

A STUDY ON ISSUES OF POWER SHORTAGE IN SURIYAGIRI SPINNING MILLS

**Submitted in partial fulfilment of the requirements for the award of
Bachelor of Business Administration**

By

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**DEPARTMENT OF BUSINESS ADMINISTRATION
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**SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade “A” by NAAC | 12B Status by UGC | Approved by AICTE

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CHENNAI – 600 119

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BONAFIDE CERTIFICATE

This to certify that this Project Report is the bonafide work of **SHALIK NAWAZ A.S (39280089)** Who carried out the project entitled **"A STUDY ON ISSUES OF POWER SHORTAGE IN SURIYAGIRI SPINNING MILLS"** student of **Sathyabama Institute of Science and Technology** under **Dr.M.M.Dhanya MA, MBA, PhD** supervision from January 2022 to March 2022.

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DECLARATION

I SHALIK NAWAZ A.S (39280089) hereby declare that the Project Report entitled **“A STUDY ON ISSUES OF POWER SHORTAGE IN SURİYAGIRI SPINNING MILLS.** Student of **SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY** “done by me under the guidance of **Dr.M.M.Dhanya MA, MBA, PhD** at **SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY, CHENNAI** is submitted in partial fulfilment for the requirements for the award of Bachelor of Business Administration degree.

DATE: 23.04.2022

PLACE: CHENNAI

A.S. SHALIK NAWAZ

SIGNATURE OF THE CANDIDATE

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A.S. SHALIK NAWAZ

ABSTRACT

The purpose of study is to sort out the issues of power shortage in the suriyagiri spinning mill. The textile spinning industry is one of the most complicated manufacturing and largest export industry. Energy is one of the main and important cost factors for every industry because of energy crisis. In textile mill spinning unit is most important part according to electrical power consumption where more opportunities are available for energy saving, many of which are cost-effective.

So, electrical losses assessment provides the scope of electrical energy savings in different utilities and process of spinning area of textile industry. By electrical losses evaluation for electrical potential, significant cost savings is achieved which leads to improving profitability and competitiveness.

In spinning mill, electricity consumption is in increasing trend, due to modernised machines and continuous usage of the equipments in inefficient operating parameters. The energy cost is around 15 % to 20 % over the production cost and it stands next to raw material cost. Hence now a day's area of focus is towards energy consumption at load end and by optimizing the efficiency of the motor.

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CHAPTER – 1

INTRODUCTION

1.1 INTRODUCTION

India is one of the chief producers and purchaser of cotton in the world. With the preamable of cotton and enhanced crop management practices, the average cotton succumb has increased from 300 kg/hectare to 550 kg/hectare about 90% of cotton mounting area is now occupied with cotton. Cottons show advanced micronaire and lower level of trash than their non-counterparts. The lowest amount support price set by the administration was often found inadequate by the farmers as their cost of cultivation has gone high due to increase in input costs.

In Spinning Mill, electricity consumption and power cost is in increasing trend due to modernised machines and continuous usage of the machines in inefficient operating parameters. Apart from the power cost, man power is also shortage in spinning mills due to dusty environment inside the mill and heavy noise from the machines.

The main objective of the Spinning mill is to produce yarn (thread) from the raw cotton which requires six stages of process. These are discussed briefly for readers understanding. The textile mill can be split into three systems namely, card sliver, combed sliver and ring spinning system.

The card sliver system consists of blowroom and carding machine, which does the function of removing the foreign particle from the raw cotton and convert the same into thick yarn (sliver). The combed sliver system consists of draw frame and comber machines, the draw frame machine ensures the

uniformity in thickness of the sliver and comb machine removes the unwanted short fibre in the sliver.

Ring spinning system consists of Speed frame and Ring frame machine, which does the conversion of sliver (thick thread) into yarn (thin thread). Ring frame is the final product of the spinning mill.

1.2 INDUSTRY PROFILE

The Spinning industry is primarily concerned with the design, production and distribution of yarn, cloth and clothing. The raw material may be natural, or synthetic. The industry is extremely varied, with hand-spun and hand-woven textiles sectors at one end of the spectrum, while the capital-intensive sophisticated mills sector on the other end. The close linkage of textiles industry to agriculture (for raw materials such as cotton) and the ancient culture and traditions of the country in terms of textiles makes it unique in comparison to other industries in the country.

Industrial revolution brought dynamic changes in our daily lives and **textile manufacturing** process is no more an exception. Spinning mills are significant for textile industries as they transfigure fibre into yarn and yarn into fabric. Few cotton mills generally conduct the textile manufacturing process by generating fibers from cotton bales supplied and processing it ahead to attain fabrics. Spinning process is an initial step to produce textile layout such as garments, fabric, home textile and so on. People used to convert fibers into yarn i.e., the spinning process by hand before a couple of decades which has now been mostly replaced by advanced technology of mechanical spinning carried in **spinning mills**.

Industrial revolution supplied developments to production units making their process easy in controlling the process by **spinning machinery**. In this machine process various levels are added to convert fiber (cotton/wool) into

yarn to process it further for textile products. This transformation goes through various levels such as:

STEP 1: Blowroom process

STEP 2: Carding

STEP 3: Combining

STEP 4: Draw frame

STEP 5: Roving/Ring frame

STEP 6: Cone winding

STEP 1: BLOWROOM PROCESS IN SPINNING

Blowroom indicates place processing “Air Flow”. Blow room consists of various machineries to conduct the objectives of blowroom. Here the cluster of cotton brought is changed into miniature material. Simply, in blow room section, the compressed bales are opened, cleaned and blended/mixed according to particular length to form a specific size of lap.

STEP 2: CARDING

Carding is known as heart of spinning process as it defines the concluded features of yarn. The lap produced in blowroom is now shifted to carding machine for production of carded silver. Here the bales processed will open up in single fiber. Apparently, it will make ease to remove the left impurities on the surface of fiber making it straight and separating the short fiber.

STEP 3: COMBINING

As yarn is arranged in parallel manner, it is straightened again in stage of combining. On the other hand, the left short fiber will be subtracted completely from longer staple fiber. This will result in stronger and smoother staple fabric having higher demand in market.

STEP 4: DRAWFRAME

This is a device in which drafting and drawing are carried out. Doubling is the application of feeding several intermediate strands into a single strand. Drafting is carried out to lessen fiber laps to slivers. The carded silver is drafted between roller to produce drawn silver.

STEP 5: ROVING/RING FRAME

The yarn produced is processed into a speed frame to attain roving yarn. This is the initial step where twist is inserted for giving hold to the fibers in a spinning mill. The roving yarn is of little larger diameter as compared to the final yarn. Similarly ring frames are used to produce finished yarns from obtained roving yarns. yarn is resulted having good amount of strength through these ring frames.

STEP 6: CONE WINDING

Cone winding is just a simple packaging process functioning as a link between last stages of yarn manufacturing and initial stages of fabric manufacturing process. It is important to utilize the winding devices properly to avoid the loss of spinning mills as well as consumers.

1.3 COMPANY PROFILE

Suriyagiri Spinning Mills Private Limited is a Private incorporated on 15 September 2006. It is classified as non-govt company and is registered at Registrar of Companies, Coimbatore. Its authorized share capital is Rs. 40,000,000 and its paid-up capital is Rs. 40,000,000. It is involved in Spinning, weaving and finishing of textiles.

As Per Registration of Company, it involves under in Business Activity Class / Subclass Code 17111, Main Activity of the said Company SURIYAGIRI SPINNING MILLS PRIVATE LIMITED is Preparation and spinning of cotton fiber including blended cotton (please note: ginning/pressing, baling activities are included in Class 0140). (*Blended yarn/fabrics means, yarn/fabrics containing more than 50% of one fiber.), It Comes Under Division MANUFACTURE OF TEXTILES and this come under section **MANUFACTURING.**

Directors of Suriyagiri Spinning Mills Private Limited are Sellappagounder Kathirvel, Alampalayam Balasubramaniyan Sruthi, Selvaraj Satheshkumar, Selvaraj Sivaraj, Selvaraj Vijaya, Selvaraj Sellappa Gounder, Kadhivel Dhanaraj, Arunachalam Aarthi, Guruvappan Manimegalai, Gandhimathi Kathirvel, Deepaa and Kathirvel Gunganraj.

Spinning is the process of drawing out fibers from a mass and twisting them together to form a continuous thread or yarn. This can be accomplished by hand with the aid of a spindle and distaff or a spinning wheel, using fiber from vegetables or animals, such as flax, cotton, or wool (see natural fibers). In today's textile industry fibers are spun by machine. In the production of synthetic fibers—such as rayon, dacron, or nylon—the term spinning refers to the process of squeezing a synthetic liquid through one or more small openings and letting it harden to form a fiber, much as silkworms and similar insect larvae produce filament to make their cocoons.

