child coverage of medical insurance. Non possibility for reinsure and non integration of many health care services with insurance and Options to enlarge the list of attractive cost/benefit ratio.

The first factor relates to providing health insurance at an affordable price. The second factor illustrates the comprehensive coverage factor of the health insurance. The third point highlights the inadequacies in the present health insurance industry that does not allow for reinsurance and the last factor deals with enlarging options.

Through this study the researcher establishes that there is a need to enhance the quality of Integral Health care service system to achieve the aim of health for all by integrating the information health care system, IT technology, Insurance schemes, and innovations in the health scenario. In order to realize these findings and suggestions the researcher recommends a high level integration to provide a health service of appropriate, comprehensive, adequate, easily available, accessible and feasible.

**1.1 Introduction:**

Health delivery practices are shifting towards home care. The reasons behind can be the better possibilities for managing chronic care, controlling health delivery costs, increasing quality of life, quality of health services and the distinct possibility of predicting and avoiding serious complications. To achieve the above mentioned goals and to become routine to the concept, information technology (IT) solutions need to be implemented and integrated in the health
delivery scene. These solutions need to be assessed through evidence-based medicine in order to provide solid proof for their usefulness. Thus, the concept of contact or call centers has emerged as a new and viable reality in the field of IT for health. Since the generic contact center is composed by a number of modules, Integral Health Care Network Service System concentrate in the modules dealing with the communication between the patient and the contact center using mobile telecommunication solutions, which can act as a link between the internet and the classical computer telephonic communication means. Further the study Integral Health Care Network Service System in Tamil Nadu elaborate on the development of tools in such solutions, the interface problems we face, and on the means to convey information from and to the patient in an efficient and medically acceptable way. This application proves the usefulness of wireless technology in providing health care services to all round the clock and everywhere the citizen is located. It proves the necessity for restructuring the medical knowledge to educate the patients in effective delivery system and to show the virtue of interactivity by means of using the limited, yet useful browsing capabilities of the wireless application protocol technology.

1.2 Need for the Study:

Good science leads to better decisions and systems that are effective in supporting those decisions. Science is the basis of medicine. Good science leads to better decisions and more effective systems to support those decisions. Most individuals associate science primarily with academic institutions. However,
investigators working in integrated healthcare systems are increasingly carrying out top-quality research, relevant to manage the health of populations and the care of specific clinical conditions. Integrated health care maintenance organizations provide the optimal mix of population base, electronic medical and financial databases, and longitudinal observation for much health research. They are especially well situated for research, addressing issues such as the costs and effectiveness of prevention and treatment practices, the organization of care, secular trends in diseases, and relative priorities on how to apportion scarce resources. This study describes the importance and extent of this research. Outcomes management requires an infrastructure in which population-based outcomes can be readily assessed. There are no competitive environments for addressing many of these issues in Tamil Nadu. The researcher believes that these advantages are so powerful that large integrated health care systems actually have a social obligation to participate in research as a part of the healthcare process. The reasons for academic researchers to form effective partnerships and collaborations with Integral Health Care Network Service System based research centers are also compelling.

➢ **Members benefit:** Research provides members an opportunity to make a contribution. Research makes some therapies available to patients earlier than would otherwise be the case. This strategy is particularly valuable when standard therapy offers little benefit.
➢ **Physicians and staff benefit:** Research participation helps clinicians to stay abreast of new developments; it provides new activities that make their work more interesting and relevant; and it enhances job satisfaction and retention. Research also makes physicians advocates for change when research findings support that change. Research brings additional skills and perspectives into the health care system.

➢ **Interdisciplinary research:** The Integral Health Care Network Service System research environment fosters multidisciplinary research. This integration of disciplines are essential to understand the complex interrelationships of health services and their outcomes. Still our country does not have an Integral Health Care Network Service System that is quick to respond, swift, cost effective, effective, comprehensive, well integrated, and that can deal with all the types of medical needs.

