

**A STUDY ON CUSTOMER SATISFACTION OF SHARP  
DOMESTIC PUMP USERS IN TIRUPUR AND  
COIMBATORE DISTRICT**

By

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COIMBATORE**

**A PROJECT REPORT**

Submitted to the

**FACULTY OF MANAGEMENT STUDIES**

In partial fulfillment of the requirements  
for the award of the degree

of

**MASTER OF BUSINESS ADMINISTRATION**

## DECLARATION

I hereby declare that this project report entitled as “**A STUDY ON CUSTOMER SATISFACTION OF SHARP DOMESTIC PUMP USERS IN TIRUPUR AND COIMBATORE DISTRICT**” done in Sharp Pumps Industries, Coimbatore has been undertaken for academic purpose submitted to Anna University in partial fulfillment of the requirements for the award of the degree of Master of Business Administration. The project report is the record of the original work done by me under the guidance of **Dr. B. Subramani** during the academic year 2007-2008.

I, also declare hereby, that the information given in this report is correct to best of my knowledge and belief.

Place : Coimbatore

Date : 2.7.2008



**Signature of the Candidate**



**SHARP INDUSTRIES**

**2<sup>nd</sup> May 2008**

**TO WHOM SO EVER IT MAY CONCERN**

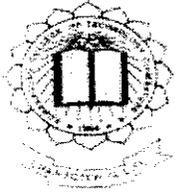
This is to certify that **Mr.V.Jeyakumar (Roll No.06MBA16)** a student of KCT Business School, **Kumaraguru College of Technology**, had undergone a project between 14.01.2008 and 24.03.2008 entitled "**A STUDY ON CUSTOMER SATISFACTION OF SHARP DOMESTIC PUMP USERS IN TIRUPUR AND COIMBATORE DISTRICT**".

During the tenure his performance was very good.

For sharp industries

A handwritten signature in black ink, appearing to read "N. Dhandapani".

**N.DHANDAPANI**  
Personnel Officer

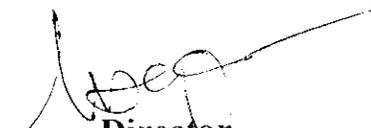


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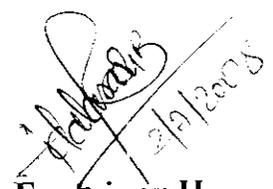
Certified that this project report titled “**A STUDY ON CUSTOMER SATISFACTION OF SHARP DOMESTIC PUMP USERS IN TIRUPUR AND COIMBATORE DISTRICT**” is the bonafide work of Mr.Jeyakumar.V (71206631016) who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
**Faculty Guide**

  
**Director**

**Evaluated and viva-voce conducted on ..... 21/11/2008 .....**



  
 21/11/2008

## *Executive Summary*

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## EXECUTIVE SUMMARY

Pump industries have contributed a lot to the growth of industrial city, Coimbatore. Gradually, Coimbatore has gained importance in the world level through pump industries. There are more than 150 ISI certified pump manufacturers in Coimbatore which accounts for 50% of the total pump manufacturer in India. For past 30 years pumps are exported from Coimbatore. Today, there are about 500 pump manufacturers in and around Coimbatore city employing more than one lakh people. Thus there exists a stiff competition in the Pump industry.

Against this background, the study is conducted for Sharp pump industries. The objectives of the study are to determine the customers' satisfaction level on the Sharp Domestic pumps in Coimbatore and Tirupur district. Further study attempts to identify the influence of the demographic variables over the satisfaction level on Sharp domestic pumps. The study assumes the characteristics of descriptive research. A sample of hundred and twenty customers is selected on convenience basis and data are collected through questionnaire method.

The study reveals that the majorities of the respondents are having monthly family income level between 10001-20000 and are undergraduates. Most of the respondents are influenced by Plumbers and Dealers to choose Sharp

construction purpose. Satisfaction level of the customers on Warranty, Price of the pump, Weight of the pump, Delivery mode and Quality is high when compared with the other factors of the pump such as the Reliability, Accessibility, Service centre response, Service time and Service cost. The findings of the study has highlighted that the demographic variables such as monthly family income, educational qualification and occupation has a significant influence on the satisfaction level of the customers with respect to sharp domestic pumps.

## ACKNOWLEDGEMENT

I thank our respected chairman Dr.N.Mahalingam who helped us to undergo this master's degree and acquire a lot of knowledge.

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# *Introduction*

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# CHAPTER - I

## INTRODUCTION

### 1.1 Background

Pump industries have contributed a lot to the growth of industrial city. Coimbatore. Farmers were dependent on water for agriculture, but the underground water level was very low. Hence the need for motor pumps has led to the growth of pump industries 65 years ago in Coimbatore.

G.D Naidu was the first person to manufacture pump in Coimbatore. In 1993, for the first time D.P.F company started manufacturing pump sets in Coimbatore. Slowly Kirloskar, P.S.G companies entered into the field. Pump industries have faced a tough time in the initial period since many were not aware of the advantages of pumps. As survey revealed that during seven years of the initial period, around 500 pumps were sold totally in India. Slowly awareness among people and the five-year plan of the government, which made agriculture an important occupation paved way to the development of pump industries.

Today, there are about 500 pump manufacturers in and around Coimbatore city employing more than one lakh people. Gradually, Coimbatore has gained importance in the world level through pump industries. There are more than 150 ISI certified pump manufacturers in Coimbatore which accounts for 50% of the total pump manufacturer in India. For past 30 years pumps are exported from Coimbatore.

But at present due to many reasons pump industries are facing number of problems leading to 30% reduction in manufacturing.

According to Mr.R.Balasundaram, former president of Southern India Manufacturers Association(SIEMA) the domestic pump industry, which is

He said that the data collected from secondary sources on the performance of the pump industry in 1999-2000 in the region had not given a rosy picture. Domestic segment had reported a growth but three phase agricultural pump, particularly mono bloc pump production had shown about 30% negative growth in 1999-2000 as against 1995-96 and there was not much improvement when compared to 1998-99 also.

Three phase motors also registered a decline of 11% compared to 1998-99 and 50% compared to 1995-96. The disturbing signal was from Andhra Pradesh market, which is of great concern to all organized pump manufacturers. As against 1.37 lakhs branded pump sets sold during the last three years, as many as 2.45 lakhs assembled kit pump sets had been sold during the same period.

The profitability has come down very drastically due to the increase in the input cost. At the same time the industry is unable to increase the selling price due to stiff competition.

Only few producers with marketing muscle were able to seize the opportunity in certain areas. But most of the units which had not done well last year. The reality was only those units with effective marketing network. Sound financial strength, a good product mix and cost effective production have done well.

Mr. Balasundharam felt that there were only two options for survival in the industry. One was to identify an alliance to be a sub-contractor. The other was to be content with existing performance and be ready to face even worst conditions. He called for serious thought on an action plan to face challenges from multinationals, foreign brands and assembled kit manufacturers.

Satisfaction of the customers is an important aspect to any of the

## 1.2 Review of Literature

This section deals with review of literature collected from different sources.

Gilbert A. et. al., have conducted a study on “**An Investigation into the Determinants of Customer Satisfaction**”. The study seeks to investigate whether it is necessary to include disconfirmation as an intervening variable affecting satisfaction as is commonly argued, or whether the effect of disconfirmation is adequately captured by expectation and perceived performance. Further, they model the process for two types of products, a durable and a nondurable good, using experimental procedures in which three levels of expectations and three levels of performance are manipulated for each product in a factorial design. Each subject's perceived expectations, performance evaluations, disconfirmation, and satisfaction are subsequently measured by using multiple measures for each construct. The results suggest the effects are different for the two products. For the nondurable good, the relationships are as typically hypothesized. The results for the durable good are different in important respects. First, neither the disconfirmation experience nor subjects' initial expectations affected subjects' satisfaction with it. Rather, their satisfaction was determined solely by the performance of the durable good. Expectations did combine with performance to affect disconfirmation, though the magnitude of the disconfirmation experience did not translate into an impact on satisfaction. Finally, the direct performance-satisfaction link accounts for most of the variation in satisfaction

John R. Hauser et. al., (1994) conducted a study on “**Customers Satisfaction Incentives**”. Customer satisfaction incentive schemes are increasingly common in a variety of industries. This study offer explanations as to how and when incenting employees on customer satisfaction is profitable and

employee groups (including managers) who may have shorter time horizons than the firm, such systems enable a firm to use customer reaction to monitor implicitly how employees allocate effort between the short and long terms. These systems can be used to encourage employees to make tradeoffs that are in the best interests of the firm. The study derive optimal reward systems for an equilibrium in which the firm maximizes profits, employees maximize their expected utility, and customers choose purchase quantities based on initial reputations, employee efforts (both ephemeral and enduring), and price.