Weaving is the interlacing of two sets of threads or yarns, usually at right angles. The lengthwise yarns are called the warp; the crosswise yarns are called the weft, woof, or filling. Very simple weaving may be done by hand, but most weaving is done on hand- or machine-operated looms. A woven fabric may then be ready for use or, as is often the case in the modern textile industry, it may undergo a number of treatments known as finishing processes that make the fabric more appealing to users.

CHAPTER – 2

REVIEW OF LITERATURE

2.1 INTRODUCTION

In this chapter, the researcher has made an attempt to study and understand the concepts of power shortage in spinning mill. This attempt includes, understanding the concepts of setting up solar panels for the power shortage issue, analysing research studies made by earlier researchers in respect of power shortage in spinning mill, the researcher has used various books, research Journals and websites. The detailed list is further elaborated in the Bibliography. Through this Literature Survey researcher wants to find out which are the important parameters of power shortage in spinning mill.

2.2 LIST OF REVIEWS

Prakash Khude(2017) A Review on energy management in textile industry. Energy is one of the main cost factors in the textile industry. Especially in times of high energy price volatility, improving energy efficiency should be one of the main concerns of textile plants.

Hunt Allcott Allan Collard-Wexler Stephen D. O'Connell (2014) How Do Electricity Shortages Affect Industry Evidence from India. The short-run effects of electricity shortages do not explain much of the productivity gap between firms in developing vs. developed countries discussed by Banerjee and Duflo (2005), Hall and Jones (1999), Hsieh and Klenow (2009), and others, although the long-run effects could be different. because shortages more strongly affect plants without generators.

Saur News Bureau (2017) Tailoring Solar Power for Textile Industry. The incredible drop of solar module prices and growth of the solar ecosystem have created the ideal situation for more widespread adaption of solar PV systems. Textile industry can benefit hugely by deploying solar projects in large scale.

Y. Dhayaneswaran & L. Ashokkumar (2013) A Study on Energy Conservation in Textile Industry. In India, there are many textile industries. Hence, by incorporating the above technique in all the textile mills, ample energy can be saved. In general, most of the mills have not included renewable energy techniques in productive and non-productive machines. By means of adopting these techniques, significant energy saving can be realised.

Aravin Prince. P (2008) Energy Conservation in Textile Industries & Savings. Modernization through plant and machinery could be effective in reducing energy consumption. Some of the important factors for energy conservation are energy audit, maintenance, instrumental control, waste heat recovery, etc. Much research has been carried out for the use of solar energy. However, due to high capital cost, these have not been found wide application in textile industry.

Sanjay Gupta Scope for Solar Energy Utilization in The Indian Textile Industry. Use of solar energy can herald enormous economic benefits for textile industry. There is need for research in this area to mould the available technology for its greater exploitation. There is also need for entrepreneurs to make popular developed products and for the government to support initial capital investments.

Ali Hasanbeigi Energy - Efficiency Improvement Opportunities for The Textile Industry. Modernization through plant and machinery could be effective in reducing energy consumption. Much research has been carried out for the use of solar energy. However, due to high capital cost, these have not been found wide application in textile industry.

Arthur Adel M. Abdel – Dayem M.A. Mohamad (2001) Potential of solar energy utilization in the textile industry. The environmental impact of using such a system was studied for different air and water pollutants. Reduction of carbon dioxide emission was found to be the main advantage of using solar energy as a clean energy source.

Arthur Muhammad Shahzad Iqbal, Dr.Babak Mahmood, Junaid Iqbal, Muhammad Naeem Akhtar (2017) Economic Impact of Energy Crisis on the Textile Sector. energy crisis is any significant bottleneck in the supply of energy resources to an economy. In literature, it often refers to one of the energy sources used at a certain time and place, in particular, those that

supply national electricity grids or those used as fuel in industrial development and population growth have led to a surge in the global demand for energy in recent years.

F Kocyit, E Yanikolu, Ahmet Yilmaz, Mehmet Bayrak (2009) Effects of power quality on manufacturing costs in textile industry. As demonstrated by the measurements, although the harmonic currents are above the standards in the textile industry, nearly all of the material loss suffered due to poor energy quality is from sudden voltage variations (particularly short-term voltage variations) and power failures.

S. Mariappan Economics of Solar Power in Spinning Mills. A mill should reduce the power cost for increasing profit margin for which captive power generation is a must. Considering the good potential for solar power, it is strongly recommended that mill should go in for solar plant. The author, S Mariappan, M.Tech. (Textiles) has worked for a few years in spinning mills and has got about 33 years' experience in Liasion & Consultancy department in The South India Textile Research Association (SITRA), Coimbatore. He had visited more than 400 mills for consultancy assignments in both India and foreign countries. He has retired from SITRA recently as Research Associate.

Muhammad Hassan Qaisar, Abraiz Khattak, Muhammad Bilal Electrical Energy Management in Spinning Area of Textile Industry. Energy is one of the main and important cost factors for every industry because of energy crisis. In textile mill spinning unit is most important part according to electrical power consumption where more opportunities are available for energy saving, many of which are cost-effective. So, electrical losses assessment provides the scope of electrical energy savings in different utilities and process of spinning area of textile industry. By electrical losses evaluation for electrical potential, significant cost savings is achieved which leads to improving profitability and competitiveness. In this paper, influence of different motors, machines processes and electrical power losses in textile industry is discussed and compared with practical data.

K. Balachander kalappan, Alagarsamy Amudha (2019) Energy Saving Measures in Textile Mill. Improving working parameters of plant towards security

and better effectiveness. The above is a portion of the better purposes of energy Preservation measures being attempted and to be attempted in the enterprises. Carefully, the above measures are gone for running our current supplies to the most extreme conceivable effectiveness. We need to lessen the avoidable misfortunes to the greatest in the transmission of vitality from one state to other in the hardware. So to state, we are endeavoring to coordinate our current effectiveness of types of gear to suit to process. At the same time, we attempt to improve the current compassing conditions encompassing the types of gear to suit and solace the supplies with the goal that they can give better yield to process. The suggestions are submitted to the administration of the plant.

Md. Vaseem Chavhan, Siva Jagadish Kumar Munagala (2017) Energy Conservation Strategies of a Spinning Mill. Energy audit is one of the methods to conserve the energy such that to reduce the gap between supply and demand. This paper highlights the energy audit conducted at Energy audit had been conducted in one of the leading textile mills, which is located in northern part of Andhra Pradesh. The audit has estimated energy saving potential of the spinning mill by suggesting cost effective measures. The estimated energy saving potential, Greenhouse gas emission reduction, implementation cost and payback period for different energy conserving alternatives are accounted in this paper.

2.3 CONCLUSION

Different authors defined performance appraisal in different ways and contexts; some of them are mentioned above. A literature review may comprise a fundamental part of a postulation or paper, or might be an independent survey of works regarding a matter. Regardless, its motivation is to put each work with regards to its commitment to the comprehension of the subject under audit. Depict the relationship of each work to the others viable. Recognize better approaches to decipher, and reveal insight into any holes in, past research. Resolve clashes among apparently opposing past examinations. Point the route forward for further research.

CHAPTER- 3

RESEARCH METHODOLOGY

3.1 NEED FOR STUDY

- An important aim of industrial fundamental research to develop new technologies to optimize conventional processes in order to conserve energy by basically adopting novel concepts. The need of energy conservation has assumed paramount importance due to the rapid growth of process industries causing substantial energy consumptions in textile operations.
- This has made pathway to conservation of energy which can be affected through process and machinery modifications and implementation of technological advancements relating to process optimization as well as development of newer methods to meet the challenge of substantial energy saving in textile wet processing.
- The necessity for replacing the conventional methods by the latest processes which will lead to avoiding the loss caused due to power shutdown or weekly cuts.
- Solar gives textile manufacturers control of one of the critical cost variables, power and provides term a long-term differentiation.
- As a percentage of conversion cost spinning mills have higher percentage, dying and fabric units will also benefit from its adoption.

3.2 SCOPE AND SIGNIFICANCE OF THE STUDY

- The early adopters of solar power energy who avail themselves of AD & REC benefits currently available will build a long-term differentiator for businesses.

- The grid power costs are expected to escalate a 6% YOY, moreover accessibility of grid power is also challenging, resulting in higher usage of diesel increasing overall energy costs.
- It is essential to have energy security for the future and also minimize current diesel consumption costs leading to faster pay back of the solar investment.

3.3 OBJECTIVES OF THE STUDY

- To study the impact caused due to power cuts in textile industries.
- To know the rate of energy consumed in textile industry and find conventional source.
- To study the current situation of the industry.
- To find out possible ways of solution to weakness.

3.4 RESEARCH DESIGN

3.4.1 Descriptive Research Design

Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

3.5 SOURCE OF DATA

Data collection is the term used to describe a process of preparing and collecting data.