The health centers both in public and private sectors boast of saying that they are well integrated and are capable of tackling all the emergency situations but in reality they do not so.

The current study thus feels that there is a research gap in the study about Integral Health Care Network Service System in Tamil Nadu in the following areas:

a. The service variation in urban and rural areas,

b. The lack of adequate integration in the payment or cost side of the system,
c. Low levels of innovations in health care integration.

These gaps form the basis and the need for the study.

1.3. **Scope of the Study:**

The study belongs to the area of human resource management. This is very useful to government policy makers and to the public during the health care planning in Tamil Nadu. The main objective of the present study is Development of Integral Health Care Network Service System in Tamil Nadu.

1.4. Area of the Study:

The area of the study is namely the state of Tamil Nadu. A brief outline of the state is presented below.

1.4.1. The Profile of the State of Tamil Nadu:

Tamil, the official language of the State, is the mother of other Dravidian languages. Tamil literature and grammar are related to the period before 500 BC. Thirukkural, the masterpiece of Tamil literature with the highest and purest expressions of human thought dates back to this early period. Tamil Nadu is known for its large number of temples. Many of them are huge with towering structures called gopurams. Intricate rock carvings, festivals, classical music and dance highlight the cultural heritage and make Tamil
Nadu the cultural capital of the country. Tamil Nadu State (formerly known as Madras State) is located in the south eastern side of Indian peninsula with Kanyakumari as the southernmost tip of the land. This tip is the meeting point of Bay of Bengal, Indian Ocean and Arabian sea. Tamil Nadu has a long eastern coastline dotted with enchanting beaches with Bay of Bengal in the east. Marina in Chennai is one of the longest beaches in the world. Arabian sea and the states of Kerala and Karnataka form the boundary in the west. Western Ghats have sanctuaries such as Mudumalai wildlife and The Nilgiris, the Queen of Hills. The state is bounded in the north by the states of Karnataka and Andhra Pradesh. Pulicat Lake is in the extreme north. Tamil Nadu is one of the most industrialised states in India with a high Human Development index. Chennai (formerly known as Madras), the capital city of Tamil Nadu, is the gateway of South India with an international airport, sea ports and good railway and road network connectivity. Coimbatore, Madurai and Tiruchirappalli, Salem and Tirunelveli are some of the other major towns in the state. The state has large number of good educational institutions and is one of the leaders in the field of Science and Technology particularly in Information Technology. Tamil Nadu State has a population of 62,405,679 as per Census 2001 and covers an area of 130,058 sq.kms. Geographical Position North Latitude Between 8° 5' and 13° 35' East Longitude Between 76° 15' and 80° 20' table No 1.1 presents the administrative units of the State.
Table No 1.1

The Administrative Units of the Tamil Nadu

<table>
<thead>
<tr>
<th>S.No</th>
<th>Administrative units of the State</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Districts</td>
<td>31</td>
</tr>
<tr>
<td>2</td>
<td>Revenue Divisions</td>
<td>73</td>
</tr>
<tr>
<td>3</td>
<td>Taluks</td>
<td>208</td>
</tr>
<tr>
<td>4</td>
<td>Firkas</td>
<td>1,120</td>
</tr>
<tr>
<td>5</td>
<td>Revenue Villages</td>
<td>16,563</td>
</tr>
<tr>
<td>6</td>
<td>Municipal Corporations</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>Municipalities</td>
<td>150</td>
</tr>
<tr>
<td>8</td>
<td>Panchayat Unions (Blocks)</td>
<td>385</td>
</tr>
<tr>
<td>9</td>
<td>Town Panchayats</td>
<td>561</td>
</tr>
<tr>
<td>10</td>
<td>Village Panchayats</td>
<td>12,618</td>
</tr>
<tr>
<td>11</td>
<td>Lok Sabha Constituencies</td>
<td>39</td>
</tr>
<tr>
<td>12</td>
<td>Assembly Constituencies</td>
<td>234</td>
</tr>
</tbody>
</table>

Source: State Information Centre (Tamil Nadu)

It is clear from Table 1.1 that the administrative units of the Tamil Nadu are the **Lok Sabha Constituencies** 39 and the **Assembly Constituencies** 234. Table no 1.2 explains the area and population of Tamil Nadu.