Sunder Kekre et. al., (1995) has conducted a study on **“Drivers of Customer Satisfaction for Software Products: Implications for Design and Service Support”**. This study investigates the key determinants of customer satisfaction with software products. This analysis, based upon a large sample of over 2,500 customer responses, suggests that capability and usability are the critical drivers of overall customer satisfaction. This study also finds that the importance of seven key satisfaction factors differs across customer and product segments. The results have significant implications for Quality Function Deployment in making design and service support choices for software products.

Edvardsson et. al., have conducted a study on **“The effects of satisfaction and loyalty on profits and growth: products versus services”**. The study uses data from the Swedish Customer Satisfaction Index together with performance data from competing industries to study the difference in logic in terms of customer satisfaction and loyalty between services and products. The study finds that for product firms loyalty can have a negative effect on company performance, while for service firms the effect is positive. The implication is that service firms must earn their loyalty but product firms can lower their prices and thus retain their customers.

Eugene W.Anderson et. al., (1994) studied the link between the **“Customer Satisfaction, Market Share, and Profitability”**. Many firms that

beginning to question the link between customer satisfaction and economic returns. The study investigates the nature and strength of this link. Study discuss how expectations, quality, and price should affect customer satisfaction and why customer satisfaction, in turn, should affect profitability; this results in a set of hypotheses that are tested using a national customer satisfaction index and traditional accounting measures of economic returns, such as return on investment. The findings support a positive impact of quality on customer satisfaction, and, in turn, profitability. The study demonstrate the economic benefits of increasing customer satisfaction using both an empirical forecast and a new analytical model. In addition, study discuss why increasing market share actually might lead to lower customer satisfaction and provide preliminary empirical support for this hypothesis. Finally, two new findings emerge: First, the market's expectations of the quality of a firm's output positively affect customers' overall satisfaction with the firm; and second, these expectations are largely rational, albeit with a small adaptive component.

Whatons' Jay H.Baker Retail Initiative and the Verde group conducted study on “**Retail Customer Dissatisfaction**”. The study found that disinterested, ill prepared and unwelcoming salespeople lead to more lost business and bad word-of-mouth than any management challenge in retailing.

Ricca, Stephanie (2007) have given a report on “**Overall guest satisfaction slips in the U.S. hotel and motel Industry**”. The survey was conducted among in more than 47,000 hotel guests. The report says that the decline is not a cause for concern but allows hotels to determine which areas of service needs improvements.

Bloemer et. al., have conducted a study on “**Effects of personal value on customer satisfaction**”. This study seeks to investigate empirically two specific

generalizes both models into a new disparity – disconfirmation model, providing testable conditions to evaluate and compare the validity of the original models. Furthermore, the paper shows that in the research’s settings of a financial service provider, the external dimension of values is more instrumental in predicting satisfaction than the internal dimension.

Homo textiles conducted a survey on “**Customer Satisfaction**” on Jo-Ann stores Inc in Ohio. It states the firm to improve the customer service through, survey of customers in store experience.

### **1.3 Objectives of the Study**

- To identify the profile of the Sharp domestic pump users.
- To determine the satisfaction level of customers on Sharp domestic pumps.
- To analyze the influence of the demographic variables on the satisfaction level of the customers.
- To provide suggestions based on findings

### **1.4 Statement of the Problem**

Satisfaction of the customers is an important aspect to any of the organization. Moreover, the profitability has come down very drastically due to the increase in the input cost. At the same time the industry is unable to increase the selling price due to stiff competition. Therefore, this study is undertaken to find out the satisfaction level of the customers in Coimbatore and Tirupur District.

### **1.5 Scope of the Study**

This research gives a broad framework of the Sharp pump users and

plans and making changes in the current business activities. It gives an idea of the areas, which need emphasis and development.

This study has been conducted in Coimbatore and Tirupur district covering all the areas falling within the Coimbatore and Tirupur region. The findings of this research can be applied to all areas where there are Sharp pump users.

There are chances of slight variations depending upon the market share and strategies of the other competitors in those areas.

## **1.6 Research Methodology**

### **1.6.1 Research Design**

The study assumes the nature of descriptive research. The descriptive research describes the characteristics of a group in a given situation, offers ideas for future research and helps to make certain simple decisions. The study describes the profile of Pump users, their satisfaction level and the influence of the demographic variables on the satisfaction level of customers.

### **1.6.2 Sampling Design**

Non- probability sampling is that sampling procedure which does not afford any basis for estimating the probability that each item in the population has of being included in the sample. The items in the population are selected deliberately. The personal element has a great chance of entering into the selection of the sample. Here convenient sampling technique has been used.

### **1.6.3 Sample Size**

From the population the sample of 120 respondents has been selected for the study. The sample for the study is the Sharp pump users in the Coimbatore and Tirupur district.

### **1.6.4 Method of Data Collection**

Primary data was collected by survey method. Questionnaire survey was conducted to learn about the Customers satisfaction, personal profile and influence of demographic variables on the satisfaction level of the customers. Questionnaire with a set of questions was presented to the respondents for their answer.

### **1.6.5 Tools for Analysis**

The Statistical tools for analysis are.

- Percentage analysis
- Mean Score Analysis
- Weighted Average Method
- Chi Square Analysis

### **1.7 Limitations of the Study**

- Some of the respondents were hesitant in spending time on the Questionnaire.
- Due to time constraint, this study is limited only to Coimbatore and Tirupur District
- Sample size is taken to 120 due to time and cost constraint

## **1.8 Chapter Scheme**

The study is reported in five chapters. The first chapter discusses the background to study, objectives, scope, limitations and methodology of the study.

The second chapter deals with organization profile that includes history, management, organization structure and various functional areas.

The third chapter discusses about the macro-micro analysis which deals with the prevailing economic scenario with the industry.

The fourth chapter deals with data analysis and interpretation.

The fifth chapter deals with the results and discussions and considered recommendations.

## *Organisation Profile*

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## **CHAPTER - II**

### **ORGANIZATION PROFILE**

Sharp group of concerns commenced operations in 1967. The present Managing Partner Sir K.K.Rajan was one of the directors of the sharp group of companies. The group with its base in Coimbatore, India has established it self as a leading name in manufacture of pumps in the country.

MR.K.K.RAJAN took over Sharp industries in 1992, when the turn over was under 6 crores and production capacity of 40,000 pumps. Today the company achieved a sales turn over of over 14 crores are planning production of 150000 pumps for the current year and what's more the company has also established a strong marketing network that links the country end to end.

'Sharp industries' strong commitment to quality has not gone unrecognized. In 1997 they had the honor of ISO 9002 accreditation.

In 1998 with a view to break into the highly competitive international market, the company launched "Ventura" which has met with great success.

'Sharp industries' success is all the more impressive considering the fact it was achieved at a time when major industries in the company were going through some tough times.

In recognition of 'Sharp industries' performance and commitment to quality they were the proved recipients of the prestigious Rajeev Gandhi national quality award for the year 1996. This was awarded by during 1999.

Over the decades ago, a young Engineer turned entrepreneur called Ramaswamy from Coimbatore, south of India started on enterprise called sharp with an investment of Rs.25000/- & manpower of five.



The weather was good and the time ripe. Following this groundwork the SHARP ground of concerns commenced its official operations in the year 1967.

While most of the organizations today boast of the evolving philosophers around COMMITMENT and QUALITY has been the edifice of this corporate. Today the group has a turnover of over Rs.25 crores. At story of success backed by vision.

## **2.1 History**

Sharp industries which is integral unit of sharp group of companies was established in the year 1977 primarily to manufacture and market 0.5hp mini mono block pumps and produce which was not then available in the Indian market, termed Little Master “self priming Monobloc pump”.

This pioneering decision proved decision to be entrepreneurial masterstroke for; it was the largest selling pump from then on in the country lauded for both its quality and unique design. Aptly named as the little master this tiny pump soon came to be Sharp type pumps.

## **2.2 Management**

Under the able leader of its managing partner Mr.K.K.Rajan who has 23 years of managerial experience in his pursuits, the firm has about 200 shop floors employees and 80 other staff.