PRIMARY DATA - Questionnaire given to 70 respondents

SECONDARY DATA - Websites and online journals, Published reports & Review of literature from published articles to study.

3.6 STRUCTURE OF QUESTIONNAIRE

Structure questionnaire will be used to gather primary data, while secondary research data will be used to gather more information that confirmed the veracity of information collected through survey. The kind of questionnaires were choosed are structured questionnaires. Questionnaires were divide into 2 sections. In the Section "A" to know the general information of employees and in the Section "B" consists the respondent's opinion towards how can the **issues of power shortage will be able to sort out in the spinning mill.**

3.7 SAMPLING TECHNIQUE

3.7.1 Convenience Sampling Method

A convenience sample method is used in this study which is main type of non-probability sampling method. A convenience sample is made up of people who are easy to reach.

3.8 PERIOD OF STUDY

The period of study is from January 2022 to March 2022 which is three months of study.

3.9 ANALYTICAL TOOLS

1. Percentage Analysis

Research questions are always answered with a descriptive statistic. Generally, either percentage or mean. Percentage is appropriate when it is important to know how many of the participants gave a particular answer. Generally, percentage is reported when the responses have discrete categories.

2. Bar Graphs

It is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally. A vertical bar chart is sometimes called a column chart.

A bar graph shows comparisons among discrete categories. One axis of the chart shows the specific categories being compared, and the other axis represents a measured value. Some bar graphs present bars clustered in groups of more than one, showing the values of more than one measured variable.

3. Pie Charts

A pie chart is a circular statistical graphic, which is divided into slices to illustrate numerical proportion. In a pie chart, the arc length of each slice is proportional to the quantity it represents. While it is named for its resemblance to a pie which has been sliced, there are variations on the way it can be presented.

3.10 LIMITATIONS OF THE STUDY

The study is confined to Suriyagiri Spinning Mill employees only

- The study is based upon the issues of power shortage in suriyagiri spinning mill.
- The data collected for the research is fully on primary data given by the respondents, there is chance for personal bias. So, the accuracy may not be true.
- Due to storage of time and other constraints, the study has been limited to 80 respondents only.

CHAPTER – 4

DATA ANALYSIS AND INTERPRETATION

4.1 PERCENTAGE ANALYSIS

Table 4.1.1 Age of the respondents

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	25 – 30	40	68.8%
2	30 - 35	30	30%
3	35 & above	10	1.2%
	TOTAL	80	100%

Source: Primary Data

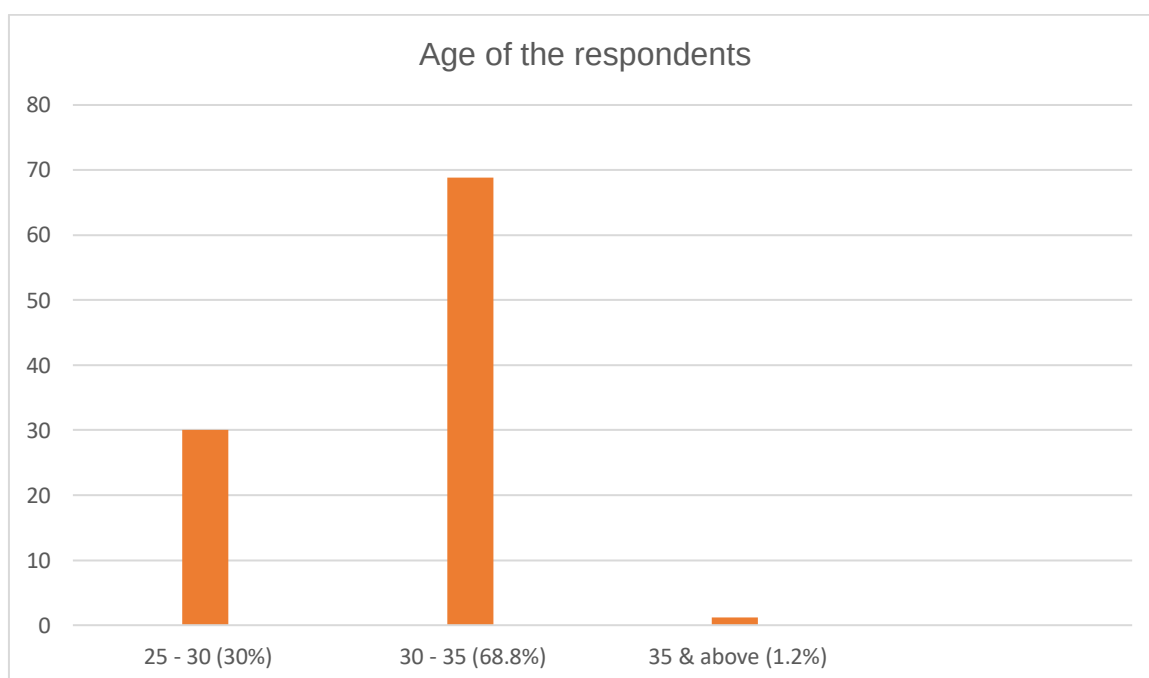


FIG 4.1.1 Age of the respondents

Interpretation

From the above table it is interpreted that the number of respondents between 25 - 30 age of respondents is 30%, between 30 -35 age of respondents is 68.8% and between 35 & above age of respondents is 1.2%.

Inference

Majority (68.8%) of the respondents are in the age between 30 to 35 years old.

Table 4.1.2 Gender of the respondents

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	MALE	45	52.5%
2	FEMALE	35	47.5%
	TOTAL	80	100

Source: Primary Data

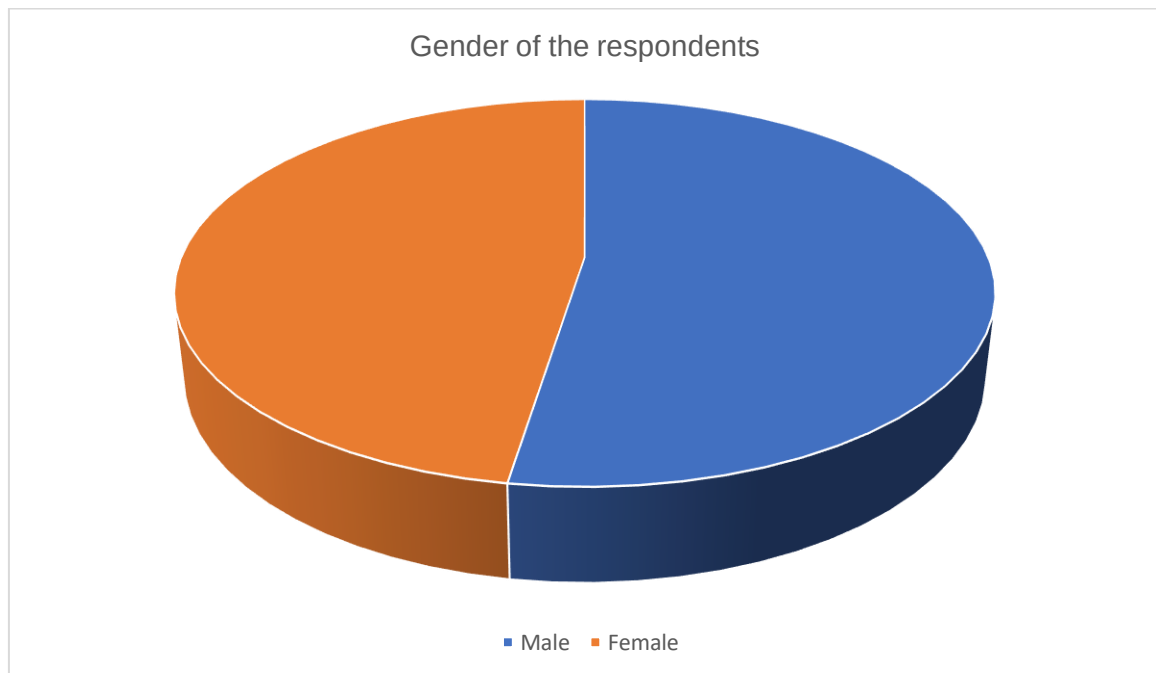


FIG 4.1.2 Gender of the respondents

Interpretation

From the above table it is interpreted that the number of male respondents is 52.5% and female respondents is 47.5%.

Inference

Majority (52.5%) of the respondents are Male.

