CHAPTER 8

FINDINGS AND SUGGESTIONS
8.1 FINDINGS ABOUT JHANSI REGION:

Geographically and strategically Jhansi can be said the heart of the Nation. As heart is the main central part of the human body and there are linkages to all other parts of the body, similarly Jhansi has very well road & train linkages to other parts of the nation. As the heart is responsible for the circulation & supply of the life saving blood to the other parts, similarly Jhansi is responsible for the supply of life protecting armed forces to the boarders & any other parts of the nation. Jhansi has also emerged as one of the most important central junction for the transportation.

It is located on the cross section of the three National highways as well as center of the four ways, connecting north to south and west to east. Jhansi is a rapidly developing industrial town. High way towards Kanpur, New Delhi, Bombay, are making this place a strategically important junction for the companies dealing in logistics, transportation & warehousing.

The temperature ranges from 4 degree Celsius in winter and up to 44 degree Celsius in the peak summer. The annual average rainfalls are 1000 mm. Humidity conditions are high here which makes weather unbearable in such duration.

Economy of the region is based on agriculture industry, forest resources & mineral resources. Indian railways, BHEL, Parricha, Baidhyanath, Concrete industry, education, diamond cement, Shri nivas fertilizers, Vegipro foods, Hindustan Leaver, Urvashi fertilizers and Bharat explosive pvt. Ltd are some of the main big employment providing companies. Total employment in this sector are approx. 1300 while in small & rural industries are generally approx 37,380 employment in this region.

Important manufacturers are edible oil, lace chemicals and pharmaceuticals, brassware, fine silk and coarse rugs. The Paricha Thermal Power Plant and
National Research Center for Agro forestry (NRCAF), The Indian Grassland and Fodder Research Institute are located here.

Jhansi is surrounded by the fortress wall and dominated by an ancient fort. The city has a large military cantonment area, railway workshops and an industrial estate. The population of Jhansi is more than 4 lakhs persons with almost 80% literacy rate. More than seventy five thousand households reside in the city.

It is a very important Railway junction. It is emerging as one of the central hub for road transport because being of junction of fast progressing four-way lane, connecting all-important Metros in all directions.

The climate of the district is the Central India type sub-tropical and may be characterized by a very hot dry summer and cold winter. Like other districts of the Bundelkhand region, this also shows four distinct seasons. Summer being from March to mid-June, Monsoon from mid-June to September, post-monsoon transition between October and November while the winter months are December to February.

The day temperature is the highest during May / June which falls steeply with the onset of monsoon in mid-June or July. It rises again around September and goes a little higher during October. Then with the beginning of winter, the temperature falls and becomes minimal in January.

The population of Jhansi is more than the population of Lalitpur & Jaloun. However % growth of population is also higher in Jhansi. Total divisional population are 3401118. There are total 683308 no. of households out of which only 31% are availing banking facility. This region is having less than 3% employment of total population. This is really very low figure and in no way is attractive reason for the growth of A.C. & water purifier market.
This region is having 28 public sector and 202 private sector companies, in which total employment is approx 36252. The electricity is available in 218267 households out of total 683308 households, which is 31.9 %i.e. less than one third. It means more than two third population can not think of purchasing anything that runs with electricity and products for which this research study have. This information is very much useful in this research work because in the later part of thesis it is revealed that 'High operating cost (electricity cost) has emerged out as one of the major reasons for not purchasing Air conditioning devices'. In case of unauthorized user of electricity, they are not supposed to pay bill for the electricity they use hence they do not care for 'such a high electricity consumption for the use of air conditioners been undertaken are also of the same nature.

Cinema & television programs are significantly influencing the lifestyle of society. 'Changing life style of the society' is the great area of concern to study 'Factors affecting consumer behaviors in the purchase of air & water conditioning device in Jhansi region.'

The study also reveals type of drainage in the household. This information may be useful to know the status of household with respect study factors affecting consumer behavior in the purchase of air & water conditioning devices.

The 30.9 % households are having toilet availability that is also very less. This indicates that more than two third households are not having basic amenities like toilet and they cannot think of purchase of any conditioning devices.

8.2 Industry Findings:
The precise purposes of our reading of our literature were depending on the approach we were intending to use our research. For this research projects we use the literature to help us to identify theories and ideas that we will test using data. This knows as a deductive approach in which we develop a theoretical or conceptual framework, which we subsequently test-using data.
Currently, the Indian air-conditioner industry has an annual turnover of approximately Rs 1,600 crore. A number of Indian companies in the original sector, a large number of assemblers in the unorganized sector, and quite a few multinational are operating in the industry. Though, there has been a boom in demand in recent years, only 0.67 million units of RACs were sold in last year against an installed production capacity of 0.95 million. In other words, currently there is a substantial surplus capacity in the industry. As a result of the surplus capacity and the presence of a large number of players, competition in the industry is fierce.

There has been a substantial growth in demand for air-conditioners in recent years. Growing industrialization, an expanding middle class with increasing disposable income, and reduction in prices consequent to reduction in excise duties have led to this growth in the industry, the five years between 1992 and 1997 initiated rapid growth in the industry, at a CARG of over 35 percent. This trend than continued with a greater pace in next 10 years.

Currently, environmental and energy concerns are influencing the industry significantly and the product range on offer is reflecting this reality. The RACs, which include the unitary products and ducted splits, constitute the largest category, with a market share of approximately 65 percent of the total AC market. It is also the fastest growing category. It accounts for a turnover of Rs 1,000 Crore. Table presents sales of RACs from 1994-95 to 2000-01.

**The Main Players in the Indian AC Industry (Organized Sector)**

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<th>Carrier Aircon</th>
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<td>Symphony Comfort Systems</td>
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Currently, the total market size of the AC industry is of the order of Rs 1,900 crore, with RACs contributing to around Rs 1,200 crore and central plants, around Rs 700 crore. In terms of number of units, the market size is of the order of 8.85 lakh units in the case of RACs.

The share of the organized sector, relative to the unorganized sector was 1:1 in 1998. It became 7:2 in 2005. In the post-liberation era, consistent reduction in excise duties has narrowed the price gap between the sectors. So, the organized sector asserted itself and eroded the share of the unorganized sector. The entry of more players/brands from the organized sector in recent years has also contributed to this development.