## **2.3 Product Range of Sharp Industry**

The product ranges from the house of Sharp industries include. Mono bloc pumps, Bore well compressors and industrial compressors. The Ventura model recently launched is yet another mark in their pursuit.

## 2.4 Awards

The company has earned many awards including

- National award for best entrepreneur in Tamilnadu
- Udyog part for best entrepreneur in Tamilnadu
- The IMM Bata award for marketing
- The Jammanlal Bajaj award for fair business practices

Above all these, the firm is also the recipient of prestigious quality mark of ISO 9002 accumulation for quality assurance in production and installation. It has also obtained the approval of Bureau of Indian Standard

## 2.5 Location

The firm is located in Coimbatore, the city known for the industries resource especially cotton and pump manufacturing industries.

The corporate office and the production unit are located in Sharp Nagar, Kalapatti with a prestigious layout of campus. It is about 15kms away from Coimbatore town. There is a separate production unit for compressor assembling in gold wins. There is also a branch office in Trishur.

## 2.6 The Campus

The campus is about 25 acres of land. The layout of the corporate office and the production units are carefully designed. The lawn in front of the corporate office, and lunch room, the store room, the shop floor, the reception block, etc are so very pleasing that it communicates the image and reverence of the firm in the complete sense.

## 2.7 Production

Ventura Sharp produces about 40 varieties of mini mono bloc pumps with a standard production target of 400 units per day.

Their raw material requirement is satisfied from in and around Coimbatore and they export their finished products to Srilanka, Kuwait, and Singapore. The most demanded export model is Domestic pump set of 0.5 Hp motor.

Ventura water heater and Ventura emergency lamps are the 2 products launched recently. They are exported on demand basis.

The company manufactures 1,20,000 pumps per year, which covers nearly 10,000 per month. The number of pumps manufactured per day is 400. Average weight of a pump is 10 kg.

Numatic tools are used in assembling the pumps to prevent the damages and to increase the life of the pumps. The guarantee period of all the Monobloc pumps is one year.

The Sharp industry can also export its products. The largest manufacture of mini Monobloc pumps is exported to countries such as Egypt, Srilanka, and Nepal.

## 2.8 Competitors

Their product life cycle being in the growth stage they face huge competition from TEXMO pumps, SUGUNA pumps, CRI pumps, etc.

## 2.9 Objectives

- ❖ The main objective of the industry is to utilize the machines, men and material in an effective manner.

- ❖ To improve productivity by reducing the cost through involving employees and vendors.
- ❖ To buy, sell, manufacture, refine, manipulate, import, export and deal in all substances, plant and things capable of being used in any such business as required by any customers or persons, having dealings with the company either by wholesale or retail.

## **2.10 Added Features of Ventura Pumps**

- ❖ Self priming and instant suction capacity
- ❖ Brass components in between casting and bracket gives corrosion resistant.
- ❖ High discharge.
- ❖ Heavy duty brats impeller.
- ❖ Double seated precision ball bearing with life lubrication.
- ❖ Stain less steel shaft.
- ❖ Graded case iron pump casing and motor bearing housing.
- ❖ Mechanical seal with high Alumina seal face.
- ❖ TEFC capacitor start and run motor.
- ❖ High quality extruded Aluminium motor body.

## **2.11 Group Profile**

### **Sharp Tools**

Year of Establishment	:	1967
Directors	:	Mr.K.K.Ramaswamy Mr.Pandian Ramaswamy

### **Sharp Industries**

Year of Establishment : 1977

Directors : Mr.K.K.Rajan  
Mrs.Rani Rajan

Production Capacity : 1.20,000 pumps

### **Sharp Pumps Pvt. Ltd**

Year of Establishment : 1981

Directors : Mr.K.K.Ramachandran  
Mr.Kamalakaran Ramachandran

Production Capacity : 30,000 assorted pumps

### **Sharp Electrodes Pvt. Ltd**

Year of Establishment : 1984

Directors : Mr.K.Jaganathan

Production Capacity : 40 million pieces of welding electrodes

### **Sharp Products Pvt. Ltd**

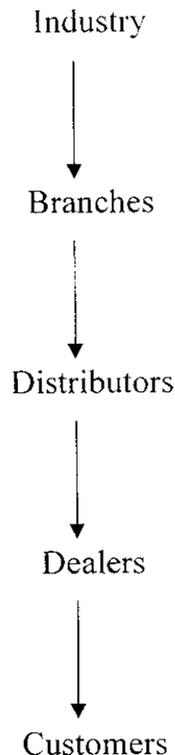
Year of Establishment : 1995

Directors : Mr.K.K.Jaganathan  
Mr.K.K.Rajan

## 2.12 Marketing Department

The main function of this department is to deliver or to make arrangements to reach their products to the ultimate customers.

### CHANNELS OF DISTRIBUTIONS



The branches of their industry are located in Bangalore, Chennai, Cochin, Sekendrabad, and indoor. For distributing the products there are 30 distributors and 500 dealers for selling purposes.

### Sales Promotion

In order to promote sales, advertisement is given through newspapers, televisions and other media. Exhibitions and trade shows are conducted occasionally. Sometimes road shows and fairs are also conducted to introduce their products to the general public.

## **Market Share**

The market share value is 40% and it will attain huge sales at the time low price with huge quality out of 40% of market share 99% of the production is for domestic purposes. The remaining 1% for agriculture, industrial and other commercial purposes. It may be differ from different category. Hence the market share may not be constant at all time.

## **Market Segmentation**

The market may be segmented into two categories, they are:

- Product segmentation

Under each product segmentation there is a sub category, it may be

- a. Jet pumps
- b. Bore well compressors
- c. Agricultural pumps
- d. Submersible pumps
- e. Centrifugal pumps
- f. Monobloc pumps

Among the above pumps, the monobloc pumps are playing the vital role.

- Market Segmentation

The industry has segmented the market for

- a. Domestic purpose
- b. Commercial purpose
- c. Agricultural purpose

## **Sales Promotion**

The industry has forecasted some plans and policies to increase the sales. It has forecasted to increase the sales up to 150000 for the next financial year. At present it is having the sales volume of 100000.

## **Compete rail Basis**

In India there are 1000 manufacturers for mono bloc pumps. They may be organized and unorganized companies. Out of 1000 industries 500 industries are located inside and around Coimbatore 350-400 were resident in Ahamadabad. The rests are scattered around the country.

The number of organized companies will be 52-60 and huge competition will prevails on among the stated values. the remaining are unorganized.

## **Leading Companies**

- Texmo
- Suguna pumps
- CRI

In the southern region, the top holders are

- Texmo
- CRI pumps
- Crompton
- Sharp industries
- KSB

In the northern region the companies are

- Atlanta
- Sabar
- Water man
- UJALA

### **Advertising Budget**

The industry spends 5% of its turn over for advertising. It may increase depending upon the market share.

The sales executives and sales representatives, who are all called as market managers are engaged in supplying the products for some specified areas. For marketing purposes, there are 25 leading managers. They are availing regular services after sales, which are done by agents and distributors. There is also an existence of service centers for rendering services to the customers. Service after sales is one of the main motto of the management.

### **Product Life Cycle**

The product manufactured by the company is having the life period for 10 to 20 years. It may be affected by other factors like usage, sand, type of water supplied, and site. Thus the life cycle of the product is high.

# *Macro-Micro Analysis*

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## CHAPTER - III

### MACRO – MICRO ANALYSIS

#### 3.1 Pump Industry – Global Scenario

Pumps are the vital elements in an enormous range of fluid handling applications & range from small household pumps to immense units utilized in the water, chemical and energy industries. Pump performance requirements and duties vary considerably in terms of material of construction, wide range of temperature, pressure, viscosity, density etc. Pumps are employed in almost all the industries.

In India the pumping of drinking water from small wells is still a major need whereas in Singapore large pumping systems are needed to move drinking water in from Malaysia.

The Indian Pump industry has more than 500 manufacturers with worker strength of over 30,000 producing about 1.2 million pumps. Indian market for pump is estimated to be Rs.25000 million growing at an annual rate of 8%.

##### 3.1.1 Present Industrial Scenario

Pump industry very much depend on health of other industries. Such as

- ❖ Refining Industry
- ❖ Petro-chemical Industry
- ❖ Fertilizer Industry
- ❖ Drugs & Pharmaceuticals
- ❖ Caustic Soda

❖ Cement Industry

❖ Agriculture Industry

Irrespective of other industry pump industry will continue to grow as long as we need water.