Table 1.2

Area and population (2001 census)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Area and Population</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Area (Sq.Km.)</td>
<td>130058</td>
</tr>
<tr>
<td>2</td>
<td>Population</td>
<td>62405679</td>
</tr>
<tr>
<td>3</td>
<td>Male</td>
<td>31400909</td>
</tr>
</tbody>
</table>

By Sex
<table>
<thead>
<tr>
<th>S.No</th>
<th>Imperative Statistics</th>
<th>Rate</th>
<th>Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Births (CRS) (in number)</td>
<td>1071833</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Deaths (CRS) (in number)</td>
<td>419119</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Infant Deaths (CRS) (in number)</td>
<td>11130</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Birth Rate (per 1000) (SRS)</td>
<td>16.5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Rural</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Urban</td>
<td>16.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: State Information Centre (Tamil Nadu)

It is clear from table 1.2 that male population is higher than female population. Table no 1.3 presents the vital statistics of Tamil Nadu.

Table No 1.3

Vital statistics 2005
<table>
<thead>
<tr>
<th></th>
<th>Death Rate (per 1000) (SRS)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
<td>7.4</td>
</tr>
<tr>
<td>8</td>
<td>Rural</td>
<td>8.2</td>
</tr>
<tr>
<td>9</td>
<td>Urban</td>
<td>6.2</td>
</tr>
<tr>
<td>10</td>
<td>Infant Mortality Rate (per 1000 live Birth) (SRS)</td>
<td>37.0</td>
</tr>
<tr>
<td>11</td>
<td>Rural</td>
<td>39.0</td>
</tr>
<tr>
<td>12</td>
<td>Urban</td>
<td>34.0</td>
</tr>
</tbody>
</table>

Expectation of life at Birth (2006-11)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>68.45</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Female</td>
<td>71.54</td>
</tr>
</tbody>
</table>

Source: State Information Centre (Tamil Nadu)

The above table clearly indicates the Infant Mortality Rate in rural is higher than urban table 1.4 explains the Medical and Health classification.

Table No 1.4

Medical and health (government) 2006-07

<table>
<thead>
<tr>
<th>S.No</th>
<th>Medical and Health</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hospitals</td>
<td>329</td>
</tr>
<tr>
<td>2</td>
<td>Dispensaries</td>
<td>215</td>
</tr>
<tr>
<td>3</td>
<td>Other Medical Institutions</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>Primary Health Centres</td>
<td>1417</td>
</tr>
<tr>
<td>5</td>
<td>Health Sub Centres</td>
<td>8683</td>
</tr>
<tr>
<td>6</td>
<td>Beds in Hospitals and Dispensaries</td>
<td>52536</td>
</tr>
<tr>
<td>7</td>
<td>Doctors</td>
<td>10882</td>
</tr>
<tr>
<td>8</td>
<td>Nurses</td>
<td>24504</td>
</tr>
<tr>
<td>9</td>
<td>Community Health Nurses</td>
<td>384</td>
</tr>
<tr>
<td>S.No</td>
<td>Road and Transport</td>
<td>Length (in Kms)</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>1</td>
<td>National Highways (2006-07)</td>
<td>4482.755</td>
</tr>
<tr>
<td>2</td>
<td>State Highways (2006-07)</td>
<td>55796.000</td>
</tr>
<tr>
<td>3</td>
<td>Corporation and Municipalities Road (As on)</td>
<td>17014.000</td>
</tr>
<tr>
<td>4</td>
<td>Panchayat Union and Village Panchayat Road</td>
<td>96330.050</td>
</tr>
<tr>
<td>5</td>
<td>Town Panchayat Roads (As on 31.03.2007)</td>
<td>15591.737</td>
</tr>
<tr>
<td>6</td>
<td>Others (Forest Road) (As on 31.03.2005)</td>
<td>3511.000</td>
</tr>
</tbody>
</table>

Source: State Information Centre (Tamil Nadu)

It could be seen from the table 1.4 that maximum number of doctors are practicing modern medicine and only a minimum number of nurses practicing in Homeopathy table no 1.5 gives details of Road and Transport facilities in Tamil Nadu.