Table 4.1.3 Marital Status of the respondents

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Single	32	46.3%
2	Married	48	53.8%
	TOTAL	80	100%

Source: Primary Data

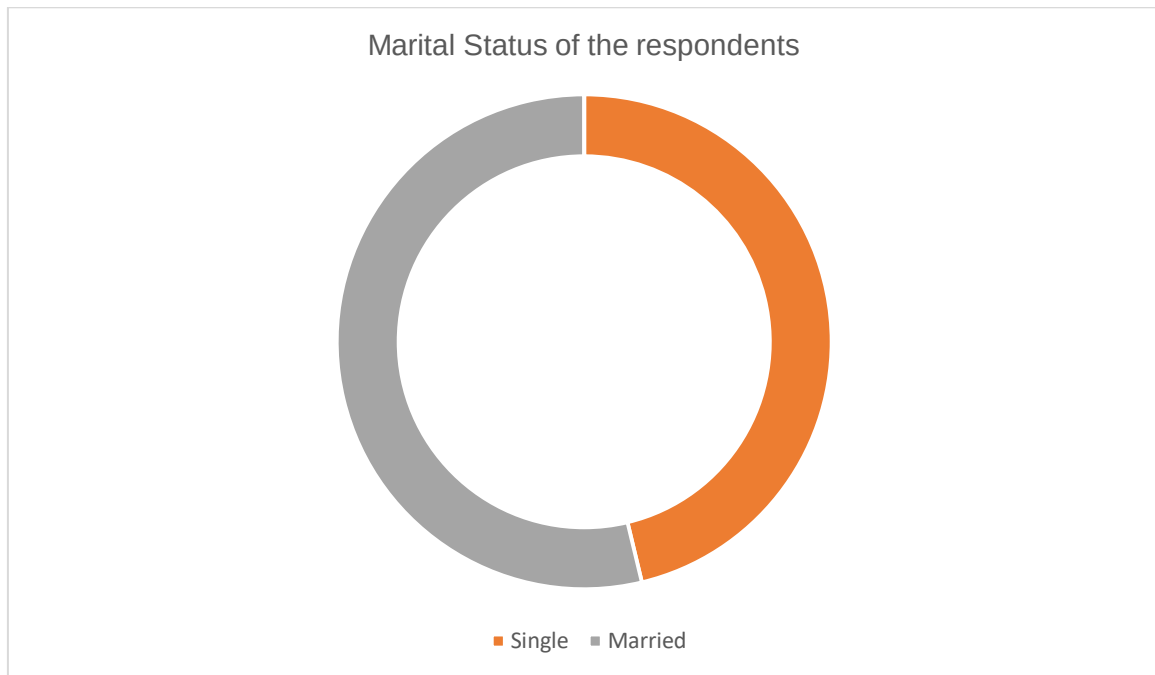


FIG 4.1.3 Marital Status of the respondents

Interpretation

From the above table it is interpreted that the number of respondents were 46.3% single and 53.8% married.

Inference

Majority (53.8%) of the respondents are Married.

Table 4.1.4 How do you run the mill when there is power shortage

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Adapt to alternative resource	45	38.8%
2	Wait for power supply	15	27.5%
3	Someother solution	20	33.8%
	TOTAL	80	100%

Source: Primary Data

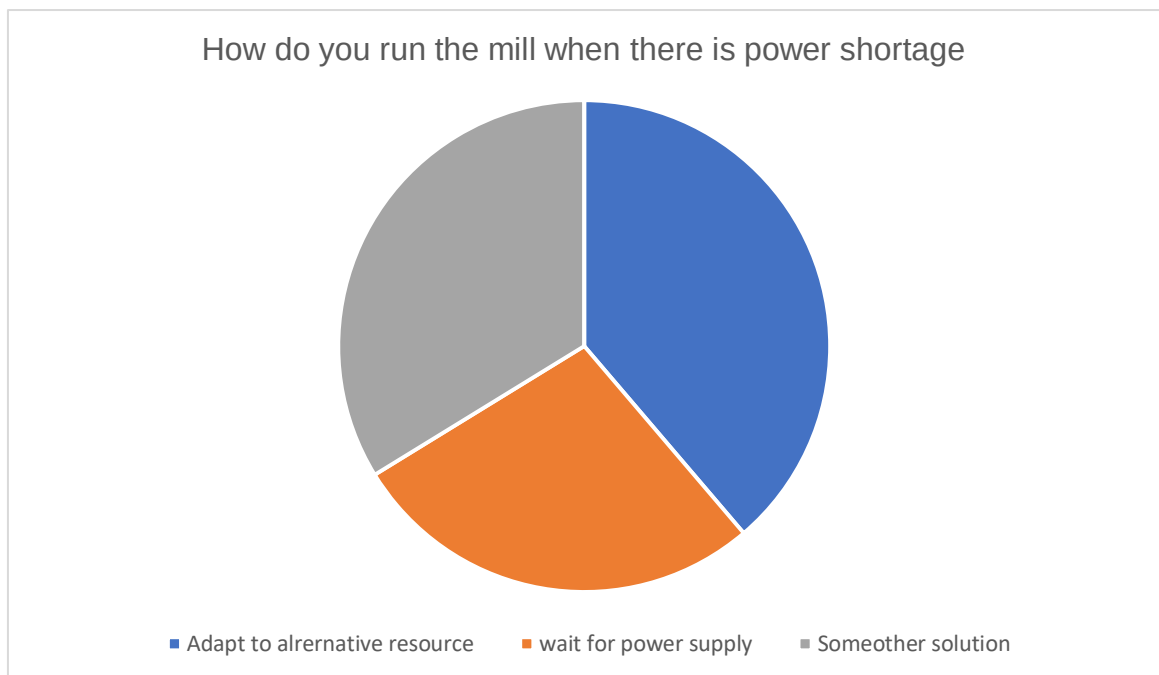


FIG 4.1.4 How do you run the mill when there is power shortage

Interpretation

From the above table it is interpreted that the 38.8% of the respondents have answered that they will adapt to the alternative resource, 27.5% of the respondents have answered that they will wait for power supply and 33.8% of the respondents have answered that they will wait for someother solution.

Inference

Majority (38.8%) of the respondents will adapt to the alternative resource.

Table 4.1.5 Role does the electricity plays in the spinning mill

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Production Process	45	41.3%
2	Packing	10	20%
3	Main source for the mill	25	38.7%
	TOTAL	80	100%

Source: Primary Data

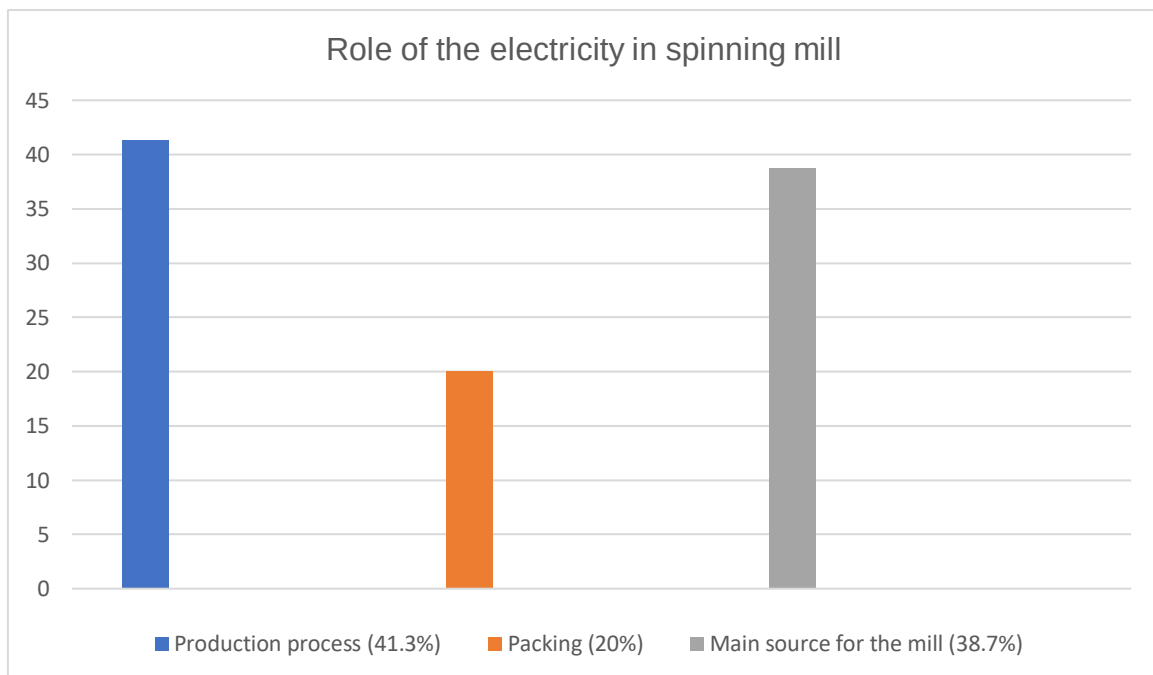


FIG 4.1.5 Role does the electricity plays in the spinning mill

Interpretation

From the above table it is interpreted that the role of electricity in spinning mill 41.3% of the respondents have answered for production process, 20% for packing and 38.7% for main source of the mill.