### 3.1.2 Growth of Pump Industry

Although some pumps were used in 19th century, the real growth of Pump Industry took place in 20th century:

**1905 :** Multistage Centrifugal Pumps were developed.

**1929:** Considerable light was thrown on the vexing problem of pressure pulsations in large hydraulic turbines & pumps.

**1932:** Proper understanding was made on the origin and nature of pressure pulsation and the accompanying, vibratory, structural and mechanical response.

**1955:** Dependence of cavitation erosion on liquid was established. This led to an understanding of why high-energy pumps are more likely to suffer from this damaging phenomenon.

**1956:** How the thermodynamic vaporization properties of the pump liquid could lead to reduction of cavitation activity at high temperatures at the same NPSH (Net Positive Suction Head) was understood.

**1994:** How cavitations can cause profound instabilities in pump & inducer operation was known.

**1990-2000:** It is found that sometimes obscure fluid phenomena can produce mechanical instability in rotodynamic pumps.

- ❖ **Industrial Revolution:** Pump industry had been fueled by the massive demands of the industrial revolution that built our modern society.
- ❖ **Post World War II Expansion:** In order to satisfy the pent-up demand that had gone unfulfilled in war years. Here the emphasis was on large, multistage electric utility boiler feed water pumps and oil-field injection and pipeline pumps.
- ❖ **Energy Crisis:** Energy crisis all over world led to lot of research and development work for developing energy efficient pumps & systems.
- ❖ **Environmental Challenges:** Curbing emissions was the paramount concern. This influence has led to better sealing of pumps including sealless, magnetically coupled chemical pumps. The ultimate product in this regard could be ‘integral motor pump’.
- ❖ **Globalization:** The fluid engineering & other technical challenges are assumed to be solvable by the MNC who emphasize quality, productivity and faster delivery of the product in order to battle global market share. The apparently mature pump product has a lot of room for improvement. The technical improvements will continue to be necessary to maintain global competitiveness.

### 3.1.4 Applications of Pumps

Various applications of pumps are listed below:

- ❖ **Transportation:** It is a prime function.
- ❖ **Circulation:** For homogenizing the temperature and/or composition of fluid.
- ❖ **Mixing:** Two or more streams can be connected at the suction of pump &

- ❖ **Injecting:** High pressure can be developed by using pump and fluid can be injected in pipe or tank.
- ❖ **Metering:** Pumps can be used as metering device.
- ❖ **Pressure Reducing Device:** Rotary pumps can be used for reducing the pressure in polymers.
- ❖ **Agitator Pump:** Submersible pump keep the solids in suspension & prevent setting.
- ❖ **Vacuum Generation:** Liquid ring vacuum pumps are well known. Dry vacuum pumps are also developed.
- ❖ **Reactor:** When two liquids are to be reacted with very small residence time then pump can be used.
- ❖ **Cavitation Reactor:** When one liquid and another in vapor form are to be reacted, the principle of cavitation can be used.

Indian pump industry at present met the pump requirements of 95% of applications.

### 3.1.5 Some Recent Developments in Pumps

- ❖ One supplier has developed dry industrial vacuum pump. They use claw technology with a built in roots mechanism & facilitate high speed evacuation down to an ultimate vacuum of 0.05 mbar. Peak pump capacity is 560 cubic m/hr. Despite high pumping capacity, manufacturer claims less energy consumption.
- ❖ Another has developed vertical dual-screw dry running vacuum pump. It has an electric drive control integral with pump unit & can also be

instrumentation safety standards of legislation. (Received award in 40th International Mech. Engg. Exhibition at BRNO in Czech Republic).

- ❖ One foreign supplier has developed ultra high pressure plunger pumps (Pressure : 2500 bar & flow 15 to 20 lit/min., Temp. : 50°C) can be used for
  - Sensitive paint stripping from metal and concrete surfaces.
  - Surface preparation prior to painting & coating.
  - Cutting of metals, concrete, reinforced material.

Computational Fluid Dynamic studies are carried out by Cranfield University for:

- Flow prediction in pumps
  - Three dimensional transonic flow simulation using a time marching scheme.
  - Erosion studies during cavitation.
- ❖ **“Smart Pumps”**: Depending on the changes in suction conditions and / or changes in the discharge requirement the pump should act accordingly by using **“SMART SENSORS”** which will be based on optical fibers.
  - ❖ **High Efficiency Small Circulation Pumps**: The conventional efficiency of small pumps is of the order of 5 to 10%. When these pumps are used as part of solar-auxiliary system, the efficiency of pump plays a vital role. The efficiencies of the pump have improved dramatically (+80%) using permanent magnet motors & hydraulically optimized impellers.

- ❖ One supplier has developed mechanical seal (for oil service at 660°F & water at 320°F) where cooling is achieved by using extended surfaces (fins), thus cooling water requirement is eliminated.
- ❖ Enterprise Asset Management (EAM) software applications reduce energy consumption & improve pump reliability by automatic monitoring of process pumps.
- ❖ Abroad, favorable experience of variable speed drive for power conservation in high HP equipment has led to development of micro drives.

### **3.1.6 Challenges Ahead**

- ❖ Stabilizing the head characteristics of large, high specific – speed mixed flow pumps by using CFD (Computational Fluid Dynamics) techniques.
- ❖ Predicting the performance curves of pump using CFD.
- ❖ Eliminating vibrations & off-design pressure & flow fluctuations.
- ❖ Finding solutions to both rotor & structure related vibrations using FEA (Finite Element Analysis).
- ❖ Performance & life of pump is drastically affected due to cavitation. Improved blade shapes reduces / eliminates cavitation damage.
- ❖ Develop highly reliable pump such that no standby pump is required.

### **3.1.7 Path Forward**

- ❖ Even though pump industry is challenged globally must continuously improve productivity, quality & service to the customer to stay in business. Success will also depend on a brain trust of technical people

- ❖ What seem today to be stable product lines with an indefinite future stand a good chance of being superseded and phased out. Good business planning therefore, must include the engineering expertise that has made such business possible in the past & will without doubt continue to do so in the future.
- ❖ Like European Committee of Pump Manufacturers, Europump, we Indians should take lead to form “ASIAN COMMITTEE OF PUMP MANUFACTURERS”.

### **3.2 Pump Industry – Indian Scenario**

The Indian pump manufacturers have traditionally catered to the needs of domestic market. In India, pumps are mainly used for pumping water from wells in households. With the effect of LPG (Liberalization, Privatization and Globalization) the Indian pump manufacturers have started exporting to foreign countries, where pumps are used for various purposes in different industrial sectors like, oil refineries, steel mills, mines etc. This has led to the increasing trend in export of pumps.

Absorption of technology has been commendably high across the industry both in the manufacture of pumps to international quality and also in competency resolving field problems. Hence, even after globalization, imports of pumps have not had any disturbing effect on the indigenous manufacture.

Most MNCs were initially interested in exporting to the Indian market, but soon realized the need and economic viability of indigenous manufacturing and working out a joint venture or foreign direct investment for manufacturing. Apart from labour being cheap, availability of technologically skilled and knowledgeable manpower with communicative competence made them to favourably consider the above. MNCs feel that manufacturing base in India can

### **3.2.1 Major Players in the Indian Pump Industry**

About 30 of the total 500 units, dominated by SMEs, have already entered the Asian markets, Middle-east, Egypt, USA, Italy, Greece and southern parts of African countries. Some of the leading exporters from India include Kirloskar Copeland, Tecumesh Products (India) Ltd., BHEL, Ingersoll-Rand, Higi Equipments, CRI Pumps, Sharp Pumps, Aqua Sub Pumps, Suguna Motors & Pumps, Texmo Pumps, Mahendra Pumps etc.

### **3.2.2 Export Performance of Pumps**

There has been good track record of pump exports to as many as 60 – 65 countries around the world, including developed countries. They have also been buy-back contracts with MNCs operating sporadically but uninterrupted for more than 20 – 25 years. This stands proof to the technological and economic competence of Indian pump manufacture.

However, costs of inputs required have a deterrent to enthruse investments appropriate to exploit economies of scales of production. In turn the share of Indian pumps in the global market is very miniscule and scattered. Driven to the brink by the unorganized pump makers who have drilled into their market share, the unorganized players in the Rs.900 crore industry are looking to pump revenues from foreign soil.

### **3.2.3 Reasons for Increasing Trend in Exports**

The pump industry has witnessed a steady growth in export sales. The trend in export sales has been given in the following table.