There is no single market leader in the industry, across all the product categories. Carrier Aircon is trying for such a leadership position. It is the leader along with Blue Star. In central plants Blue Star is the leader. Voltas had been the leader in the past, with a market share of over 30 percent. But it has been slipping from the position in recent years. The position is keep on changing.

The demand for RACs has grown at an impressive rate over 20 percent compounded between 1992 and 1998. In terms of volume, it grew to 0.57 million units in 2000 from 0.13 million units in 2000 from 0.13 million units in 1992. This trend continues with the greater pace in next 5 years from 2001 to 2006.

The installed capacity for RACs in the organized sector in 2002-2003 was around 0.8 million units. Over the next two years, additional capacities to the tune of 0.25 million units were added, bringing the total installed capacity in the country too 1.05 million units by the year 2004. Supply has thus registered good increase in recent years. Existing players have expanded capacity and new entrants have brought in fresh capacity. And, as mentioned already, at present, supply is in excess of demand.

As per an NCAER estimate, the numbers of households with monthly incomes above Rs 10,000 in metros and above Rs 5,000 in non-metros is expected to rise to 57.2 million in 2005-06. It was 22.7 million in 1996-96. It means that inspirational buying will steadily increase in India. And, as that happens, demands for ACs are bound to go up.
In the matter of industry potential, the AC industry will get a high rating. A study conducted by IMRB points to an additional potential of 0.35 million AC units in the short term, if a unit with appropriate capacity is offered at a price of Rs 18,000. In the long term, about 20 million Indians with income of above Rs 5,000 per month in year 2000 are considered as potential customers for RACs. Demand from industrial users too is expected to grow at a handsome rate. In the coming years, more and more electronic gadgets will be used in industrial establishments.

NCAER has estimated the affluent population in India with an income of over Rs 10 lakh per annum to be in the range of one million households. It means that a target audience of 5.6 million individuals is available for products priced at the top-most end of the scale. That is certainly not a small segment. This segment is looking out for ‘something new’ to buy; It is constantly upgrading to the styles set by the affluent in the west. Such individual happily buy Air conditioner worth Rs. 1 lakh also.

8.3 FINDINGS ABOUT INDIAN CONSUMER MARKET:

- The ‘consuming class,’ households with an annual income of Rs 45,000-2,15000 at 1994-95 prices, which is normally considered as the middle class, now totals 53.5 million. About 27.5 million of these middle-income households are in urban areas and 25.9 million in rural areas.
- Granting an average 5.56 people per household, the size of the middle class consumers can be pegged at about 297 million.
- As a proportion of the population, the consuming class has doubled from 14 percent of total households in 1989-90 to 30 percent in 1998 –99.
- This proportion will rise to 40 percent by 2006 – 07, when there will be 80 million middle class household with 445 million people.
- The percentage of very poor households is shrinking. It has dropped by almost half in the past decade – from 25 percent in 1989 –90 to 13.2 percent.
1998 – 99, and the figure is expected to fall further to 7.7 percent, by 2006 – 07.

- 'The destitute' (income range: Rs 16,000 per annum) and 'the aspirants' (income range: Rs16000 – 22,000 per annum) will shrink significantly.
- In other words, the poorest class will roll back from more than 51 percent of the total population to about 14 percent by 2006 – 07.
- At the other end of the income spectrum, the very rich will account for 2.6 percent of all households in 2006 – 07 up from 1.6 percent in 1998 –99 and 0.3 percent in 1989 –90.
- In term of numbers, the affluent will jump from a mere 4 million in 1994 – 95 to 35 million by 2006 –07.
- 'The consuming classes will grow the fastest.
- Economic liberalization has had a positive impact on Indian households, pushing up their incomes and expenditures.

8.4 CONCLUSIVE FINDINGS ABOUT CONSUMER BEHAVIOUR FOR AIR CONDITIONER AND WATER PURIFIER:

**AIR CONDITIONER**

Maximum owning of AC's are from the people ranging between 31 years to 50 years. The inference, which can be drawn, is that young & new generation like these products but the low figures of product acceptability in the age segment, below 30 years, is not supporting this conclusion. The reasoning of this was found on further probing to the respondent. It was established that respondents of this age segment are having comparatively low income & this is why they are not showing purchase intention even having positive purchase attitude towards such products. Respondents of age group 31-40 years are more inclined towards these products.

Response towards conditioning devices is gradually increasing with the higher education. This is because higher degree of awareness for such advances
products & their utility in their day-to-day life. More than 75% share is with the postgraduates & professionals.

Qualification distribution among the owners of the air-conditioners, indicating that 77% share of total consuming community is with higher education group. The inference, which can be drawn, is that highly educated people like air conditioners subject to support by other factors, discussed later in this report.

People having good income & lifestyle suitable for the product like air conditioners subject to supported by other factors, discussed later in this report. The income of professionals depends upon good & continuous services provided by them to their clients. They should keep themselves in proper comfort to avoid physical exertion.

Income distribution among the owners of the air-conditioners, indicating that 71% share of total consuming community is with income group more than 20000 Rs. per month, while it is followed by 21% Share for the people having income ranging between 15001 and 20000. The inference, which can be drawn, is that people having good income & lifestyle suitable for the product like air conditioners subject to supported by other factors, discussed later in this report. The income of professionals & business mans depends upon good & continuous services provided by them to their clients & customers. They should keep themselves in proper comfort to avoid physical exertion.

A.C.'s are more popular at office place than any other use location because people want to maintain a status as well as working comfort for themselves, there employees & their visitors.

Employment place as a use location (with 14 % share) showing that employer at Jhansi region are rarely providing A.C. to their employees because of many reasons. This is because there are not big organizations at private sectors hence they cannot afford to these expenses on the other hand they do not have such culture at their workplace.
However there is almost equal chunk of Domestic users and Users for their own office & air-conditioned vehicle.

The main purchase reasons for A.C. is found to be ‘comfort’ with 58% respondent giving it 1st rank, while also having Other reasons as Health & hygiene factors 18%, luxury 4% & improving living standards 17%.

84% majority of respondents either agrees or strongly agrees that Purchase affordability leads to purchase decision.