**Table No 1.5**

**ROAD AND TRANSPORT**
<table>
<thead>
<tr>
<th></th>
<th>Registered Motor Vehicles (in Nos)</th>
<th>9103620</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Commercial (As on 31.03.2007)</td>
<td>608325</td>
</tr>
<tr>
<td>9</td>
<td>Non-Commercial (As on 31.03.2007)</td>
<td>8495295</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Railways (in Kms) (2006-07)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Route Length (Broad &amp; Metre)</td>
</tr>
<tr>
<td>11 Broad Gauge</td>
</tr>
<tr>
<td>12 Metre Gauge</td>
</tr>
<tr>
<td>13 Track Length (Broad &amp; Metre)</td>
</tr>
<tr>
<td>14 Broad Gauge</td>
</tr>
<tr>
<td>15 Metre Gauge</td>
</tr>
<tr>
<td>16 Railway Stations (in Nos)</td>
</tr>
<tr>
<td>17 Broad Gauge</td>
</tr>
<tr>
<td>18 Metre Gauge</td>
</tr>
<tr>
<td>19 BG &amp; MG Combined</td>
</tr>
<tr>
<td>20 Sea Ports (in Nos) (2006-07)</td>
</tr>
<tr>
<td>21 Major Ports</td>
</tr>
<tr>
<td>22 Minor Ports</td>
</tr>
<tr>
<td>23 Air Ports (in Nos) (2006-07)</td>
</tr>
</tbody>
</table>

Source: State Information Centre (Tamil Nadu)

The table 1.5 explains details of the state transport and road facilities.

1.5 THE OBJECTIVES OF THE STUDY:

Keeping the need for the study the following objectives have been framed.

**PRIMARY OBJECTIVE**

To study the existing pattern of Integral health Care Network service system in Tamilnadu.

**SECONDARY OBJECTIVES**

1. To study the satisfaction about integral health Care Network service system.
2. To study the importance of Integral health Care Network service system in Emergency Medical care Situations (EMS).

3. To study the effect of Comprehensive Medical Insurance for integral health care service system.

4. To study some of the innovations that have been tried in the state to develop and to maintain the Integral health Care Network service system.

5. To analyze the problems related to the functioning or non-functioning of the Integral health Care Network service system in rural and urban areas of Tamilnadu.

6. To give recommendations based on the findings of the study, which can be applicable on a wider level in the country.

1.6. Methodology of the Study:

The present study is based on both primary and secondary data. The primary data were collected with the help of a questionnaire (vide Appendix ‘A’). The required secondary data were collected from National Information centre, State Information Centre, NGO’s, hospitals, websites, newspapers, magazines, journals, brouchers and unpublished research theses.
1.6.1 **Types of Research:**

The researcher has used descriptive research that describes the opinions and attitudes of the respondents of the study.

1.6.2 **Data Used:**

The researcher has used both primary and secondary data in his research. The secondary data are used to depict the review of the integration of health Care Network service system. The primary data is used to study the various existing pattern of Integral health Care Network service system variables

1.6.3 **Data collection tool:**

The researcher has used a structured and disguised questionnaire form. The questionnaire is annexed in this report.

1.6.4 **Mode of Communication:**

The mode of communication used by the researcher was personal survey by which the researcher met the respondents individually and asked them to fill the questionnaire the respondents were assisted to fill up the questionnaires in case they were illiterate.
1.6.5 Type of Survey:

The researcher has used sampling survey for his research.