**Table No.1**  
**Trend in Export of Pumps (Quantity and Value)**

Year	Exports in Quantity	Exports in Value (Rs. Crore)
1987 – 88	45.058	13.37
1988 – 89	65.502	10.64
1989 – 20	89.265	16.45
1990 – 91	1,50,937	29.96
1991 – 92	1,01,600	33.71
1992 – 93	1,53,951	56.20
1993 – 94	1,70,669	66.13
1994 – 95	2,80,987	67.18
1995 – 96	2,11,974	66.52
1996 – 97	2,76,531	79.23
1997 – 98	3,47,046	135.34
1998 – 99	6,45,050	279.90
1999 – 00	2,39,430	247.30
2000 – 01	1,08,480	352.70
2001 – 02	1,43,580	457.90
2002 – 03	1,63,390	413.80
2003 – 04	7,34,100	564.10

**Source: CMIE, February 2005**

### **Inference**

From the above table it can be inferred that the trend in export of pumps is increasing. From the mid of 1990's there has been a tremendous improvement in export of pumps. The major reason for such improvement is the LPG effect. The R & D efforts of Indian pump exporters and their marketing strategies in

### 3.2.4 Pump Exports

Pump exports from India have been made to number of countries like Australia, Egypt A. Rep, U.K, U.S., Singapore, Ghana, Germany, Nepal, U.A.E., Netherlands, Italy etc. The U.S. will remain the largest purchaser over the next five years. China will experience the largest growth rate in the export of pumps.

Significant pump market exists in 80 countries and regions. In Chile, the largest pumps purchasing segment is the copper industry whereas in Germany it is the chemical industry. The Middle East has a big pump market due to oil and gas industries. The Canadian market is distinguished by a large pulp and paper industry requiring different pumps. The market for pumps in buildings in Europe is much bigger.

All major pump types will experience growth over next 5 years. The demand for different types of pumps is given below:

Centrifugal type	- 50% of total sales
Submersible effluent pump	- 5% of total sales
Submersible domestic pump	- 4% of total sales
Other category of pumps	- 41% of total sales

### 3.2.5 Future of Indian Pump Industry in Export Trade

Indian pump exporters are facing intense competition from the foreign counterparts in catering to global needs. In this highly competitive scenario, Indian pump exporters have realized the fact that customer-centric attitude is a prerogative to stay ahead. The key sectors that are major consumers of industrial pumps are water handling/sewage treatment, oil & refineries, and power with a market size of 35 percent, 45 percent and 20 percent respectively. The industry's growth is dependent on sectors such as the petrochemical, oil and power etc.

In the recent years, the Indian pump industry has been forced to be proactive with foreign players like Grundfoss bringing in superior pumps to the market. The domestic industry today is in fact looking up for overseas opportunities and quite a few have also made a good impact in the international scenario. Indian pump exporters have managed to carve niches in the Middle East and African countries, where standards and conditions are akin to what is prevailing in India. The global market for pumps has been estimated at around US \$22 billion.

**Table No : 2**  
**Market Size for Pumps**

Countries	Value (Billion \$)
American (USA and other American countries)	7.0
European (Germany and other European countries)	7.5
Asian (Japan and other Asian countries)	7.5
Total	22.0

**Source: Industrial Herald, October 2005, p:26**

### **3.2.6 Conclusion**

Indian pump manufacturers are on a sustained growth path backed by strong upswing in fluid handling industries, irrigation and urban infrastructure projects. However, demand for pumps from the domestic (household) and agriculture market is lackluster. Fortunately, this was more than offset by high demand growth witnessed in industrial and infrastructure sector. With industry and infrastructure sustaining the uptrend, this market condition favours the organized industry players with strong order inflow.

The Indian pump manufacturers have an added advantage in catering to the global market needs. As Indian pump manufacturers have proved themselves in the quality front when comparing to Chinese pump manufacturers the Indian pump industry has been given global recognition.

# *Data Analysis and Interpretation*

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## CHAPTER IV

### DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected through questionnaire.

#### 4.1 Profile of Sharp Pump Users

Profile of the respondents in terms of the monthly family income, educational qualification, occupational status and purpose of Pump usage are discussed below.

##### 4.1.1 Monthly Family Income of the Respondents

The table below indicates the monthly income of the respondents.

**Table 4.1**

#### Distribution of the Respondents on the basis of Monthly Income

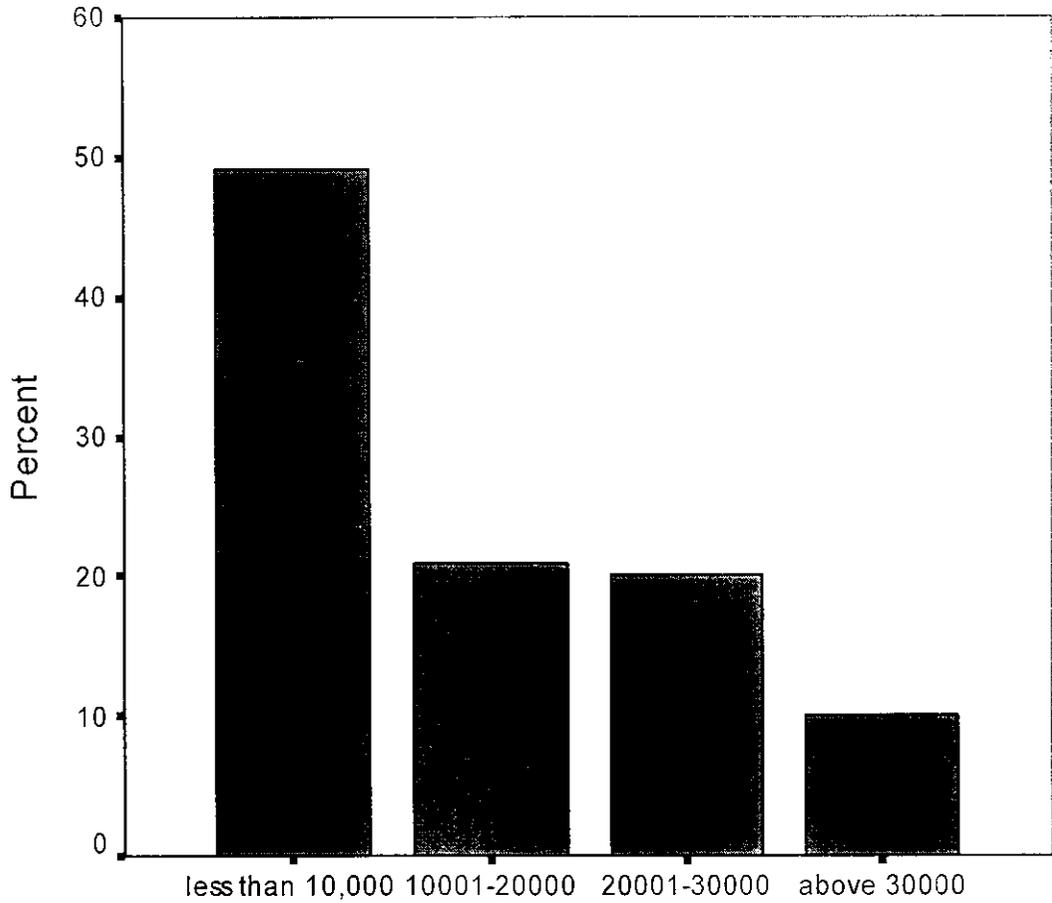
Monthly family income (Rs)	No. of respondents	Percentage
Upto 10000	25	20.8
10001-20000	59	49.2
20001-30000	24	20.0
Above 30000	12	10.0
Total	120	100

#### Inference

From the table 4.1, it is inferred that 49.2% (59) of the respondents have monthly family income between 10001-20000. 20.8% (25) of the respondents have monthly family income level upto 10000. 20% (24) of respondents have

**Chart - 4.1****Distribution of respondents on the basis of Monthly Income**

The chart below represents the monthly family income of the respondents.



Monthly family income of respondents (In Rs)

### 4.1.2 Educational Qualification of the Respondents

The table below indicates educational qualification of the respondents.

