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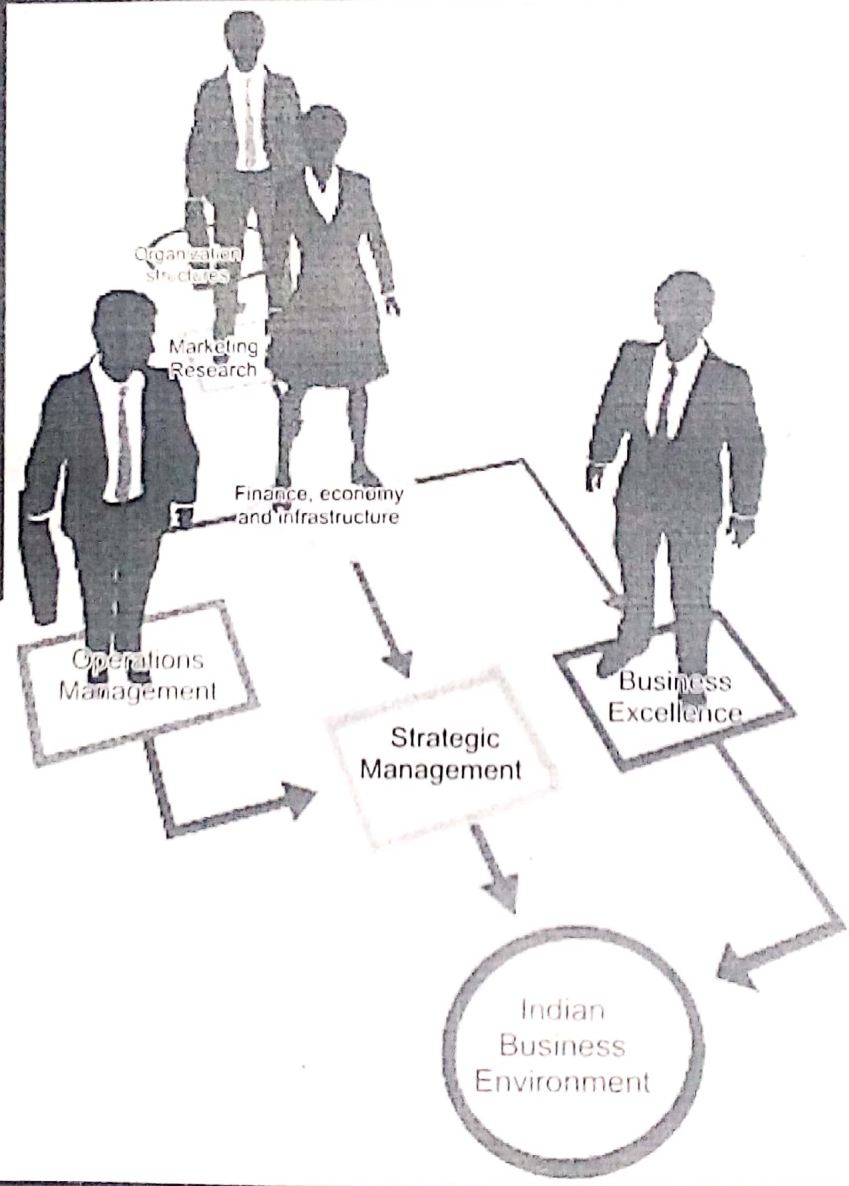

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Adaptability of Consumer for Non-Conventional Source of Energy as Compare to Conventional Regular Source of Energy in and around Pune City

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A) Introduction of Topic:

Energy: - The energy of a body is its capacity to do work. It is measured the total amount of work that the body can do.