1.7. Framing the Questionnaire:

For the purpose of collecting the primary data from the stakeholders in health care: Physician’s offices, Pharmacies, Health insurance companies, Public health institutions, Hospitals, Laboratories were visited. A comprehensive questionnaire was prepared. Before the preparing of the questionnaire, the researcher had a trial interview with 10 sample respondents. Based on both the response from the selected respondents and the objectives of the present study the questionnaire was framed. The framed questionnaire was submitted to the experts for their critical evaluation and was revised in the light of their comments. Then a pre-test was conducted with 30 sample respondents. After the pre-test the questionnaire was revised and the final draft was prepared for collecting the primary data.

1.9. Sampling Design:

The study area namely State of Tamil Nadu. The present study is mainly focused on the Integral Health Care Network Service System in Tamil Nadu. 400 samples were selected by Judgemental sampling method.
1.10. Field work and Collection of data:

The required primary data were collected from the stakeholders in health care: Physician’s offices, Pharmacies, Health insurance companies, Public health institutions, Hospitals, Laboratories through the questionnaire by the researcher himself. The questionnaire was circulated to the respondents during the month of February 2008 to April 2008. The researcher visited the respected fields and collected the filled in questionnaire directly.

1.11. Data Processing:

After completion of data collection, the filled up questionnaires were edited properly to make them ready for coding. The master Table has been prepared to sum up the information contained in the questionnaire. With the help of a master Table, the information was coded and then transcribed on transcription cards. The transcription cards were used for further analysis.

1.12. Hypothesis:

As for the objectives of the study to testify the hypothetical questions raised by the researcher factors have been framed for the following hypothesis namely Satisfaction towards Medical Care, Importance of Emergency Services,
health Care Insurance, Innovation in Medical Care Integrations have been testified.

**Satisfaction towards Medical Care:**

i) $H^0$ – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the gender of the respondents at 5%.

ii) $H^0$ – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the religion of the respondents at 5%.

iii) $H^0$ – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the marital status of the respondents at 5%.

iv) $H^0$ – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the occupation of the respondents at 5%.

v) $H^0$ – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the educational level of the respondents at 5%.
vi) \( H^0 \) – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the residing locations of the respondents at 5 %.

vii) \( H^0 \) – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the type of the respondents at 5 %.

viii) \( H^0 \) – There is no significant difference between the factor (n) scores for satisfaction towards medical care and the type of medical care preferred/provided by respondent at 5 %.

**Importance of Emergency Services:**

i) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the gender of the respondents at 5 %

ii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the religion of the respondents at 5 %.

iii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the marital status of the respondents at 5 %.
iv) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the occupation of the respondents at 5 %.

v) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the educational level of the respondents at 5 %.

vi) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the residing location of the respondents at 5 %.

vii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the type of the respondents at 5 %.

viii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of EMS and the type of medical care preferred/provided by respondent at 5 %.

**Health Care Insurance:**

i) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the gender of the respondents at 5 %
ii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the religion of the respondents at 5%.

iii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the marital status of the respondents at 5%.

iv) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the occupation of the respondents at 5%.

v) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the educational level of the respondents at 5%.

vi) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the residing location of the respondents at 5%.

vii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the type of the respondents at 5%.
viii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Health Care Insurance and the type of medical care preferred/provided by respondent at 5%.

**Innovation in Medical Care Integration:**

i) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the gender of the respondents at 5%.

ii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the religion of the respondents at 5%.

iii) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the marital status of the respondents at 5%.

iv) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the occupation of the respondents at 5%.

v) \( H^0 \) – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the educational level of the respondents at 5%.
vi) $H^0$ – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the residing location of the respondents at 5%.

vii) $H^0$ – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the type of the respondents at 5%.

viii) $H^0$ – There is no significant difference between the factor (n) scores for opinion towards importance of Innovation in Medical Care Integration and the type of medical care preferred/provided by respondent at 5%.