The main apprehension felt/feel in purchasing Air-Conditioner device is ‘electricity problem’ that includes ‘electricity cost’ & ‘irregular supply’. The other main apprehensions felt/feel in purchasing Air-Conditioner device are as follows:

- It does not suit with their life style.
- It may reduce body’s tolerance power.

Air conditioning devices have been considered as low priority household items in comparison to other household items as colour television, refrigerator, desert cooler, Washing machine, scooter, inverters / generators etc. Air conditioners were not purchased at no.1 sequence. Only 2% respondent purchased at no.2 sequence while 5% respondent purchased at no.3 sequence. Only 7% respondent purchased at no.4 sequence while 10% respondent purchased at no.5 sequence.

‘Availability of Dealer in nearby area’ is no issue with the 7% giving it no.1 rank while 10% giving it rank 2.

‘Awareness / persuasion factors’ & ‘Availability of Fund / Finance’ are two issues with the 22% giving it no.1 rank to ‘Awareness / persuasion factors’ while 32% giving it rank 1 to ‘Availability of Fund / Finance’. It is found that ‘Price economy’ is the main ‘Purchase push factor’ for the Air conditioners.
Correspondence analysis of the expense affordability factor for the purchase of AC and the rank was performed to have an idea of the association between them. The value of the chi square was 116.48 with p-value=0.00. The correspondence plot clearly reveals that others are closely associated with rank-4 and running cost with rank-1. Whereas installation & maintenance cost are closely associated with rank 2 & 3.

Correspondence analysis of the suitable operating conditions for purchase of AC and the ranks was performed to have an idea of the association between them. The value of Chi-square was 397.6 with p-value=0.00. The correspondence plot clearly reveals that UNINTERUPPTED POWER SUPPLY is closely associated with Rank-1, CHEAP POWER with Rank-2, and SUPPORTIVE FACTORS with last priority at Rank-5.

UNINTERUPPTED POWER SUPPLY is found the most important ‘Suitable Operating Condition’ with rank –1. It is most important to be present for having positive purchase decision.

The second most important ‘Suitable Operating Condition’ that is most important to be present for having positive purchase decision of Air conditioner is CHEAP POWER with Rank-2

It can be established from figures that Operating expense affordability is Higher or Very higher than the purchase affordability in 84 % cases. It is easy to draw a conclusion that high operating conditioning expenses are dominating over purchase affordability. Hence it can be stated that factor of high operating expense is negatively influencing consumer behaviour for the purchase of Air conditioning devices.

It can be established from figures that 71 %respondents either agree or strongly agree that ‘Suitable operating conditions’ affect more than the favorable ‘purchase affordability’. It is easy to draw a conclusion that ‘Suitable operating conditions’ are dominating over purchase affordability. Hence it can be stated
that factor of 'Adverse Operating conditions are negatively influencing consumer behaviour for the purchase of Air conditioning devices.

53% respondents purchased / intend to purchase Air conditioner in the presence of 'Suitable purchase conditions' as well as 'suitable operating Conditions'.

31% respondents purchased / intend to purchase A.C in the presence of favorable operating conditions; no matter weather purchase Conditions are suitable or not.

Only 14% respondents purchased / intend to purchase Air conditioner in the presence of favorable purchase conditions no matter those operating conditions were not favorable.

Only 2% respondents purchased / intend to purchase air conditioners when the Purchases as well as the Operating conditions both are not suitable.

It is found from the above figures that the presence of 'favorable purchase conditions' is an important & positive purchase factor but it is not found an essential purchase factor while on the other side presence of 'favorable purchase conditions' have been found important as well as essential purchase factor positively influencing consumer behaviour for the purchase of Air conditioners.

'Operating expense non-affordability' has been found main reason for not purchasing air conditioners with the 43% respondents gave it as a reason for not purchasing this device. While 'lacking suitable operating conditions' is the other important reason with the 27% respondents on the other side 21% respondents says that it is not matching with their lifestyle.

Correspondence analysis of the factors in deciding 'Point of purchase for AC' and the ranks was performed to have an idea of the association between them. The value of Chi-square was 97.12 with p-value=0.00. The correspondence plot
Findings & Suggestions

clearly reveals that PRODUCT KNOWLEDGE and BRAND IMAGE have been given the top priority for deciding the purchase of AC, whereas Dealers efforts were at the last priority.

Self image' of the user are mainly perceived as 'A comfort seeking individual' with the 39% respondents think so while 'A person influenced with modern lifestyle' is the self image for 23% respondents followed by 21% respondents who think their self image as 'A person with Materialistic approach'.

There are 17% respondents who think their self-image as 'A rich person who live in luxury'.

It is concluded that self-image for the users of Air conditioners are vary as the respondents vary with their profiles.

WATER PURIFIERS

This May clearly established from the figures that maximum liking for such Products are also from the people ranging between 31 years to 50 years. The same inference is applicable here as was applicable in the case of Air conditioners. Respondents of age group 31-40 years are more inclined towards these products especially for water purifiers because they are found more concerned for their children's health & hygiene.

Age distribution among the owners of the water purifiers, indicating that 63% share of total consuming community is with age group 30 to 50 years. The inference, which can be drawn, is that young & new generation like Water purifiers subject to supported by other factors, discussed later in this report. Respondents of age group 31-40 years are more inclined towards water purifiers because they are found more concerned for their children's health & hygiene.
Responses towards water purifier are gradually increasing with the higher education. This is because higher degree of awareness for such advances products & their utility in their day-to-day life.

86% share is with the postgraduates & professionals. The effect of higher education is higher in the case of water purifier than the Air conditioner because much awareness & greater degree of persuasion is required in the case of water purifier.

Qualification wise distribution among the owners of the water purifiers, indicating that 86% share of total consuming community is with higher education group. The inference, which can be drawn, is that highly educated people like Water purifiers subject to support by other factors, discussed later in this report. Respondents of these groups are more inclined towards water purifiers because they are found more aware, informed & concerned for their children's health & hygiene.

46% share is with the professionals. It is followed by 31% shares of respondent belong to government service. The effect of higher education is higher in the case of water purifier than the Air conditioner because much awareness & greater degree of persuasion is required in the case of water purifier.