There are two types of Energy Sources as Follows,

Non-Conventional source of energy is energy sources obtained from sources that are essentially infinite. Examples of Non-Conventional include wind power, solar power, geothermal energy, tidal power and hydroelectric power. Previously these were Conventional energy source before James Watt invented the steam engine in the eighteenth century. In fact, the New World was explored by man using wind-powered ships only. The non- conventional sources are available free of cost, are pollution-free and inexhaustible. Man has used these sources for many centuries in propelling ships, driving windmills for grinding corn and pumping water, etc. Because of the poor technologies then existing, the cost of harnessing energy from these sources was quite high. Also because of uncertainty of period of availability and the difficulty of transporting this form of energy, to the place of its use are some of the factors which came in the way of its adoption or development.

Conventional energy is the conventional fossil fuels such as coal, oil and gas, which are likely to reduce with time. The use of fossil fuels and nuclear energy replaced totally the non-conventional methods because of inherent advantages of transportation and certainty of availability; however these have polluted the atmosphere to a great extent. In fact, it is feared that nuclear energy may prove to be quite hazardous in case it is not properly controlled.

India is blessed with an abundance of sunlight, water and biomass. Enthusiastic efforts during the past two decades are now bearing fruit as people in all walks of life are more aware of the benefits of Non-Conventional energy source, especially decentralized energy where required in villages and in urban or semi-urban centers. India has the world's largest programme for Non-Conventional source of energy.

Adoption Process:

It focuses on the stages through which individual consumer passes when deciding to accept or reject a new product. In case of Non-Conventional energy sources consumer not easily adopting as compair to Conventional Energy source. It is true that as Invention come true new technology like Bulb invention by Thomas Edison consumer started adopting new Technology. It was ancient time when consumer were using Non-Conventional

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energy sources as days passes consumer started using Conventional energy sources. These Convention sources become Non-Conventional. But now a days as cost of adoption of conventional energy sources goes on increase people are attracted towards Non-Conventional energy Sources. Scarcity of Conventional energy source is there in market so consumer started using Non-Conventional energy sources. Non-Conventional source of energy help to save time, money and energy.

B) Rationale or Significance of the Study:

Energy generation is the indication of economic growth and industrial development of any country. While it is a life stream of country like India.

The Indian economy is one of the fastest growing economies in the world. The current GDP of India is estimated at USD 1.847 trillion1 for 2011 and although growth is expected to slow down in 2012, medium to long term projections still attribute 8% to 9% per annum growth in GDP. The demand for energy during the 12th Five Year Plan is expected to increase as the economy grows, there is increased access and as access in rural areas expands. The supply of primary commercial energy is projected to increase from 710.79 metric tones in 2011-12 (Provisional) to 1219.76 metric tones by 2021-22. The annual average growth rate of the total energy requirement is expected to accelerate from 5.1 per cent per year in the Eleventh Plan to 5.7 per cent per year in the Twelfth Plan and 5.4 per cent per year in the Thirteenth Plan. The availability of energy is a crucial input for sustaining the long term growth in the GDP of the country.

The capacity additions during the Eleventh Five Year Plan period (2007-2012) has been 54,964 MW which is 69.8 per cent of the original target and 88.1 per cent of the reduced target of 62,374 MW set in the Mid-term Appraisal (MTA). It is more than 2.5 times that of any of the earlier Plans. The total installed generation capacity in the country, including renewable energy sources, as on 30 Nov 2012 is ~ 211 GW. The share of Non-Conventional energy capacity is about 12.2 per cent. Despite the promising growth witnessed in the generation capacity additions in past few years, the electricity shortage continues to impose significant constraints to India's economic development and growth. During the financial year 2011-12, though the total energy availability increased by 8.8% over the previous year and the hit the highest point increased by 5.4%, the shortage conditions prevailed in the country both in terms of energy and peaking availability. During the year 2012-13, it is anticipated that there would be energy shortage of 9.3% and peak shortage of 10.6% respectively. There are certain areas where the sustainable sources of energy could play an important role.