1.13. Framework of Analysis:

In order to study the Integral Health Care Network Service System in Tamil Nadu, the researcher applied the following tools by using a statistical package called statistical packages for social sciences (SPSS).

TOOLS USED

The researcher has used Inferential Statistics, factor Analysis, and ANOVA for analyzing the data. Let us see about each of the tool separately.

1.13. 1. INFERENTIAL STATISTICS:

Inferential statistics refers to the various statistical tools that we use for inferring the characteristics under study. It includes statistical procedures like
percentage analysis, and graphical presentations such as Bar charts, Histograms, pie charts, and Frequency polygons. It also uses probability analysis.

**There are three uses of inferential statistics:**

1. Get p-values to use in testing a null hypothesis: The p-values are probabilities (which range from 0 to 1). More particularly, they are conditional probabilities. They reflect the probability of getting observed data given that null is true.

2. Determine whether an independent variable has an effect on the dependent variable. (The effect is said to be "significant" when we can reject the null hypothesis that any treatment differences are due to chance alone.)

3. Estimate effect size. Determine which of several relevant variables has the larger effect on the dependent variable.

In the study we have used inferential statistics to analyze the profile of the respondents. Bar charts, percentage tables, and pie charts have been used to infer the demographic variables.

**1.13. 2. FACTOR ANALYSIS:**

It is a generic name given to a class of Multivariate statistical methods whose primary purpose is to define the underlying structure in a data matrix. It is a procedure that takes a large number of variables or objects and searches to see whether they have a small number of factors in common which account for their inter correlation.

**Objectives of Factor Analysis.**
1) Data reduction:- Used for reducing a mass of data to a manageable level.

2) Structure identification:- Used to discover the basic structure underlying a set of measures.

3) Data Transformation: Used to identify factors that is uncorrelated. The factors that can be used as input in the relevant dependence method.

Assumption

1) The conceptual assumptions underlying factor analysis relate to the set of variables selected and the samples chosen.

2) The basic assumption of factor analysis is that some underlying structure does exist in the set of selected variables.

Basic Principles

This test does not treat some variables as independent or as dependent variables. Instead they try to identify interdependence among a number of variables without treating any of them as dependent or independent. It strives to generate understanding of the underlying structure of questions, variables, or objects and to combine them into new variables or groups (Common factor analysis). Broadly speaking, it addresses the problem of analyzing the structure of the interrelationships (correlations) among a large no. of variables (e.g.: test scores, test items, questionnaire responses) by defining a set of common underlying dimensions known as factors.
• In summarizing data, it derives underlying dimensions that, when interpreted and understood, describe the data in a much smaller number of concepts than the original individual variables.

• Data reduction can be achieved by calculating scores for each underlying dimensions and substituting them for the original variables. (principal component factors)

  ➢ Specific items that correlate highly are assumed to be a member of that broader dimension.

  ➢ Factor analysis has value only when a correlation among subsets of the variables really exists. The higher these intranet correlations are, the better defined are the resulting factor dimensions - the researcher must ensure that the data matrix has sufficient correlations to justify the application of factor analysis. If visual inspection reveals no substantial number of correlations greater than 0.30, then factor analysis is inappropriate

Another mode of determining the appropriateness of factor analysis is by conducting the Bartlett test of Sphericity- which is a statistical test for the presence of correlations among the variables. It provides the statistical probability that the correlation matrix has significant correlation among at least some of the variables.

  ➢ Another measure to quantify the degree of inter-correlations among the variables and the appropriateness of factor analysis is the measure of sampling adequacy (MSA). This index ranges from 0 to 1. The measure can be interpreted with the following guidelines: .80 or above –
meritorious, .70 or above – middling, .60 or above – mediocre, .50 or above
– miserable and below .50 – unacceptable

The MSA increases as
i) the sample size increases,
ii) the average correlations increase,
iii) the number of variables increases, or
iv) the number of factors decreases.