Inference

Majority (41.3%) of the respondents feels that in production process electricity plays the major role.

Table 4.1.6 Do you think that setting up a solar panel system will help in controlling power shortage

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Definitely	45	45%
2	May be	22	36.3%
3	May not be	13	18.8%
	TOTAL	80	100%

Source: Primary Data

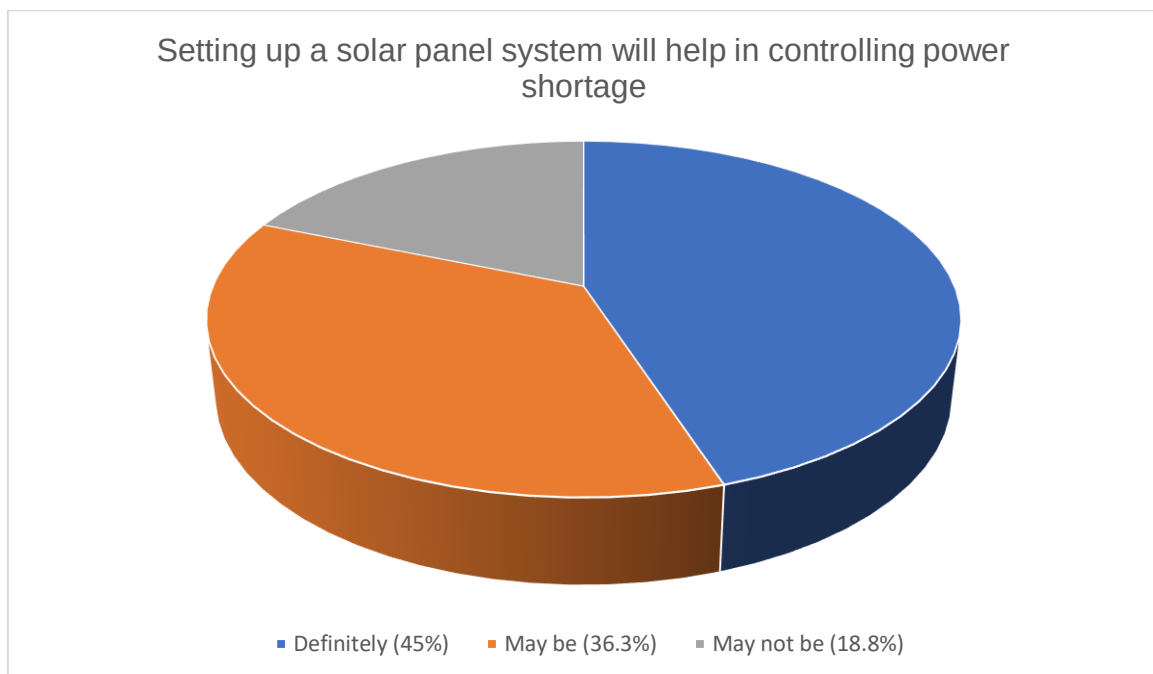


FIG 4.1.6 Do you think that setting up a solar panel system will help in controlling power shortage

Interpretation

From the above table it is interpreted that 45% of the respondents answered definitely that setting up a solar panel system will help in controlling power shortage, 36.3% of the respondents answered may be and 18.8% answered may not be.

Inference

Majority (45%) of the respondents feel that setting up a solar panel system will help in controlling power shortage.

Table 4.1.7 Is solar panel system gains profit for the company

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Yes	33	37.5%
2	No	14	25%
3	May be	33	37.5%
	TOTAL	80	100%

Source: Primary Data

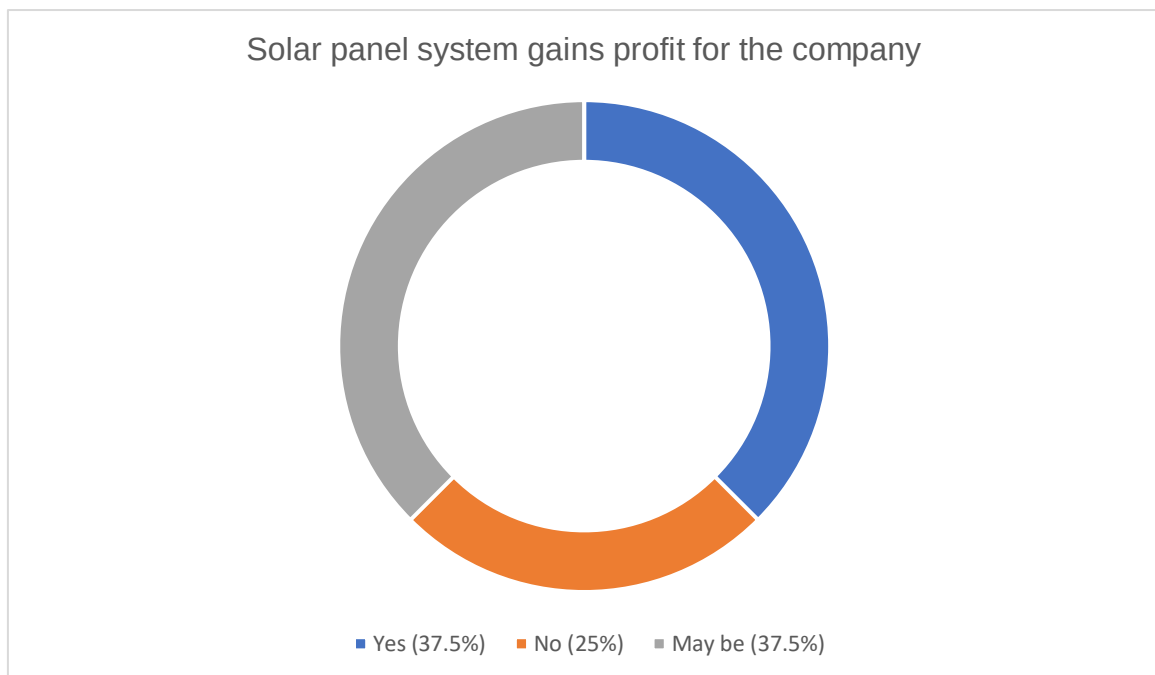


FIG 4.1.7 Is solar panel system gains profit for the company

Interpretation

From the above table it is interpreted that 37.5% of the respondents says that solar panel system gains profit for the company, 25% of the respondents and 37.5% of the respondents says that solar panel system will gains profit for the company.

Inference

Majority (75%) of the respondents feels that the solar panel system will gain profit for the company.

Table 4.1.8 Why we need a solar panel system to fix the power shortage

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Renewable resource	35	38.8%
2	More efficient	12	23.8%
3	Both A & B	33	37.5%
	TOTAL	80	100%

Source: Primary Data

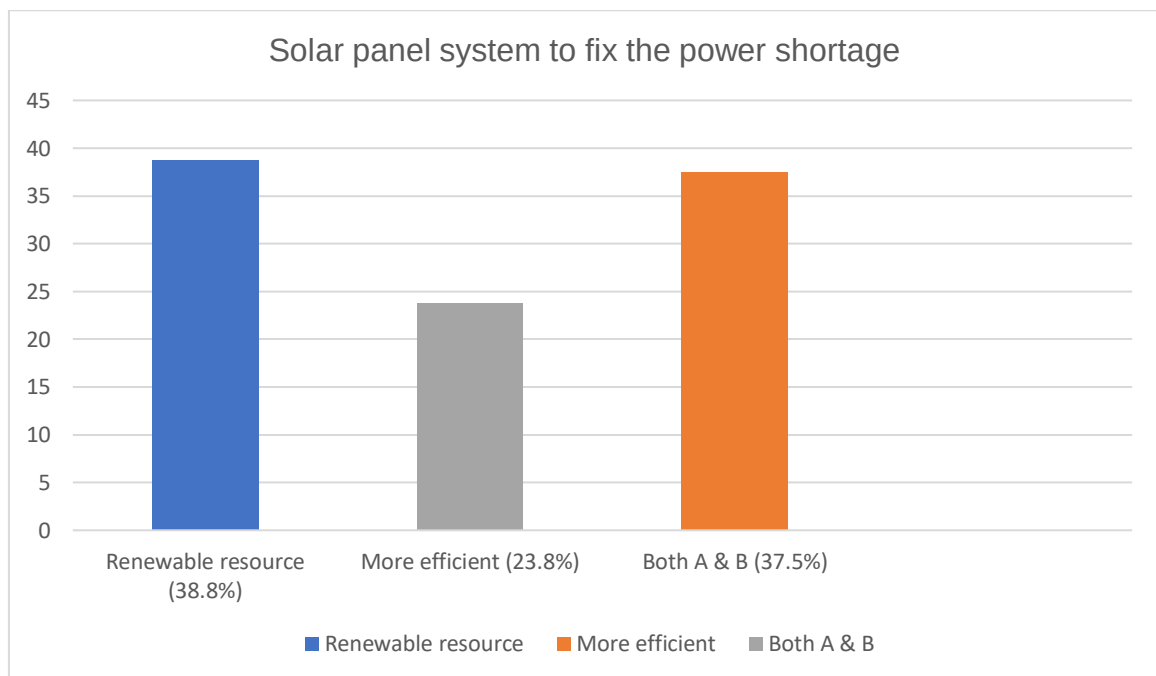


FIG 4.1.8 Why we need a solar panel system to fix the power shortage

Interpretation

From the above table it is interpreted that 38.8% of the respondents have answered for renewable resource, 23.8% of the respondents have answered for more efficient and 37.5% of the respondents have answered for both a & b.