**Table 4.2**

#### **Distribution of the respondents on the basis of Educational Qualification**

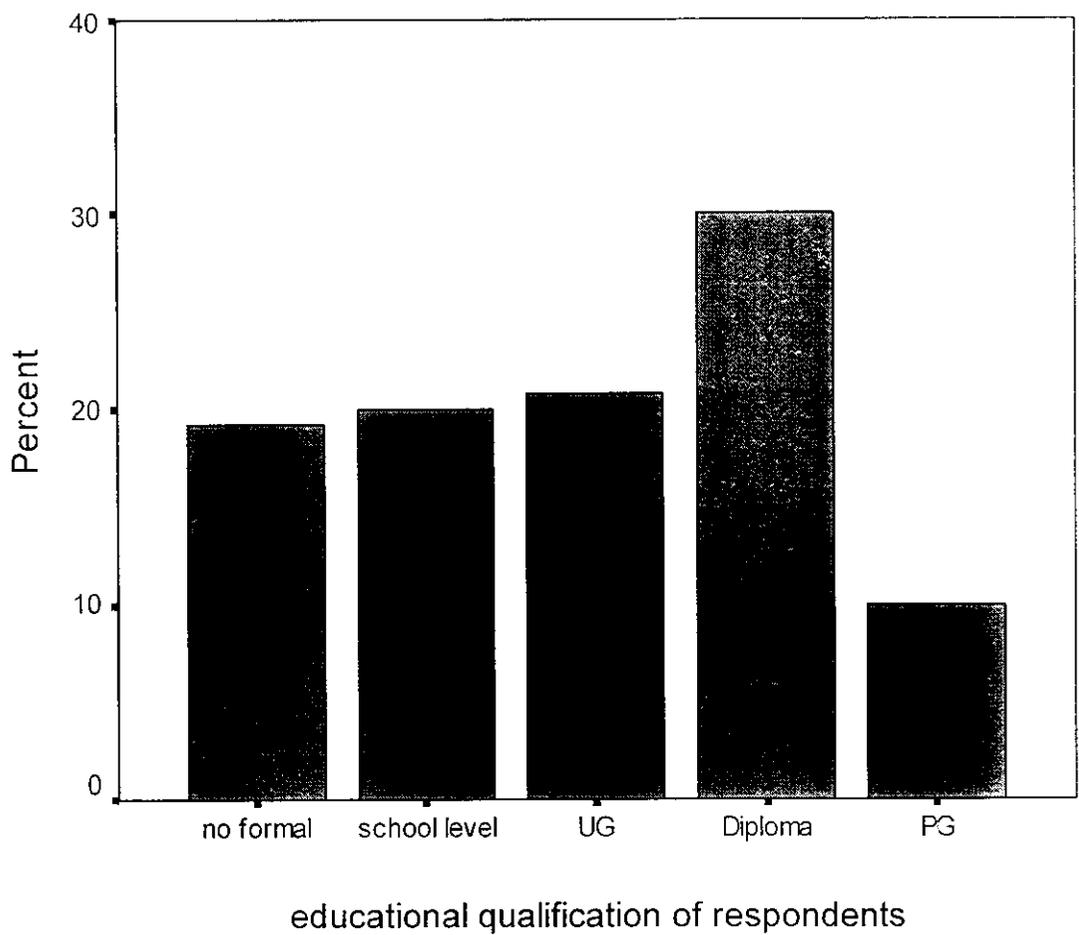
Educational Qualification	No. of respondents	Percentage
No formal Education	23	19.2
School level	24	20.0
UG	36	30.0
Diploma	25	20.8
PG	12	10.0
Total	120	100

#### **Inference**

From the table 4.2, it is inferred that 30% (36) of the respondents are undergraduates, which is followed by Diploma holders who constitute 20.8%(25). 20% (24) of the respondents have completed school education. 19.2% (23) of the respondents are without any formal education and 10% (12) respondents are postgraduates.

**Chart - 4.2****Distribution of respondents on the basis of Educational Qualification**

The chart below indicates the distribution of the respondents on the basis of the educational qualification.



### 4.1.3 Occupation of the Respondents

The table below indicates the occupation of the respondents.

**Table - 4.3**

#### **Distribution of the respondents on the basis of occupation**

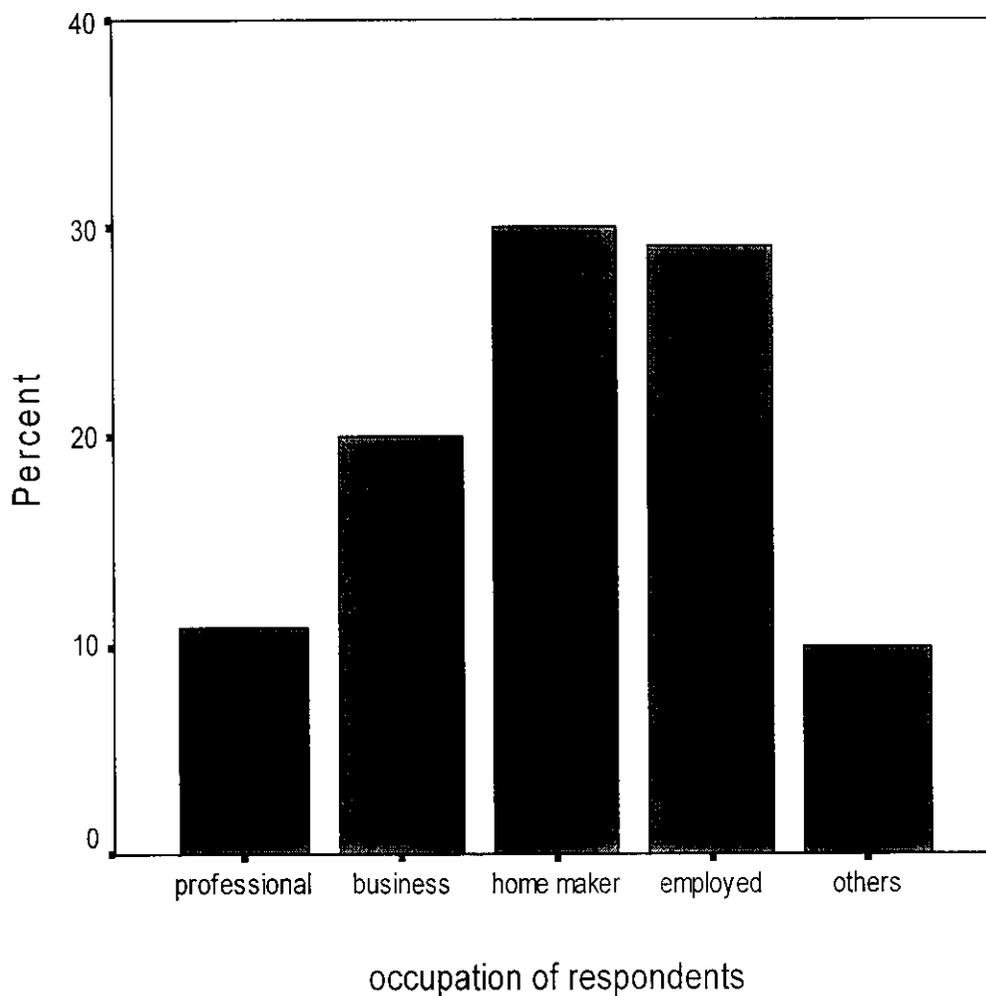
Occupation	No. of respondents	Percentage
Professional	13	10.8
Business	24	20.0
Homemaker	36	30.0
Employed	35	29.2
Others	12	10.0
Total	120	100

#### **Inference**

From the table 4.3, it is inferred that 30% (36) of the respondents are Homemaker. 29.2% (35) of the respondents are employed. 20% (24) of the respondents are business people. 10.8 % (13) of the respondents are professionals and 10% (12) of the respondents belong to other category.

**Chart - 4.3****Distribution of Respondents on the basis of Occupation**

The chart below indicates the distribution of the respondents on the basis of occupation.



#### 4.1.4 Factors Influenced the Choice of the Sharp Pumps

The table below indicates the factors influenced the choice of Sharp domestic pumps.