**Factor analysis types:**

Factor analysis is of two types:

*R-type factor analysis:*

When applied to a correlation matrix of the variables.

*Q-type factor analysis:*

When applied to a correlation matrix of the individual respondents based on their characteristics. (i.e.) combining or condensing large no. of people into distinctly different groups within a larger population.

**Design of Factor Analysis**

It involves 3 basic decisions.

1) Calculation of the input data (a correlation matrix) to meet the specified objectives of grouping variables or respondents

2) The design of the study in terms of number of variables, measurement properties of variables, and the types of allowable variables
3) The sample size necessary, both in absolute terms and as a function of the
number of variables in the analysis – As a general rule, the minimum is to
have at least five times as many observations as there are variables to be
analysed and the more acceptable size would be a ten – to – one ratio

**Latent root criterion**

Factors having Latent Roots or Eigen values greater than 1 are considered
significant; all factors with latent roots less than 1 are considered insignificant and
are disregarded.

**Rotation**

Unrotated factor solutions achieve the objective of data reduction, but will
not provide information that offers the most adequate interpretation of the
variables under examination – like the underlying construct between the variables,
a meaningful pattern of variable loadings. So, generally rotation will be desirable
because it simplifies the factor structure, and it is usually difficult to determine
whether unrotated factors will be meaningful.

The simplest case of rotation is an **orthogonal rotation**, in which the axes
are maintained at 90*. But it is not constrained to be on orthogonal. So the
rotational procedure is **oblique**.

Orthogonal rotation is of three types Quartzimax, Varimax, and Equimax.

*Quartimax* has not proved very successful in producing simpler structure.
The difficulty is that it tends to produce a general factor as the fist facto on which
most, if not all, of the variables have high loadings.
Varimax has proved very successful as an analytic approach to obtaining an orthogonal rotation of factors.

**Criteria for the significance of Factor Loadings**

Factor loadings greater than + or - 0.30 are considered to meet the minimal level; loading of + or +.40 are considered more important and if the loading are + or - .50 or greater they are considered practically significant. Thus larger the absolute size of the factor loading, the more important the loading in interpreting the factor matrix. A .30 loading translates to approximately 10% explanation and a .50 loading denotes 25% of the variance accounted for by the factor. The loading must exceed .70 for the factor to account for 50% of the variance.

The researcher should realise that extremely high loadings (.80 and above) are not typical and that the practical significance of the loadings is an important criterion. These guidelines are applicable when the sample size is 100 or large. Guidelines for identifying Significant Factor Loading based on Sample Size is shown in the table below.

<table>
<thead>
<tr>
<th>Factor Loading</th>
<th>Sample size needed for Sig.</th>
</tr>
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<tbody>
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<td></td>
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So, the criteria for the significance of factor loadings, the following guidelines can be stated:

1) The larger the sample size, the smaller the loadings to be considered significant.

2) The larger the number of variables, being analysed, the smaller the loading to be considered significant.

3) The larger the number of factors, the larger the size of the loading on later factors to be considered significant for interpretation.

**Interpreting a Factor Matrix.**

1) Move horizontally from left to right with the first variable on the first factor looking for the highest loading for that variable on any factor. When the highest loading (largest absolute factor loading is identified) is identified, it should be underlined if significant.
2) Then move on the second variable left to right horizontally, looking for the highest loading for that variable on any factor.

3) Continue for each variable until all variables have been underlined once for their highest loading on a factor.

**Assess commonalities of the variables**

It represents the amount of variance accounted for by the factor solution for each variable. Variables having commonalities less than 0.50 as not having sufficient explanation. If there are variables that do not load on any factor or whose commonalities are deemed too low, two options are available:

1) Interpret the solution as it is and simply ignore those variables

2) Evaluate each of those variables for possible deletion depending on the variables overall

Overall contribution to the research as well as its commonality index. If the variable is of minor importance to the study’s objective or has an unacceptable commonality value, it may be eliminated and then the factor model re-specified by deriving a new factor solution with those variables eliminated.