Occupation wise distribution among the owners of the water purifiers, indicating that 46% share of total consuming community is with professionals group. While it is followed by business community & Government servant with respectively 19% &31% share. The inference, which can be drawn, is that professionals & people in government sector like Water purifiers subject to support by other factors, discussed later in this report. Respondents of these groups are more inclined towards water purifiers because they are found more aware, informed & concerned for their health & hygiene. Their income depends upon good & continuous services provided by them to their client. This is only possible with their sound health.
Findings & Suggestions

Approximately 70% share is with the people having their income more than Rs.20000 per month. People having their income more than Rs.15000 per month approximately with approximately 25 % shares of respondent belong to government service follow it. High degree of persuasion is required in the case of water purifier.

Income wise distribution among the owners of the water purifiers, indicating that 59% share of total consuming community is with higher income group having more than 20000 Rs. per month. While the people having their income ranging between 15001 and 20000 per month have 26% shares. The inference, which can be drawn, is that people of higher income group like Water purifiers’ subject to support by other factors, discussed later in this report. Their income depends upon good & continuous services provided by them to their client. This is only possible with their sound health.

This is found that Water purifiers are equally popular at office place and Domestic location than any other use location because people want to maintain a health & hygiene for themselves, their children, their employees & their visitors.

Water purifiers are almost equally acceptable at various use locations. However it is having more popularity at domestic use & people having at their offices.

It is clear from data that the purchase reasons for Water purifier is found to be ‘Health & hygiene factors', while also having Other reasons as comfort’, luxury & improving living standards.

68% majorities of respondents either agree or strongly agree that Purchase affordability leads to purchase decision.

Correspondence analysis of the factor for purchase of WP and the ranks was performed to have an idea of the association between them. In this case also the chi-square value was significant (589.652 with p-value=0.00). The correspondence plot clearly reveals that HEALTH/HYGEINE factor is closely
associated with rank-1 and OTHERS are very closely linked with rank-5. STANDARD is associated with Rank-2 and COMFORT with Rank-3. LUXURY is linked with Rank-4. This establishes the fact that WP is purchased mostly for health / hygiene point of view.

Main purchase reasons for Water purifier is found to be 'Health & hygiene factors' with 89 % respondent giving it 1st rank, while also having Other reasons as comfort 4%, luxury 2% & improving living standards 5%.

The main apprehension felt/feel in purchasing Water purifier is 'Awareness problem' that includes 'Technical information & actual utility of the device'. The other main apprehensions felt/feel in purchasing Water purifier are as follows:

- Non-consistency in regular availability of purified water at every places & every time.
- It does not suit with their life style

Water conditioning devices have been considered as low priority household items in comparison to other household items as colour television, refrigerator, desert cooler, Washing machine, scooter, inverters/generators etc. Air conditioners were not purchased at no.1 sequence. Only 2% respondent purchased at no.2 sequence while 5 % respondent purchased at no.3 sequence. Only 7% respondent purchased at no.4 sequence while 10 % respondent purchased at no.5 sequence.

Water purifiers were also not purchased at no.1 sequence. Only 1% respondent purchased at no.2 sequence while 3 % respondent purchased at no.2 sequence. Only 4% respondent purchased at no.4 sequence while 7 % respondent purchased at no.5 sequence.

Television, refrigerators & inverters are found to be the first, second, or third choice at the first, and second, or third sequences. Scooters, desert coolers & Washing machine were found to be next set of choice for the next set of
sequences. Water purifiers were found to be the last set of choice with in the
given household articles for the given last set of sequences.

39 respondents gave refrigerator as first preference at first sequence while 35%
respondents gave colour televisions as first preference at first sequence. 12
respondents gave Desert cooler as first preference at first sequence while 9%
respondents gave two-wheeler as first preference at first sequence. 2%
respondent also gave inverter as first preference at first sequence. With 3%
respondent, water purifiers also got it's place as first preference at first sequence.

'Awareness / persuasion factors' & 'Availability of Dealer in nearby area' are two
issues with the 41% giving it no.1 rank to 'Awareness / persuasion factors' while
26 % giving it rank 1 to 'Availability of Dealer in nearby area'. It is clear from the
table that 'Availability of Fund / Finance' is no issue with the 14% giving it no.1
rank while 20 % giving it rank 2. It is found that 'Price economy' is also not
having much concern in 'Purchase push factor' for the Air conditioners with 19%
respondent giving it rank 1 and 23 % respondent giving it rank 2.

Correspondence analysis of the push factor for purchase of WP and the ranks
was performed to have an idea of the association between them. The value of
Chi-square was 51.20 with p-value=0.00 implying significance of the results. The
correspondence plot clearly reveals that Persuasion is closely associated with
Rank-1 and Price economy with Rank-2 i.e these two are important factors for
purchase of WP. Nearest dealer and funds availability has the last priority (rank-3
and rank-4).

Correspondence analysis of the expense affordability factor for purchase of WP
and the ranks was performed to have an idea of the association between them.
The value of Chi-square was 51.20 with p-value=0.00. The correspondence plot
clearly reveals that OTHERS are closely associated with Rank-1, Installation with
Rank-2, Running cost with Rank-3 and Maintenance with Rank-4.
Findings & Suggestions

It can be established from figures that Operating expense affordability is negligible or lesser than the purchase affordability in 94 % cases. It is easy to draw a conclusion that operating expenses are not important factor over purchase affordability. Hence it can be stated that factor of operating expense is not influencing consumer behaviour for the purchase of Water purifiers.

It can be established from figures that 39 % respondents either agree or strongly agree that 'Suitable operating conditions' affect more than the favorable 'purchase affordability'. On the other hand only 15% respondents either disagree or strongly disagree that 'Suitable operating conditions' affect more than the favorable 'purchase affordability'. However there is a big group of 46% respondents who neither agree nor disagree to the statement. It is easy to draw a conclusion that 'Suitable operating conditions' are no more dominating over purchase affordability factor. Hence it can be stated that factor of 'Adverse Operating conditions are not influencing consumer behaviour for the purchase of Water conditioning devices.

27 % respondents purchased / intend to purchase water purifier in the presence of 'Suitable purchase conditions' as well as 'suitable operating Conditions'.

31% respondents purchased / intend to purchase water purifier in the presence of favorable operating conditions; no matter weather purchase Conditions are suitable or not.