**Table 4.4**

#### **Factors Influenced the Choice of the Sharp Pumps**

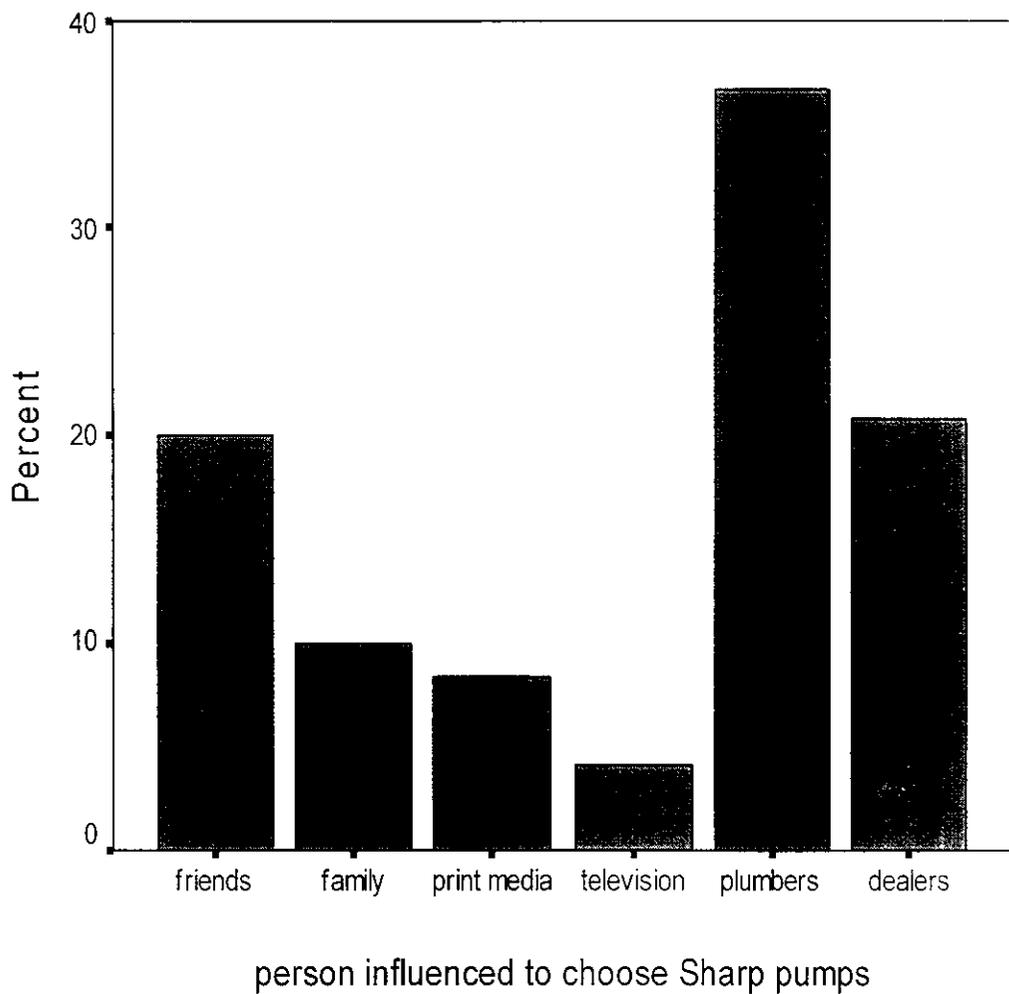
Factors Influenced	No. of Respondents	Percentage
Friends	24	20.0
Family	12	10.0
Print media	10	8.3
Television	5	4.2
Plumbers	44	36.7
Dealers	25	20.8
Total	120	100

#### **Inference**

It is inferred from the table 4.4 that 36.7% (44) of the respondents were influenced by Plumbers, 20.8% (25) of the respondents were influenced by Dealers, 20% (24) were influenced by Friends, 10% (12) of the respondents by family, 8.3% (10) of the respondents by Print media and only 4.2% (5) were influenced by television.

**Chart 4.4****Factors Influenced the Choice of the Sharp Domestic Pumps**

The chart below indicates the factors influenced the choice of the Sharp domestic pump



### 4.1.5 Purpose of Pump Usage

The table below indicates the purpose of Pump usage.

**Table 4.5**  
**Purpose of Pump usage**

Purpose of usage	No. of respondents	Percentage
Overhead tank	79	65.8
Gardening	9	7.6
Construction	32	26.6
Total	120	100

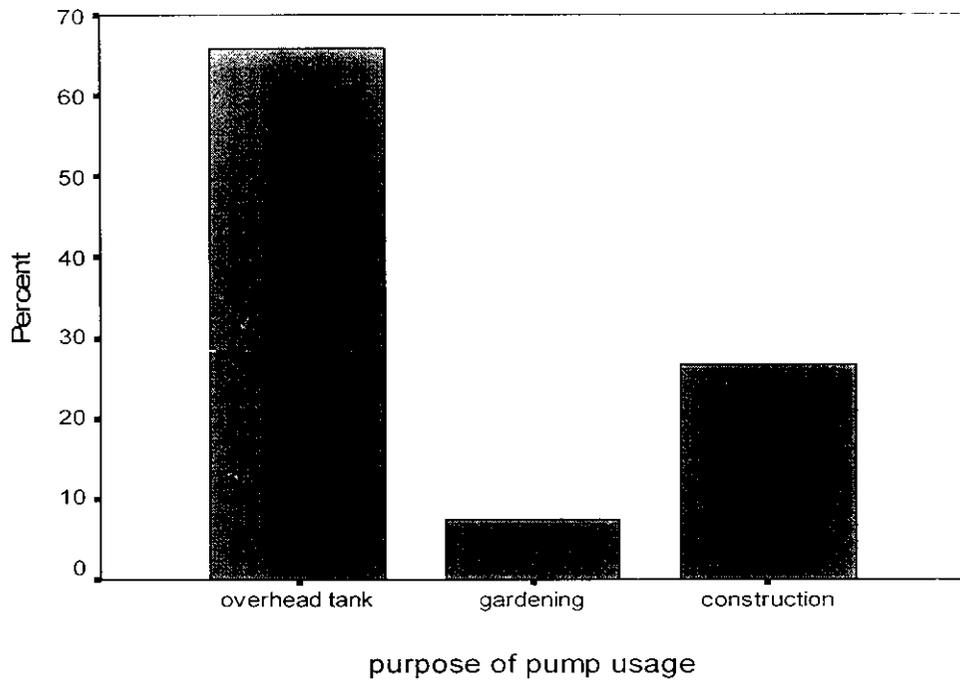
#### **Inference**

From the table 4.5, it is inferred that about 65.8% (79) of the respondents are using the pump for filling up overhead tank, 26.5% (32) of the respondents are using the pump for construction purpose and only 7.5% (9) of the respondents are using the pump for gardening purpose.

## Chart - 4.5

### Purpose of Pump Usage

The chart below indicates the purpose of pump usage.



### 4.1.6 Repurchase Behaviour

The table below gives the respondents wishes to buy the Sharp pump again.

**Table 4.6**

#### **Repurchase Behaviour of the Respondents**

Wish to Buy Again	No. of respondents	Percentage
Yes	100	83.3
No	20	16.7
Total	120	100

### **Inference**

From the table 4.6, it is inferred that 83.3% (100) of the respondents are ready to buy the Sharp pump again and about 16.7% (20) of the respondents are not willing to buy the pump again.

#### 4.1.7 Recommendation to others

The table below gives the respondents wishes to recommend the pump to others.

**Table 4.7**

#### **Respondents wish to recommend others**

Recommendation to others	No. of respondents	Percentage
Yes	100	83.3
No	20	16.7
Total	120	100

#### **Inference**

It is seen from the table 4.7, it is inferred that 83.3% (100)of the respondents are ready to recommend sharp pumps to others and about 16.7% (20) of the respondents are not ready to recommend the pump to others.

### 4.1.8 Brand Ranking

The table below indicates the rank given by the respondents to the five different brands of pumps.

**Table 4.8**

**Rank given by the respondents to five different brands**

Brands	Weighted Average	Rank
Sharp	10.66	II
CRI	8.93	I
Texmo	13.54	IV
Suguna	13.90	V
Aqua Sub	12.98	III

### Inference

From the table 4.8, it is inferred that respondents have given rank I to the CRI pumps, rank II to Sharp Pumps, rank III to Aqua sub pumps, rank IV to Texmo and V to the Suguna Pumps.

## 4.2 Satisfaction level of the Customers on Sharp Domestic Pumps

The table below indicates the satisfaction level of the customers on the sharp domestic pumps.

**Table 4.9**

### Satisfaction Level of Respondents

Factors	Percentage					Mean Value	Rank
	VS	S	N	D	VD		
Quality of Pump	41.7	29.1	10	10	9.2	1.16	V
Price of Pump	35.8	34.2	20	10	0	1.04	II
Reliability	35	25.8	20.8	8.3	10.3	1.33	VI
Warranty	40	40	20	0	0	0.80	I
Accessability	20	30	20	10	20	1.80	IX
Weight of Pump	31.7	30.8	37.5	0	0	1.06	III
Delivery mode	34.2	31.7	34.2	0	0	1.00	IV
Service centre response	10	10	57.6	11.7	10.7	1.75	VIII
Service cost	10	20	47	13	10	2.00	X
Service time	19.2	10	48.3	12.5	10	1.74	IX

VS – Very much satisfied. S – Satisfied, N – Neutral, D – Dissatisfied.  
VD – Very much dissatisfied.