**Labeling the factors**

Variables having higher loadings are considered more important and have greater influence on the name or label selected to represent a factor. Examine the variables for a particular factor and, place greater emphasis on those variables with higher loading will attempt to assign a name or label to a factor that accurately reflects the variables loading on that factor.
The first Factor analysis in the study was carried out to extract the relevant factors which help increase job satisfaction and reduce the number of variables into important factors. The analysis was made on the data of measures of improving job satisfaction on all 30 variables considered in the study. The factor structure of total population was explored following the procedure of principal component analysis.

The second Factor analysis was carried out to extract the relevant factors which help to either increase or decrease job satisfaction and to reduce the number of variables into important factors. The analysis was made on the data of 110 factors that greatly increase and decrease job satisfaction. The factor structure of total population was explored following the procedure of principal component analysis.

1.13. 3. ANOVA

A one independent variable experiment is called one-way ANOVA. ANOVA stands for Analysis of Variance. ANOVAs are designed to test the differences between more than 2 means. We will use means that are associated with groups defined by 2 factors--a two-way ANOVA; this test requires that all of the groups have homogeneous variances. If you want to compare means from two (or more) grouping variables simultaneously, as a two-way ANOVA does, there is a non-parametric alternative (the Friedman test), but it can't do all the things
ANOVA can. Your best bet is to try to make your variances homogeneous by transforming your data.

The output consists of an analysis of variance (ANOVA) table with the factors (independent variables) and the interaction listed in the first column and the p-values associated with them in the last column (labeled "Sig."). For our purposes, we are only interested in the Sources of Variation printed in all capital letters. Together, these factors represent the amount of variance that are explained by things that you have taken into account in your measurements. The rest of the variance is unexplained, and makes up the "Error" (sometimes called "Residual") variance. The p-value associated with each independent variable tells you the probability that the means of the different levels of that variable are the same. So, again, if p<.05, the levels of that variable are different among the groups. The p-value of the interaction term tells you the probability that the two variables act independently of each other. A one-way ANOVA allows us to test whether several means (for different conditions or groups) are equal across one variable.

1.15. Limitations of the Study
The respondents of the study the stakeholders in health care: Physician’s offices, Pharmacies, Health insurance companies, Public health institutions, Hospitals, Laboratories. The researcher experienced problems while collecting information from the stakeholders. Because of the opinion that the information collected may reach the management. The researcher explained to them the objectives and confidential nature of the present study and finally he received a good response from them.

1.16. Scheme of the Report

The thesis consists of six Chapters.

The First chapter “Introduction and Design of the Study” deals with methodological aspects of the study. It contains introduction, need for the study, scope of the study, area of the study, objectives of the study, significance of the study, methodology of the study, framing the questioner, sampling design, field work and collection of data, data processing, hypothesis, frame work of analysis, operational definitions and concepts, limitations of the study and scheme of the report.

The Second Chapter “Review of Literature” highlights a detailed note on the study existing and available in this field of research.

The Third Chapter “The theoretical foundation of the integral network service system in health care” analyzes the different theories that contribute to
this integral health care network service system the resource based theory was
fond more appropriate with the support of competitive approach the organization
learning approach and the knowledge management approach this gives us the
foundational background to the next chapter to create the conceptual and
theoretical frame work..

The fourth chapter “Conceptual Framework of Integral Health Care
Network Service System” In this chapter the researcher establishes the concepts
for the research problem. The different elements of the concepts are explained thus
to integrated the different variables in a single frame work.

The Fifth Chapter “Analysis and Interpretation” highlights various ways
to analysis the data collected from the respondents.

The Sixth and final Chapter “Summary of Findings, Suggestions and
Conclusion” deals with concluding part of the study. It includes Summary of
findings, problems, suggestions and conclusion.