India's Non-Conventional energy installed capacity has grown at an annual rate of 23%, rising from about 3.9 GW in 2002-03 to about 26 GW in November 2012. Wind energy dominates India's renewable energy industry, accounting for 70% of installed capacity (18 GW). It is followed by small hydropower (3.4GW), biomass power (3.0 GW) and solar power (1.04 GW) that has just started registering its presence. The top seven countries for non-hydro renewable electric capacity—China, the United States, Germany, Spain, Italy, India, and Japan - accounted for

about 70% of total capacity worldwide. India added about 4 GW of grid-connected non-hydro renewable power capacity during 2011, mainly from wind but also from biomass and solar capacity to give a total of more than 20 GW by year-end. India is now the fifth largest wind power producer in the world, after USA, Germany, Spain and China.

Maharashtra is the largest power generating state in India with installed electricity generation capacity of 26,838 MW (As on 31st August 2012). Maharashtra constitutes 13% of the total installed electricity generation capacity in India which is mainly from fossil fuels such as coal and natural gas. The state of Maharashtra forms a major constituent of the western grid of India which now comes under North, East, West and North Eastern (NEWNE) grid of India.

C) Literature Review:

Products and the process by which they are adopted are among the most actively researched topic in marketing and the social sciences in terms of the number of publications (Rogers, 1983). Such attention appears well warranted given the role which new product diffusion plays changes in both consumer consumption activity and in society itself (Schumepter, 1934). Furthermore, new product diffusion plays critical role in the performance of individual firms, a stream of successful new products is essential for business continued prosperity in a free economy.

The Adoption process is the "mental and behavioral sequences through which the consumer progress and which may result in acceptance and continued use of a product or Brand" (, 1974) It Encompass four components: 1) an Innovation, 2) which is communicated through certain channels, 3) over time, 4) among members of a social system (Rogers and Shoemaker, 1971) Although component of time has received minimal attention in this body of research. Mittelstaedt, Grossbart, Curtis and DeVere noted that since "time is of Paramount concern, it would seem that the most obvious question is not 'Who passes through the adoption process' But How do individuals vary in their decision behavior over time.

India is densely populated and has high solar insolation, an ideal combination for using solar power in India. India is already a leader in wind power generation. In the solar energy sector, some large projects have been proposed, and a 35,000 km2 area of the Thar Desert has been set aside for solar power projects, sufficient to generate 700 GW to 2,100 GW. Also India's Ministry of New and Non-Conventional Energy has released the JNNSM Phase 2 Draft Policy, by which the Government aims to install 10GW of Solar Power and of this 10 GW target, 4 GW would fall under the central scheme and the remaining 6 GW under various State specific schemes.

In July 2009, India unveiled a US$19 billion plan to produce 20 GW of solar power by 2020. Under the plan, the use of solar-powered equipment and applications would be made compulsory in all government buildings, as well as hospitals and hotels. On 18 November 2009, it was reported that India was ready to launch its National Solar Mission under the National Action Plan on Climate Change, with plans to generate 1,000 MW of power by 2013. From August 2011 to July 2012, India went from 2.5 MW of grid connected photo voltaic to over 1,000 MW.

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According to a 2011 report by BRIDGE TO INDIA and GTM Research, India is facing a perfect storm of factors that will drive solar photovoltaic (PV) adoption at a "furious pace over the next five years and beyond". The falling prices of PV panels, mostly from China but also from the U.S., have coincided with the growing cost of grid power in India. Government support and ample solar resources have also helped to increase solar adoption, but perhaps the biggest factor has been need. India, "as a growing economy with a surging middle class, is now facing a severe electricity deficit that often runs between 10 and 13 percent of daily need". India is planning to install World's largest Solar Power Plant with 4000 MW Capacity near Sambhar Lake in Rajasthan.

D) Need for the study

This study arises from the need of Energy/ Electricity Saving and finding alternative source of energy for Conventional Energy source.

. As a problems are increasing in Urban and Rural India. i.e. Load Shading and Light cut off. It is very necessary that to study awareness created about Non-Conventional Energy Source in India. It is alternative source for the Conventional Energy Source.