Only 23% respondents purchased / intend to purchase water purifier in the presence of favorable purchase conditions no matter those operating conditions were not favorable.

Only 19% respondents purchased / intend to purchase water purifier when the Purchases as well as the Operating conditions both are not suitable.

Presence of ‘favorable purchase conditions’ have been found important but not essential purchase factor for the purchase of water purifier.
Use of water purifiers do not match with the lifestyle of 48% respondents hence found to be the main reason for not purchasing Water purifier. While 'Not having purchase affordability' is the other important reason since 32% respondents opted for it followed by 17% respondents says that they are lacking suitable purchase conditions.

Correspondence analysis of the factors in deciding 'Point of purchase for WP' and the ranks was performed to have an idea of the association between them. The value of Chi-square was 135.52 with p-value=0.00. The correspondence plot clearly reveals that PRODUCT KNOWLEDGE and DEALERS EFFORTS have been given the top priority for deciding the purchase of WP, whereas Product image was at the last priority.

Self image' of the user are mainly perceived as 'A comfort seeking individual' with the 34% respondents think so while 'A person influenced with modern lifestyle' is the self image for 22% respondents followed by 17% respondents who think their self image as 'a person with Materialistic approach'.

There are also 27% such respondents who think their self-image as 'A rich person who live in luxury'.

RELATIONSHIP & INTERRELATIONSHIP BETWEEN CONDITIONING DEVICES:

From the analysis it is clear that 12% respondents are owner of both the conditioning devices while 63% respondents are neither having air conditioner nor they having water purifier. However, the statistical test of association between the conditioning device and the ownership is not significant. (Pearson Chi-square-value=2.611 with p-value=0.271).

There are hardly similarities in owning of two distinct conditioning devices.

From the analysis it is clear that 13% respondents are showing their purchase intention for both the conditioning devices while 22% respondents are showing
their purchase intention for air conditioner and 26% respondents are showing their purchase intention for water purifier. Still there is not a good % of respondents who are neither having any conditioning device nor do they intend to purchase the same. However, the statistical test of association between the conditioning device and the purchase intension is not significant (Pearson Chi-square-value=2.196 with p-value=0.334). There are hardly similarities in purchase intension of two distinct conditioning devices.

The statistical test of association between the conditioning device and the age of the respondent is significant, though at a higher level, i.e. 19 % (Pearson Chi-square-value=4.668 with p-value=0.19). There are similarities in owning of two distinct conditioning devices on the basis of age.

However, the statistical test of association between the conditioning device and the qualification is not significant (Pearson Chi-square-value=3.95 with p-value=0.267). There are hardly similarities in showing purchase behaviour for the two distinct conditioning devices on the basis of qualification background of the person owning/intend to own the same.

The statistical test of association between the conditioning device and the occupation was found statistically non significant (Pearson Chi-square-value=3.035 with p-value=0.386). However, it is to note here that values of more than One-fifth of the fitted cells are sparse (frequency less than 5) and accordingly the significance tests computed on this table are suspect. There are hardly similarities in showing purchase behaviour for the two distinct conditioning devices on the basis of occupation background of the person owning/intend to own the same.

It is important to point out here that the statistical test of association between the conditioning device and the income was found completely non significant
(Pearson Chi-square-value=0.0 with p-value=1.0) implying thereby that the inferences drawn from this table are not statistically sound or are just by chance. There are hardly similarities in showing purchase behaviour for two distinct conditioning devices on the basis of income background of the person owning/intend to own the same.

This is found that Air conditioner & Water purifiers are equally popular at office place and Domestic location than any other use location because people want to maintain a health & hygiene for themselves, their children, their employees & their visitors.

Water purifiers are almost equally acceptable at various use locations. However it is having more popularity at domestic use & people having at their offices.

It is important to point out here that the statistical test of association between the conditioning device and the location use of equipment was found highly significant (Pearson Chi-square-value=39.956 with p-value=0.000) implying thereby that the inferences drawn from this table are valid and statistically very sound.

There are similarities in use location of two conditioning devices.

Purchase reasons for A.C. is found to be ‘comfort’, while also having Other reasons as Health & hygiene factors, luxury & improving living standards.

While on the other hand purchase reasons for Water purifier is found to be ‘Health & hygiene factors’, while also having Other reasons as comfort', luxury & improving living standards.

Correspondence analysis of the equipment preference for purchase and the ranks was performed to have an idea of the association between them. The value of Chi-square was 655.82 with p-value=0.00 implying highly significant differences and thus confirming that valid and statistically sound conclusions can be inferred from cell values. The correspondence plot clearly reveals that Refrigerator is closely associated with Rank-1
and Colour Television with Rank-2 i.e these two are top priority for purchase. Cooler and Inverter has been linked with rank-3 and rank-4 i.e. these two items have the second priority. Whereas Air Conditioner, Water Purifier and Washing Machine has been given the last priority for purchase.

39 respondents gave refrigerator as first preference at first sequence while 35% respondents gave colour televisions as first preference at first sequence. 12 respondents gave Desert cooler as first preference at first sequence while 9% respondents gave two-wheeler as first preference at first sequence. 2% respondent also gave inverter as first preference at first sequence. With 3% respondent, water purifiers also got its place as first preference at first sequence.

‘Availability of Dealer in nearby area’ is no issue with only small 7% giving it no.1 rank while 10 % giving it rank 2. ‘Awareness / persuasion factors’ & ‘Availability of Fund / Finance’ are two issues with the 22% giving it no.1 rank to ‘Awareness / persuasion factors’ while 32 % giving it rank1 to ‘Availability of Fund / Finance’. It is found that ‘Price economy’ is the main ‘Purchase push factor’ for the Air conditioners.

While in the case of water purifier ‘Awareness / persuasion factors’ & ‘Availability of Dealer in nearby area’ are two issues with the 41% giving it no.1 rank to ‘Awareness / persuasion factors' while 26 % giving it rank 1 to ‘Availability of Dealer in nearby area’. ‘Availability of Fund / Finance’ is no issue with the 14% giving it no.1 rank while 20 % giving it rank 2.

It is found that ‘Price economy’ is also not having much concern in ‘Purchase push factor’ for the Air conditioners with 19% respondent giving it rank 1 and 23 % respondent giving it rank 2.