### Inference

From the table 4.9, it is inferred that Warranty, Price of the pump, Weight of the pump, Delivery mode and Quality are ranked as factors of satisfaction as

#### 4.4 Influence of Demographic variables on the level of Satisfaction

In order to understand the influence of demographic variables on the satisfaction level of the customers, the chi-square test is performed at 5% significant level. The demographic variables selected are Monthly Income, Educational Qualification and Occupation of the respondents. The findings are presented below

**Table 4.10**

#### **Influence of demographic variable monthly income on the satisfaction level of the Sharp pump users**

Factors of satisfaction	Very much satisfied	Satisfied	Neutral / dissatisfied / very much dissatisfied *	Monthly Income	
				X2	P value
Quality of Pump	50	35	35	154.6	0.000
Price of Pump	43	41	36	101.92	0.000
Reliability	42	31	47	148.05	0.000
Warranty	48	48	24	42.32	0.000
Accessability	24	36	60	238.94	0.000
Weight of Pump	38	37	45	68.84	0.000
Delivery mode	41	38	41	83.44	0.000
Service centre response	36	24	60	156.736	0.000
Service cost	12	24	84	130.729	0.000
Service time	35	24	61	204.25	0.000

\* Note: Neutral, dissatisfied and very much dissatisfied respondents are combined together since number of respondents are less.

**Ho:** The demographic variable Monthly Income does not have a significant

**H1:** The demographic variable Monthly Income have a significant influence on the satisfaction level of the sharp pump users.

### Inference

From the table it can be seen that the demographic variable Monthly income have a significant influence on the level of satisfaction since P value is less than 0.05.

**Table 4.11**

**Influence of demographic variable Educational Qualification on the satisfaction level of customers**

Factors of satisfaction	Very much satisfied	Satisfied	Neutral / dissatisfied / very much dissatisfied *	Educational Qualification	
				X <sup>2</sup>	P value
Quality of Pump	50	35	35	162.67	0.000
Price of Pump	43	41	36	132.683	0.011
Reliability	42	31	47	128.80	0.000
Warranty	48	48	24	216.533	0.009
Accessability	24	36	60	48.305	0.000
Weight of Pump	38	37	45	67.062	0.000
Delivery mode	41	38	41	277.944	0.000
Service centre response	36	24	60	278.20	0.000
Service cost	12	24	84	302.62	0.012
Service time	35	24	61	190.54	0.003

- Note : Neutral, dissatisfied and very much dissatisfied respondents are combined together since number of respondents are less.

**H1:** The demographic variable Educational Qualification has a significant influence on the satisfaction level of the sharp pump users.

### Inference

From the table it can be seen that the demographic variable Educational Qualification have a significant influence on the level of satisfaction since P value is less than 0.05.

**Table 4.12**

**Influence of demographic variable monthly income on the satisfaction level of the Sharp pump users**

Factors of satisfaction	Very much satisfied	Satisfied	Neutral / dissatisfied / very much dissatisfied *	Occupation	
				X <sup>2</sup>	P value
Quality of Pump	50	35	35	190.548	0.000
Price of Pump	43	41	36	107.502	0.000
Reliability	42	31	47	186.059	0.000
Warranty	48	48	24	110.571	0.000
Accessability	24	36	60	169.905	0.012
Weight of Pump	38	37	45	69.777	0.000
Delivery mode	41	38	41	105.794	0.000
Service centre response	36	24	60	138.426	0.005
Service cost	12	24	84	175.357	0.000
Service time	35	24	61	148.93	0.000

\* Note: Neutral, dissatisfied and very much dissatisfied respondents are

- H<sub>0</sub>** : The demographic variable Occupation does not have a significant influence on the satisfaction level of the sharp pump users.
- H<sub>1</sub>** : The demographic variable Occupation has a significant influence on the satisfaction level of the sharp pump users.

### **Inference**

From the table it can be seen that the demographic variable Occupation have a significant influence on the level of satisfaction since P value is less than 0.05.

*Conclusion*

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## CHAPTER – V

### CONCLUSION

#### 5.1 Results and Discussion

This chapter deals with the findings and suggestions.

##### 5.1.1 Profile of the Sharp Pump Users

The following findings are derived from the profile of the users

- ❖ Majority of the users have monthly family income level between 10001–20000.
- ❖ Most of the respondents are Undergraduates.
- ❖ Majority of the respondents are homemaker.
- ❖ Most of the respondents are influenced by Plumbers and Dealers to choose Sharp Pumps.
- ❖ Most respondents are using the pumps for filling up Overhead tank which is followed by usage in Construction purpose.
- ❖ About 83.3% of the respondents of the respondents are ready to buy the pump again and equal number is ready to recommend the pump to others.
- ❖ Majority of the respondents have given rank I for CRI pumps which is followed by Sharp pumps.

##### 5.1.2 Satisfaction Level of Respondents

- ❖ Most of the respondents feel that Satisfaction on Warranty, Price of the pump, Weight of the pump, Delivery mode and Quality is high when

### **5.1.3 Influence of the Demographic variables on the satisfaction level of the Sharp pump users.**

- ❖ Demographic variables such as monthly income, educational qualification and occupation of the respondents have influence on the satisfaction of the customers with respect to Quality of the pump, price, reliability, warranty, accessibility, weight of the pump, service centre response, service time, service cost and delivery mode.

## **5.2 Considered Recommendations**

The following recommendations emanates from the study.

- ❖ Findings show that the majority of the respondents are having monthly family income between 10001-20000 and are undergraduates and are home makers. While framing the strategies to maintain the market share from these customers, Sharp pump manufacturers should also frame strategies to attract the customers from other segment.
- ❖ The findings of the study has highlighted that the demographic variables such as monthly income, educational qualification and occupation of the respondents have influence on the satisfaction of the customers with respect to Quality of the pump, price, reliability, warranty, accessibility, weight of the pump, service centre response, service time, service cost and delivery mode.
- ❖ Warranty and Price is the most preferred features in the Sharp Domestic Pumps. Hence this should be maintained and improved.

## CONCLUSION

Pump industries have contributed a lot to the growth of industrial city, Coimbatore. But at present due to many reasons pump industries are facing number of problems leading to 30% reduction in manufacturing. Moreover, a high competition exist in the pump industry. Against this study is conducted for Sharp pump industries. The study attempts to determine the customers' level of satisfaction on the Sharp Domestic pumps. Further study attempts to identify the influence of demographic variable on the satisfaction level of the customers. The findings would enable the marketing department to frame suitable strategies to enhance the market share of Sharp domestic Pumps.

*Annexure*

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## QUESTIONNAIRE

1. Name :
2. Monthly Family Income (Rs.) :
  - a) less than 10000
  - b) 10001 to 20000
  - c) 20001 to 30000
  - d) above 30000
3. Educational Qualification
  - a) No formal education
  - b) School level
  - c) UG or Diploma
  - d) PG
  - d) Others
4. Occupation
  - a) Professional
  - b) Business
  - c) Student
  - d) Home maker
  - e) Employed
5. Who influenced you to choose sharp pumps?
  - a) Friends
  - b) Family
  - c) Print Media
  - d) Television
  - e) Plumbers
  - f) Dealers
  - g) Others
6. Kindly rate the following brand of pumps available in the market. (from 1 to 5)

Brands	Rank
Sharp	
Texmo	
Suguna	
Aqua Sub	
CRI	

7. The purpose for which you use the sharp pumps?
  - a. Overhead tank
  - b. Gardening
  - c. Construction purpose
  - d. Others (please specify.....)

8. If you have to buy the pump again will you go in for sharp pumps?

a. Yes

b. No

9. Will you suggest sharp pumps to others

a. Yes

b. No

10. Your opinion on the Sharp domestic pumps

Satisfaction	Very much Satisfied	Satisfied	Neutral	Less Satisfied	Not Satisfied
Quality					
Price					
Reliability					
Warranty					
Accessibility					
Weight of the pump					
Delivery mode					
Service centre response					
Service cost					
Service time					

11. Any other suggestions which you wish to offer for the study

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