Inference

Majority (38.8%) of the respondents feel that solar panel system is renewable resource to fix the power shortage.

Table 4.1.9 What are the advantages will get by setting up the solar panels

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Increase production	18	23.8%
2	Helps in administration managing	22	30%
3	Both A & B	35	38.8%
4	None	5	7.5%
	TOTAL	80	100%

Source: Primary Data

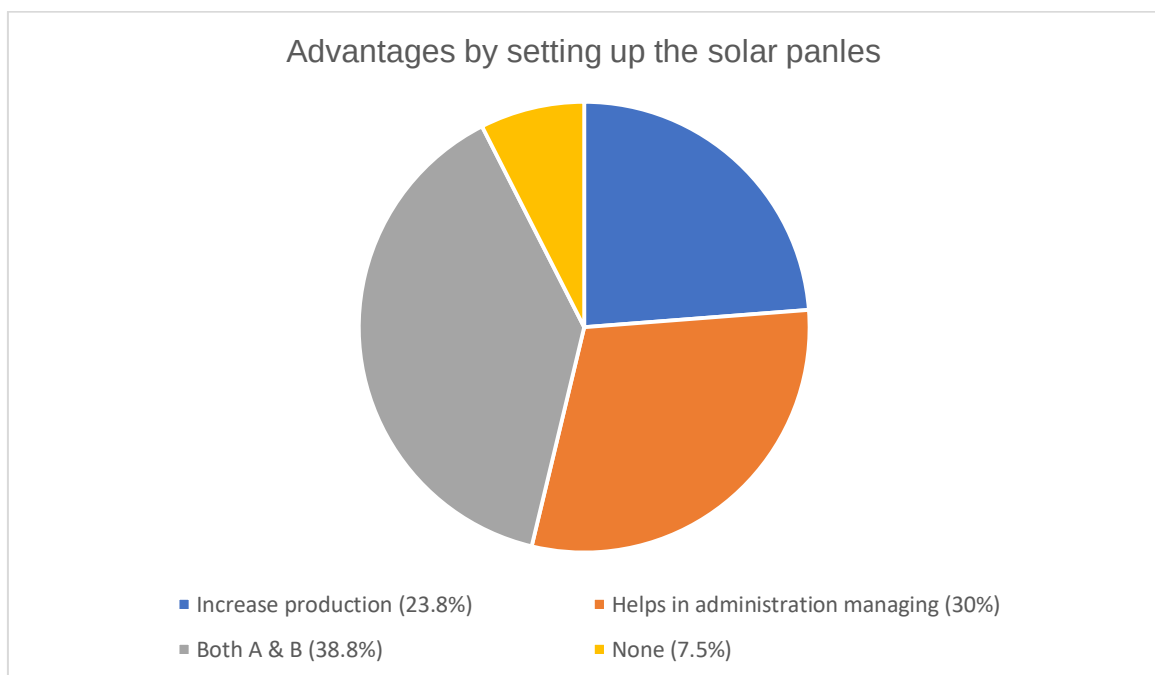


FIG 4.1.9 What are the advantages will get by setting up the solar panels

Interpretation

From the above table it is interpreted that 23.8% of the respondents have answered for increase production, 30% of the respondents have answered for helps in administration managing, 38.8% of the respondents have answered for both a & b and 7.5% of the respondents answered for none.

Inference

Majority (38.8%) of the respondents feel that setting up the solar panel will helps in increase the production and administration managing.

Table 4.1.10 By setting up the solar panels do you think it will raise the production quantity for the company

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Yes	37	42.5%
2	No	8	16.3%
3	May be	35	41.3%
	TOTAL	80	100%

Source: Primary Data

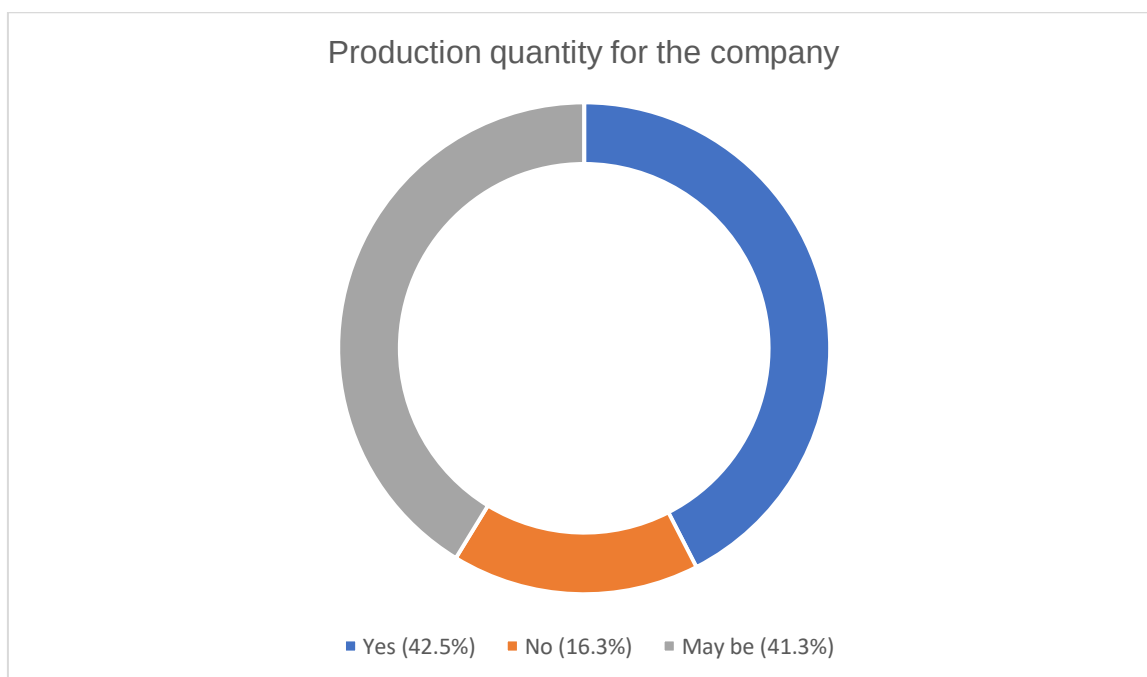


FIG 4.1.10 By setting up the solar panels do you think it will raise the production quantity for the company

Interpretation

From the above table it is interpreted that 42.5% of the respondents answered for yes, 16.3% of the respondents answered for no and 41.3% answered for may be solar panel will raise the production quantity for the company.

Inference

Majority (42.5%) of the respondents feel that setting up the solar panels will raise the production quantity.

Table 4.1.11 Does the solar panel system will be a lifetime solution for power shortage

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Yes	35	40%
2	No	12	25%
3	May be	33	35%
	TOTAL	80	100%