Significance of Chi-square value at 9% implies that valid statistical inferences can be drawn from cell values. Here, if we look at the cell values in the Row-Percent table, it is clear that in case of AC 84% (32+52 %) respondents agree with the statement that Purchase affordability leads to purchase decision. Likewise, in case of WP, 68% (27+41 %) respondents agree with the statement.
Thus, the statistical analysis of respondent data supports the hypothesis that Purchase affordability leads to purchase decision.

The statistical test of association between the conditioning device and the relationship between operating expenses and purchase affordability is highly significant (Pearson Chi-square-value=160.252 with p-value=0.00).

For AC it is high in 84% cases and for WP is low in 94% cases, implying thereby that such relationship exist in AC but is totally absent in WP.

The Chi-square value (29.873) is highly significant (p-value=0.000) implying thereby that valid statistical inferences can be drawn from cell values. Here, if we look at the cell values in the Row-Percent table, it is clear that in case of AC 71% (42+29 %) respondents agree with the statement that 'Suitable operating conditions' affect more than the favorable 'purchase affordability'. Likewise, in case of WP, 39% (12+27 %) respondents agree with the statement and only 15% disagree. Thus, the statistical analysis of respondent data supports the hypothesis that 'Suitable operating conditions' affect more than the favorable 'purchase affordability'.

Significance of Chi-square assures that cell interpretation can lead to valid conclusions. It is clear from the statement expressions that in case of both B and C, the respondent favors the SOC i.e suitable operating conditions. For AC, a total of 84% favours suitable operating conditions. Similarly for WP, a total of 58% favours suitable operating conditions. Therefore, it can be concluded on the basis of statistical analysis of observed data that the majority of respondents will purchase AC or WP, if they get suitable operating conditions. In other words, suitable operating conditions is the positive purchase reason.

Significance of Chi-square assures that cell interpretation can lead to valid conclusions. It is clear from the table that about 80% of the respondents will not
purchase AC because of C and D i.e. they either can not afford operating expenses or they do not have suitable operating conditions. Whereas in case of WP, 80% of the respondents will not purchase WP because of A and B i.e either they cannot afford it or it does not match their life style. It can be concluded from this analysis that majority of respondents will not purchase AC because its running cost is high, and they will not purchase WP since they can not afford its initial cost.

8.5 MARKETING RELATED SUGGESTION

PRODUCT
- As per the research, the product is Air-conditioning. It is a highly technical oriented product that includes some mechanically; electrical, chemical & electronic job has been done. As it emphasis on providing a cool & comfort weather in the room.

PRICE
- Price is the monetary value, which is selected for any particular product. To sell in a market is know as Price of that product.
- The Air-conditioning is a Luxurious item/product. As it comes in the durable/white goods section. The prices are high normally as to attract the customer for its status presence. The price of a window A/c start from 10,000 to 18,000 depends upon the Tons & Functions.

PROMOTION
- It is a process by which companies communicate about their product to the present & potential customer is known as Promotion.
ADVERTISEMENT
Any paid form of non-personal presentation & promotion of ideas, gds, and services by an identified sponsor.

TRIPLE BOTTOM LINE
It is a concept that utilize by every corporate house in their promotional tool. Triple Bottom Line is 3 basic required norms as to make the advertisement complete.

1. Economical Fit
The economically fit denotes the ability or affordability to the product. The Air-conditioning companies try to provide A/c at a price, which will be easy excess to the customer. They mainly do this by way of installment payment, discount on off-season sale etc. Their at the most objective is to give the A/c product with economical price as well as easy to payment for the customer.

2. Emotionally Fit
The company as a cool & comfort product in-respect of save from hot weather always position the A/c in the market. The company mainly gives their emphasis on status symbol to their product. So, that when a customer purchase a product
feel an esteem and prestigious to it. It makes an emphasis on emotionally status symbol in the society.

3. Ecologically Fit
As A/c are highly technical goods. Some chemical are also use (R-22) for its refrigeration & air-cooling system. The electrical wiring is also done with. It is very much essential that, it must be passed the ISI mark and its chemical must be safely utilized. So that any damage to the user or to the environment does not happen. The ecological fit denotes the safety and quality testing in the context of not polluting the environment as well as provide environment in the house.

SALES PROMOTION
Sales promotion is a variety of short-term incentives to encourage trial or purchase of a product or services
- A/c Company mainly promotes their product by way of some discount in a festival & off-season. They also emphasis on some Melas and exhibition to sell their product.

Public relation & publicity
A variety of program designed to promote or protect a company image or its individual products.

Personal selling
It can be defined as “Face-to-face interaction with one or more prospective customer for the purpose of making presentation answering questions and processing order.”

- In some business-to-business selling, the A/c Company prefers to do it through direct selling to the institutional buyer, such as government offices, colleges, big industry etc.
Direct Marketing
Use of mail, telephone, fax, e-mail & other non-personal contacts tools to communicate directly with or solicit a direct response from specific customer & prospects.

- Every A/c company have their own web site, when a detail information about their present A/c product as available in the market. They also try to give information about their product & information and institution through SMS service.

PLACE - Marketing Intermediaries

- Marketing intermediaries are select independent organization involved in the process of making a product or services available for use consumption.

- The A/c Company mainly selects two types of intermediaries as for bringing their product to the final customer. As per the size of the market & growth, the company selects their channel partner. In big cities they directly go to the big retailer and in small city and town prefer to get with wholesaler.

8.6 ADDITIONAL FACTORS THAT SHOULD BE CONSIDERED IN DECIDING ABOUT EFFECTIVE USE OF AN AIR CONDITIONER

Cost factor: A Mega factor

Cost may also be a consideration. Major costs include the initial purchase of the unit, maintenance costs (i.e., cleaning and/or replacement of filters and other parts), and operating costs (e.g., costs for electricity). In general, the most effective units (e.g., those with high air flow rates and efficient particle capture systems) are also the most costly. Maintenance costs vary depending on the device, and should be considered before choosing a particular unit. In
comparison to purchase and maintenance costs, operating costs for portable units (e.g., costs for electricity) are negligible.