The rapid growth of Industry, increase in environmental variability and acute shortage of electricity and the corresponding increase in need of electricity and Increasing costs of Electricity and increasing environment pollution.

To Study the best possible and suitable alternative as Non-Conventional energy source for Conventional Energy Source.

To Understand the cost effective and pollution-free and inexhaustible source. How It save time, money and energy.

To understand the various Government subsidy Schemes on Non-Conventional Energy Sources for peoples, for they are unaware and need to focus and create awareness about it.

To know how It help to generate entrepreneurship and employment opportunity in rural and urban India.

To study how it will help to solve energy problem and conserve energy for Industry, Society and Nation like in India.

E) Statement of the Research Problem

Adaptability of Consumer for Non-Conventional Source of Energy, This study arises from the need of Energy/Electricity Saving and finding alternative source of energy for Conventional Energy source.

This problem is every part of India, as a problems are increasing in Urban and Rural India. i.e. Load Shading and Light cut off. It is very necessary to study about Non-Conventional Energy Source in India. It is alternative source for the Conventional Energy Source.

The rapid growth of Industry, increase in environmental variability and acute shortage of electricity and the corresponding increase in need of electricity and Increasing costs of Electricity and increasing environment pollution.

Conventional source of energy source scarcity and to find out suitable alternative,

Non-Conventional energy source, which is cost effective and pollution-free and inexhaustible source. This helps to save time, money and energy.

To understand why people and market

have not aware about various Government subsidy Schemes on Non-Conventional Energy Sources.

To know how it helps to generate entrepreneurship and employment opportunity in rural and urban India.

F) Objectives of the Study:

1) To Study Adaptability of consumer for Non-Conventional Source of Energy as a best option for Conventional source of Energy.
2) To Study extent of awareness Created by non-conventional source of energy for urban and Rural Electrification as an Energy Conservation Option.
3) To Study Extent of awareness on household energy efficiency improvement.
4) To Study direct and indirect employment/ Entrepreneur opportunities especially created by Non-Conventional Energy Sources in Rural and backward areas.
5) To Study the energy option as Green and Environment Helpful Option.
6) To Study the awareness about state and Central Government Subsidy Schemes of Non-Conventional Energy Source Schemes, and making their utilization and Adaptability to Consumers.

G) Research Hypothesis

The research will be carried out on the basis of few assumptions drawn by the researcher which may stand accepted or rejected after the data is analyzed and conclusion are drawn. These assumptions are:

H0 Selection of Proper & appropriate Non-Conventional and Conventional energy Source is upto knowledge of that Consumer.

H1 Most of the consumers are using conventional source of energy.

H2 Consumer having knowledge of Non-Conventional energy source are started adopting the Non-Conventional source of energy.

H3 Few Consumers don't have knowledge about government subsidies for Non-Conventional Energy Source.

H4 Consumers have knowledge of Government subsidies are started using Non-Conventional Energy Source. They are taking benefit of government Schemes.

H) Research Methodology

The researcher thus follows the following procedure of research

I. Sampling Design

Sampling will allow the researcher to concentrate upon a well segmented number of Consumers/people and hence devote more energy. The information collected from them is accurate and technique used for sampling will be Simple Stratified Random Sampling Technique. In this technique proportionate allocation pattern will be used where a sampling fraction in each of the strata that is proportional to that of the total respondents who are mainly the Consumer, Builders and Housewife's and Businessman.

There are large number of people/ consumer are in Pune city who are using Conventional Source of Energy. Many of them are using conventional and Non-Conventional Source of Energy. As Compare to Conventional Source of Energy users Non-Conventional Energy Source User are less in number.

In this proposed research work, the stratified sample size will include the

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following area having major concentration of Conventional and Non-conventional Energy source.

All major areas/ parts of City, newly constructed apartments, newly based townships and few Thasils and villages within Pune district including Warje, Narhe, Malawadi, Shindewadi, Pirangut, Nanded city, Sanghavi, Wakad, Urali Kanchan etc.