Source: Primary Data

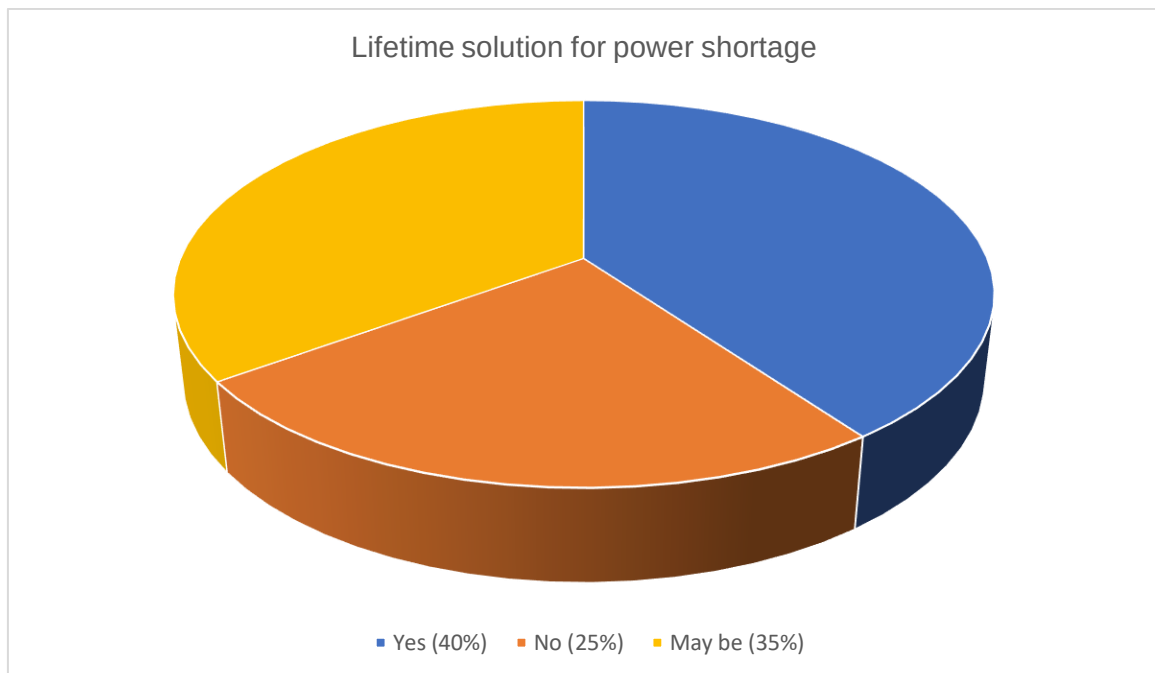


FIG 4.1.11 Does the solar panel system will be a lifetime solution for power shortage

Interpretation

From the above table it is interpreted that 40% of the respondents answered for yes, 25% of the respondents answered for no and 35% of the respondents answered for maybe it could be a lifetime solution.

Inference

Majority (40%) of the respondents feel that solar panel system will be lifetime solution for power shortage.

Table 4.1.12 What are the power saving regions in spinning process

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Increase production	20	27.5%
2	Ring frame	17	22.5%
3	Compressor	12	17.5%
4	All the above	31	32.5%
	TOTAL	80	100%

Source: Primary Data

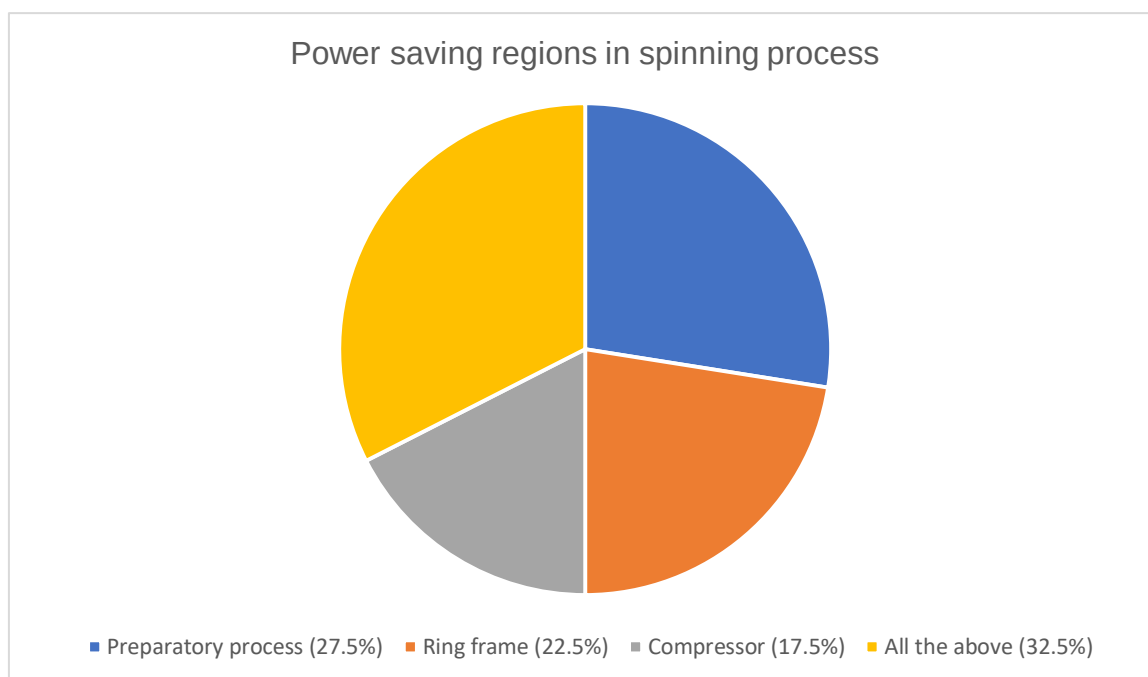


FIG 4.1.12 What are the power saving regions in spinning process

Interpretation

From the above table it is interpreted that 27.5% of the respondents answered for preparatory process, 22.5% of the respondents answered for ring frame, 17.5% of the respondents answered for compressor and 32.5% of the respondents answered for all the above.

Inference

Majority (32.5%) of the respondents feel that preparatory process, ring frame, compressor are the power saving regions in spinning process.

Table 4.1.13 If power shortage prolongs for a long time, what will be the major effect for the industry

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Theft of costly goods	18	23.8%
2	Decrease in production	14	18.8%
3	Delay in the production	15	21.2%
4	All the above	33	36.3%
	TOTAL	80	100%

Source: Primary Data

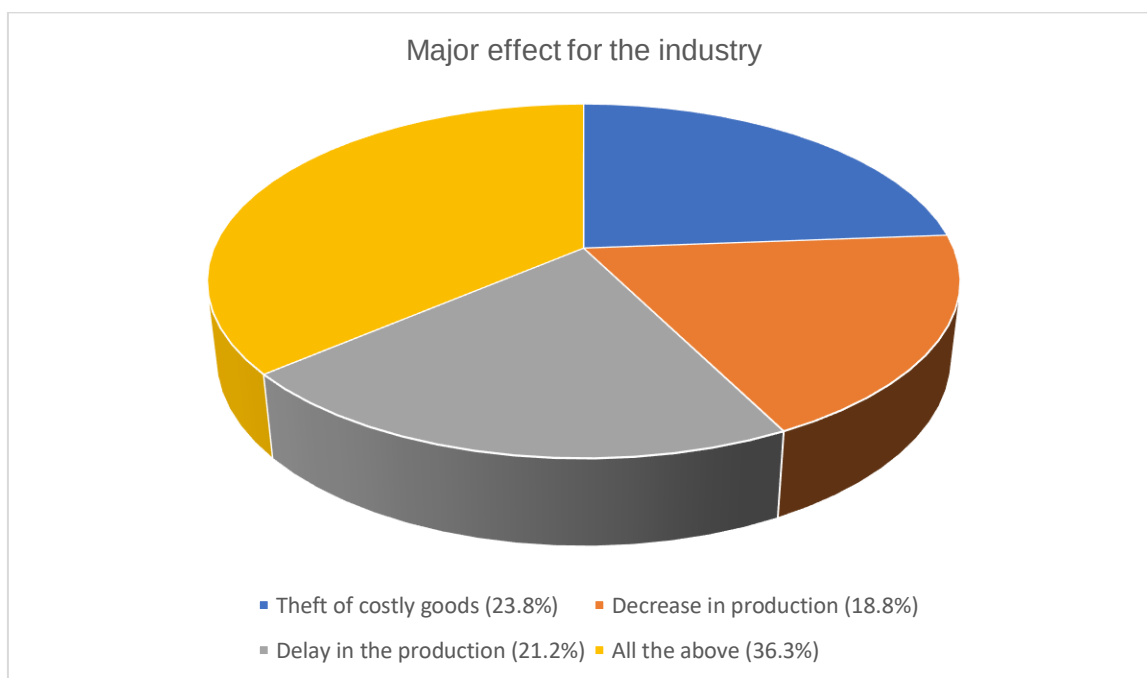


FIG 4.1.13 If power shortage prolongs for a long time, what will be the major effect for the industry

Interpretation

From the above table it is interpreted that 23.8% of the respondents answered for theft of costly goods, 18.8% of the respondents answered for decrease in

production, 21.2% of the respondents answered for delay in the production and 36.3% of the respondents answered for all the above.

Inference

Majority (36.3%) of the respondents feel that theft of costly goods, decrease in production, delay in the production will be the major effect for the industry if power prolongs for a long time.