**Air Conditioning - Staying cool while saving money**

Residential air conditioning is having huge consumption of electricity Tips for purchasing an energy-efficient air conditioner

Central air conditioners are usually more efficient than room air conditioners. However, sizing of air conditioner to meet home's needs is very important. Larger units, while generally more efficient, will not operate efficiently if they are oversized -- they will cycle on and off frequently rather than running for longer more efficient periods.

When shopping for a new unit always looks for the ENERGY STAR label and then examines the SEER or EER rating on the unit's Energy guide label (some Energy Star units are more efficient than others). One should also look for a unit that has these features:

- Operates quietly
- A fan-only switch, so you can use the unit for nighttime ventilation to substantially reduce air-conditioning costs
- A filter check light to remind you to check the filter after a predetermined number of operating hours
- An automatic-delay fan switch to turn off the fan a few minutes after the compressor turns off
- A thermal expansion device (TXV), preferably factory-installed. The TXV improves high temperature performance, and helps the unit deliver its rated efficiency even under adverse conditions (such as inaccurate or low refrigerant levels). The device costs much less than the service call or inefficiency it guards against.
8.7 SUGGESTIONS FOR REDUCING THE ENERGY CONSUMPTION (AND SAVING MONEY):

- One should set thermostat at 25°C or higher. Each half-degree setting below 26°C will increase energy consumption by approximately 8%.
- One should use bath and kitchen fans sparingly when the air conditioner is operating.
- One should inspect and clean both the indoor and outdoor coils. The indoor coil in your air conditioner acts as a magnet for dust because it is constantly wetted during the cooling season. Dirt build-up on the indoor coil is the single most common cause of poor efficiency. The outdoor coil must also be checked periodically for dirt build-up and cleaned if necessary.
- One should check the refrigerant charge. The circulating fluid in air conditioner is a special refrigerant gas that is put in when the system is installed. If the system is overcharged or undercharged with refrigerant, it will not work properly. You may need a service contractor to check the fluid and adjust it appropriately.
- One should reduce the cooling load by using cost-effective conservation measures, such as shading east and west windows. When possible, delay heat-generating activities, such as dish washing, until the evening on hot days.
- Over most of the cooling season, one should keep the house closed tight during the day. Don't let in unwanted heat and humidity. If practical, ventilate at night either naturally (e.g., by creating cross ventilation with open windows) or with fans.
- One should try not to use a dehumidifier at the same time your air conditioner is operating. The dehumidifier will increase the cooling load and force the air conditioner to work harder.
High-efficiency air-conditioning units are always Cost-effective.

Yes, if the unit serves a home or business that air conditions throughout the summer rather than on an intermittent schedule. The additional cost of the higher efficiency units can be justified from the energy savings.

Proper sizing an air conditioner.

Today, it is recognized that accurately sized, or even slightly undersized air-conditioning equipment, will result in greater operating economy and improved comfort because the air conditioner cycles on and off less often. This reduces wear and tear on the compressor, increases efficiency, and improves humidity control.

Determining the proper size for a residential air-conditioning system calls for a cooling load analysis. This procedure takes into account the size of the home, insulation levels, roof color, orientation of windows, shading of windows, tightness of construction, and number of occupants.

However, on extremely hot days, usually less than three percent of a normal cooling season, the indoor temperature may rise or swing upward a few degrees Fahrenheit during the hottest part of the day.

This is a small price to pay for improved performance and comfort during the balance of the cooling season.

Furthermore, comfort can be easily maintained during a designed temperature swing by using a fan to create air movement and delaying activities, such as cooking, that produce internal heat gain until the air conditioner has recovered.

A cooling load analysis of a home can be performed by most heating and air-conditioning contractors or by an independent energy auditor.
Status of the refrigerant used in a home air conditioner.

Unless a central home air conditioner is relatively new, the refrigerant used is R22. It is chemically different from the refrigerant used in an auto and has only one-twentieth the impact on stratospheric ozone. Because it is not as harmful to the ozone layer, it is not scheduled for phase-out until 2020.

Some air-conditioner manufacturers are offering equipment filled with refrigerants that pose no harm to the atmosphere. The operating efficiency of these air conditioners is no higher than those filled with R22.

These products may carry a higher price, but the refrigerants will be available after the scheduled 2020 phase-out of R22.

When adding central air conditioning to an older home, Factors that are needed to watch out for.

There are several issues to consider when adding central air conditioning to an existing heating system.

If a home has an older heating system with no provisions for central air conditioning, the ductwork may be smaller than what is required for air conditioning. Increase the fan speed to compensate for the ductwork. A larger motor often is required to achieve this higher flow rate. In extreme cases, it may be necessary to replace the supply ductwork.

The location of the return-air registers also plays a role in comfort. In older homes, there were often no return-air registers installed on the second floor of a two-story home. It is difficult to cool the second story if this is the case. It may be necessary to install return-air ductwork. Another consideration is the requirement for a floor drain below the furnace level. Air conditioners produce condensate when they operate. This condensate is the consequence of removing moisture from the air.
If a floor drain is not available below the level of the furnace, it is possible to purchase a small condensate pump set. For approximately $60, this set will pump the condensate to a convenient disposal site.

A final consideration is the arrangement of the ductwork at the furnace outlet. The ductwork around the furnace must leave sufficient room for the installation of the cooling coil. When installing central air, it is an excellent time to check the supply and return air ducts for leaks. Inadequate air flow across the cooling coil is the No. 1 cause for poor air-conditioning system performance.

**Suggestion to reduce summer air-conditioning costs**

First, inspect the envelope of the home. The envelope is composed of the roof, ceilings, walls, floors, windows, and doors. Various opportunities exist for improving energy efficiency, such as insulation, radiant barriers, and weather stripping. Insulation levels as high as R-38 in the attic are appropriate. It is permissible to mix insulation types, such as covering fiberglass with cellulose. Any exposed ductwork in the attic also should be sealed and insulated.

Weather stripping and caulking reduce both heating and cooling costs. Inspect existing weather stripping for wear and possible replacement. In addition to caulking window and doorframes, inspect for hidden cracks such as those that exist along foundations, or where exterior wiring or air-conditioning lines may penetrate the wall. South-facing windows can be a real benefit during the heating season but can add significantly to the cooling load. It is preferable to block the sunlight before it penetrates the window. Although a drape will delay the instantaneous solar gain, it's more effective to stop the sunlight completely by using exterior shading or reflective blinds.