II. Research Design

Different types of research designs have different advantages and disadvantages. The design is the structure of any scientific work. It gives direction and systematizes the research. The method we choose will affect our results and how we conclude the findings. Most scientists are interested in getting reliable observations that can help the understanding of a phenomenon.

Since this piece of research will study available large number of consumers for using the conventional and non-conventional energy sources, it will be a Quantitative/ Descriptive research and it will also reveal the probable loopholes in existing conventional and non-conventional energy sources user in and around Pune city.

III. Tools & Sources Of Data Collection

After preparing the details of the information required, the investigation will be done and the main tools of collecting the information will be as worked out as follows.

a) Secondary data:-

Journals, brouchers, internet sites etc,

Newspaper articles.

Media

Reports

Publications

b) Primary data: -

i) Questionnaire: It is the list of research or survey questions asked to respondents, and designed to extract specific information. It serves four basic purposes: to (a) collect the appropriate data, (b) make data comparable and amenable to analysis, (c) minimize bias in formulating and asking question, and (d) to make questions engaging and varied.

ii) Personal Interview:- It is a Market research technique for gathering information through face-to-face contact with individuals. This type of research is relatively costly, because it requires a staff of interviewers, but it provides the best opportunity to obtain information through probing for clearer explanations. The personal style (tone of voice, rewording of a question) and biases of each interviewer can affect how the participants respond and how the responses are recorded. It is the best technique to use early on in the research process when the researcher is not yet sure which questions need to be asked, because new and better questions can come out of the dialogue.

iii) Observation:- Observation Method is method of obtaining marketing research data by watching human behavior & mechanical monitoring devices closely are also used commonly. Observation is a complex research method because it often requires the researcher to play a number of roles and to use a number

of techniques; including her/his five senses, to collect data. In addition, despite the level of involvement with the study group, the researcher must always remember her/his primary role as a researcher and remain detached enough to collect and analyze data relevant to the problem under investigation.

Visits will be made to various places where conventional and Non-Conventional energy source are using by Consumer. Will contact approximately more than 100 consumers who are using conventional and Non-conventional energy sources are using. To get detail information from them and filling up questionnaire, interview and live observation; this will help to gather reliable information regarding subject of the survey.

IV. Methods of Data Analysis and Statistical Techniques

Secondary and Primary Data collected from the Consumers will be analysed for interpretation of data can be shown graphically denoting relevance of each objective undertaken. Further statistical treatment will be given to relate the findings in consultation with the research guide and an expert statistician to draw valid and accurate conclusions at the time of data summarization.

Statistical Techniques - Chi square test, factor analysis and z- test.

I) Scope of the study

The area of this study is carried in Pune city and nearby Villages. This study is focused on the Adaptability of Consumer for Non-Conventional Source of Energy as Compare to Conventional Regular Source of Energy. But now a days as cost of adoption of conventional energy sources goes on increase people are attracted towards Non-Conventional energy Sources. Scarcity of Conventional energy source is there in market so consumer started using Non-Conventional energy sources. Non-Conventional source of energy help to save time, money and energy.

The study will also investigate the root causes for unawareness of Non-Conventional Energy Source. It helps to establish entrepreneur in Urban and Rural areas. This helps to Create awareness about Government Subsidies schemes to People and Society. It help to promote Subside Schemes for Non-Conventional Energy Source.

This study will also analyze the role of society and Government for supporting and promoting Non-Conventional Energy Source.

J) Limitation of Research Study

As there are various source of Non-Conventional Energy Source for study purpose I have selected Solar Energy Sources.

Area is also very important for study so I have considered Pune District, Thasils and Villages in and around Pune District.

Time and Money are two important factors in research study so I have decided to do my research project in Pune city to overcome a time and Money constraint.

The study is proposed in Pune district only; result and conclusion may not be same in other areas of Maharashtra and India.

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