Deciduous trees provide an excellent means for natural shading in the summer; yet allow exposure of the window in the winter. Removable exterior awnings can provide a similar advantage. Unventilated attics can reach high temperatures during the summer, contributing considerably to the cooling load in the home.
Having sufficient openings along the low side of the attic, such as in soffits as well as openings along the high side of the roof for exhaust should properly ventilate attics. For ventilation, have at least one square inch of free opening for every square foot of attic space. Openings should be distributed equally between the low and high sides of the attic. Remember that screens and louvers block up to 50 percent of the ventilation area. Move air in and through the home without relying on an air conditioner. When the outdoor air is cool, yet the home is warm, a whole-house fan, which draws air through open windows and discharges into the attic, may provide all the cooling necessary.

Additional attic ventilation is necessary when using a whole-house fan. Have one square foot of free opening for every 750 cubic foot per minute (cfm) of air moved by the whole-house fan. Within the home, portable fans or ceiling fans can provide some cooling relief.

Household appliances can add considerably to the cooling load in a home. Refrigerator condenser coils should be cleaned at least twice annually. Inspect the gasket around the refrigerator door to assure that it has not worn and needs to be replaced. The cooking range and clothes dryer should be vented to the outdoors, as should exhaust fans in bathrooms. Heat loss from a water heater adds both to water heating costs as well as air-conditioning costs. A water heater that is warm to the touch should be insulated with a water-heater insulating jacket. Thermostats on water heaters should be turned down to provide hot water at the tap no greater than 140 degrees.

Prepare a furnace for summer by replacing or cleaning the air filter, and lubricating, where possible, any bearings on the blower or motor. Consider extinguishing the pilot light if the furnace is equipped with a pilot. Many new furnaces use an electronic device for igniting the flame whenever the thermostat calls for heat rather than using a standing pilot light. This will probably not result in a significant reduction in gas costs; however, the pilot does contribute a small amount of heat to the home that then must be removed by the air conditioner.
Contrary to some earlier information, extinguishing the pilot light will not shorten the life of the furnace. Be sure that if the furnace is equipped with a central humidifier that it is turned off, drained, and cleaned.

An air conditioner needs adequate airflow through the condenser for the unit to operate at maximum efficiency. Plantings and fencing should be no closer than three feet to the condensing unit. The condensing unit should be cleaned annually by carefully removing any debris from the fins of the condenser. Consider hiring an air-conditioning service contractor to clean the condenser thoroughly, particularly if it has not received maintenance in the last two or three years. Service contractors will use a variety of cleaning solutions to remove any buildup on the condenser fins as well as straighten any fins which may have been damaged, lubricate any exposed bearings, and check for appropriate refrigerant levels in the air conditioner. Taking advantage of these and other opportunities should help to reduce cooling costs this summer.

**Use of ceiling fans to effectively reduce air-conditioning costs:**

Any type of fan can be effective in reducing air-conditioning costs if the air movement helps occupants feel comfortable and results in increasing the thermostat temperature setting. If the air conditioning thermostat setting is not increased, there are no savings. The cooling effect of moving air can compensate for as much as a four-degree rise in temperature. Keep in mind, that during the heating season, the air movement caused by the fan will still have the same cooling effect.

**Fan running continuously with the air conditioner or to place it in the automatic position:**

It is more efficient to leave the thermostat in the automatic position. The fan consumes only one-tenth the energy of the compressor, but when it runs continuously, the fan can cost up to $30 a month. Cycling the fan only when it’s needed, can reduce this amount. Additionally, the air conditioner will dehumidify
the only air when the compressor is running. However, if the fan remains on after
the compressor cycles off, some moisture on the coil will re-evaporate. This
moisture must be removed during the next compressor cycle, which increases
the energy consumption. If air distribution is poor within the home or business
and hot spots or very cold areas result, the fan can be run to even out the
temperatures. However, the fan should be set to the auto position when the
building is unoccupied. Even better, shut the air conditioner off or raise the
thermostat setting when leaving the building.

**Turning off air conditioner when leaving home, or better off just letting it run:**

If gone for four hours or more, more energy will be saved by turning off the air
conditioner or turning up the thermostat. During the day, keep windows shut and
close curtains or blinds on any windows that will be exposed to sunlight. The
thermal mass of the house will probably keep the indoor temperature well below
the outdoor temperature, and the house should cool quickly when the air
conditioner is restarted. Use a programmable thermostat or timer to turn on the
air conditioner 30 to 45 minutes before the expected arrival home. If the home is
still warm upon arrival, turn on a fan to create air movement. Moving air can
make the air feel about four degrees cooler than it really is.

**Planting of bushes to hide the outside of air conditioner:**
When landscaping around an outside condensing unit, remember that the air
conditioner must reject all the heat from a home. Although it is possible to plant
bushes near the condenser, leave room for adequate air circulation. Without
good air circulation, the temperature near the condensing unit will rise. The
higher temperature will reduce the capacity of the air conditioner, causing it to
work harder and provide less cooling. This could also kill the shrubbery. If the
shrubs will not form a continuous wall around the unit, plant them so that, when
they mature, there will be three feet of clearance. If the shrubs will be continuous,
then allow five feet of clearance.
Some simple checks, can be performed to see if air conditioner is operating properly:

Check a few items that should indicate if the air conditioner has problems. First, check the two lines connected to the outside of the air conditioner. The larger one -- the suction line -- should be cool to the touch. It should not be so cold, however, that frost develops. The smaller line -- the high-pressure line -- should be warm, but not hot. It should be 20 to 30 degrees warmer than the outside temperature. In extreme cases, it will be hot to the touch, so be cautious. If this is the case, call a service technician. Some air conditioners are equipped with a sight glass in the high-pressure line (the small line). The glass should be clear, with no bubbles visible, while the system is running. Cloudy liquid in the sight glass may indicate contamination of the system. One final check is to measure the temperature of the air as it leaves the register. It should be 15-20 degrees cooler than the room temperature. If the building is warm, humid, or if the ductwork is not insulated, then there may be smaller temperature differences. These guides are not intended to eliminate the need for an annual check by a qualified service person. If problems are suspected, call for help from someone familiar with air conditioners.