Table 4.1.14 Can be the required electricity be produced from the waste water released by the industry

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	May be	45	51.2%
2	Not at all	23	31.3%
3	Yes	12	17.5%
	TOTAL	80	100%

Source: Primary Data

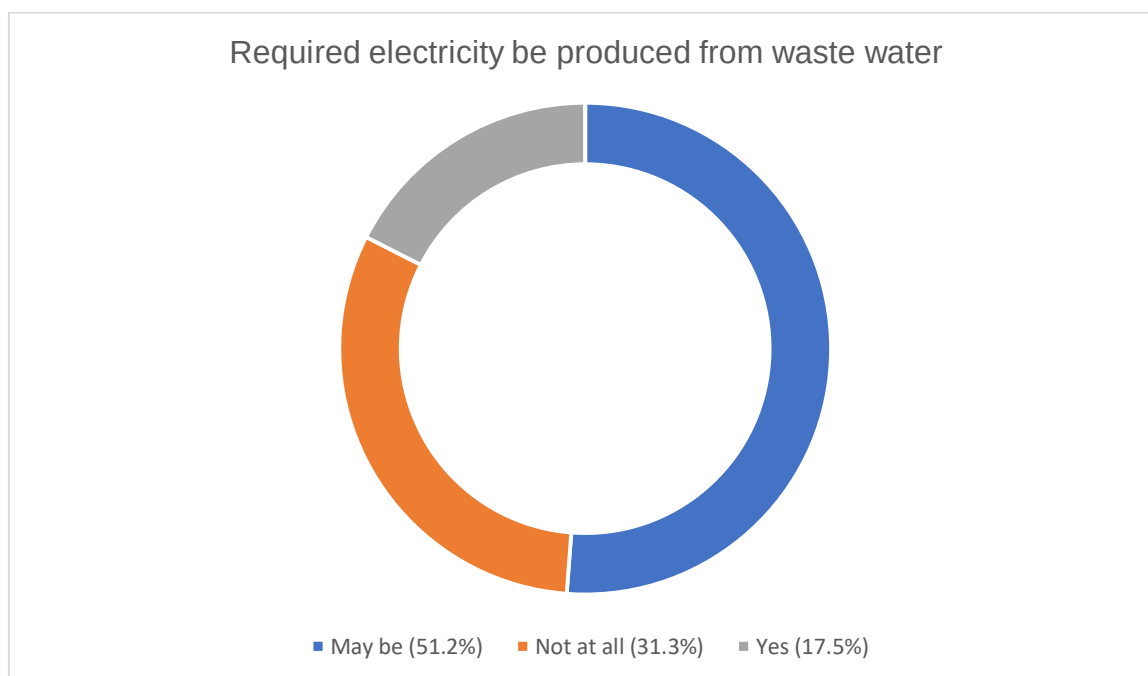


FIG 4.1.14 Can be the required electricity be produced from the waste water released by the industry

Interpretation

From the above table it is interpreted that 51.2% of the respondents answered for maybe, 31.3% of the respondents answered for not at all and 17.5% of the respondents answered for yes.

Inference

Majority (51.2%) of the respondents feel that the electricity may be produced from the waste water released by the industry.

Table 4.1.15 Is the spinning mill energy intensive

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Yes	64	72.5%
2	No	16	27.5%
	TOTAL	80	100%

Source: Primary Data

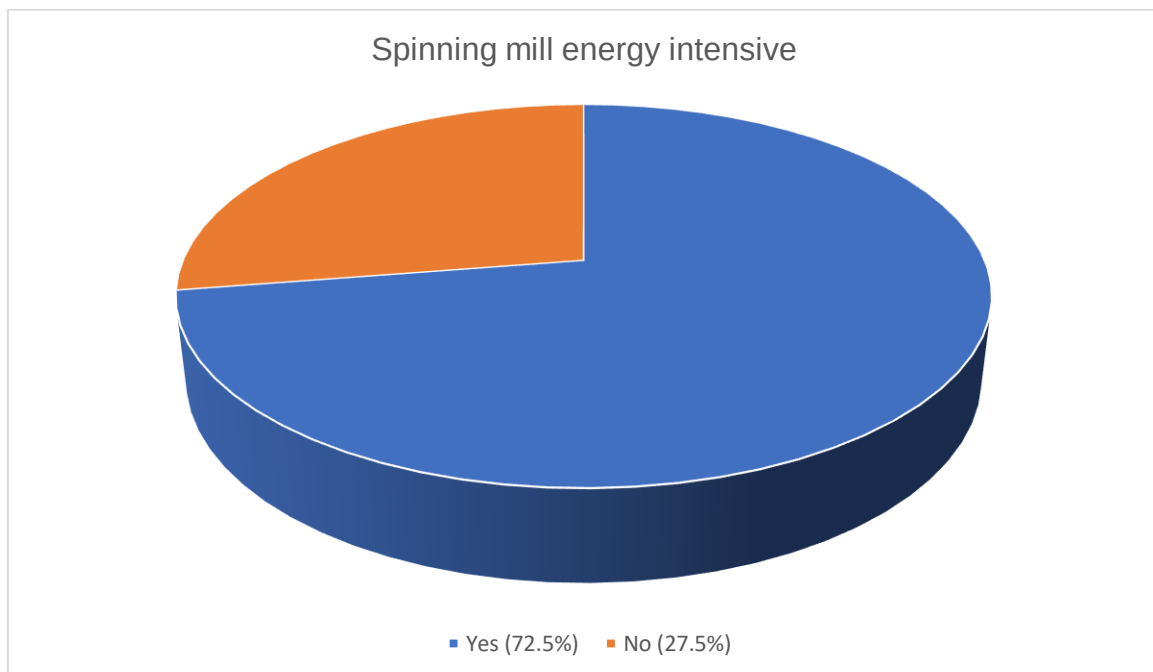


FIG 4.1.15 Is the spinning mill energy intensive

Interpretation

From the above table it is interpreted that 72.5% of the respondents answered for yes and 27.5% of the respondents answered for no.

Inference

Majority (72.5%) of the respondents feel that the energy of the spinning mill is intensive.

Table 4.1.16 Spinning consumes how much percent of total energy production in the country

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	34%	38	43.8%
2	23%	14	22.5%
3	38.5%	28	33.8%
	TOTAL	80	100%

Source: Primary Data

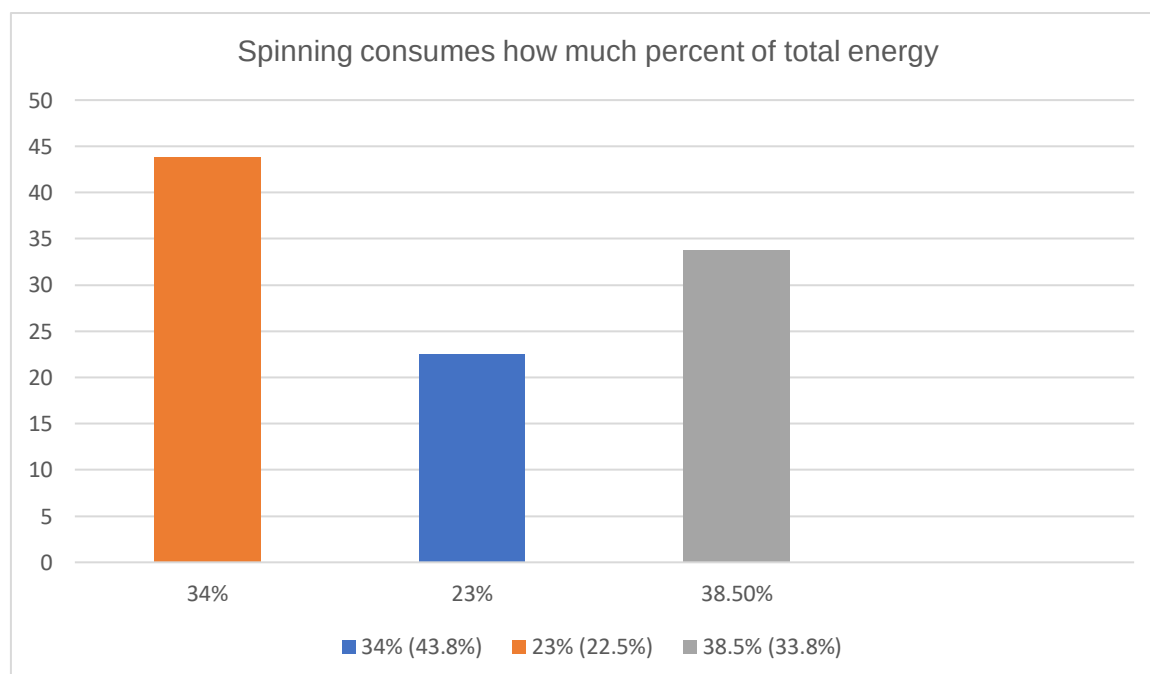


FIG 4.1.16 Spinning consumes how much percent of total energy production in the country

Interpretation

From the above table it is interpreted that 43.8% of the respondents answered for 34%, 22.5% of the respondents answered for 23% and 33.8% of the respondents answered for 38.5% of total energy.

Inference

Majority (43.8%) of the respondents feel that spinning consumes 34% of total energy production in the country.

Table 4.1.17 According to your knowledge is there any spinning mill using this solar panel system

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Yes	65	75%
2	No	15	25%
	TOTAL	80	100%

Source: Primary Data

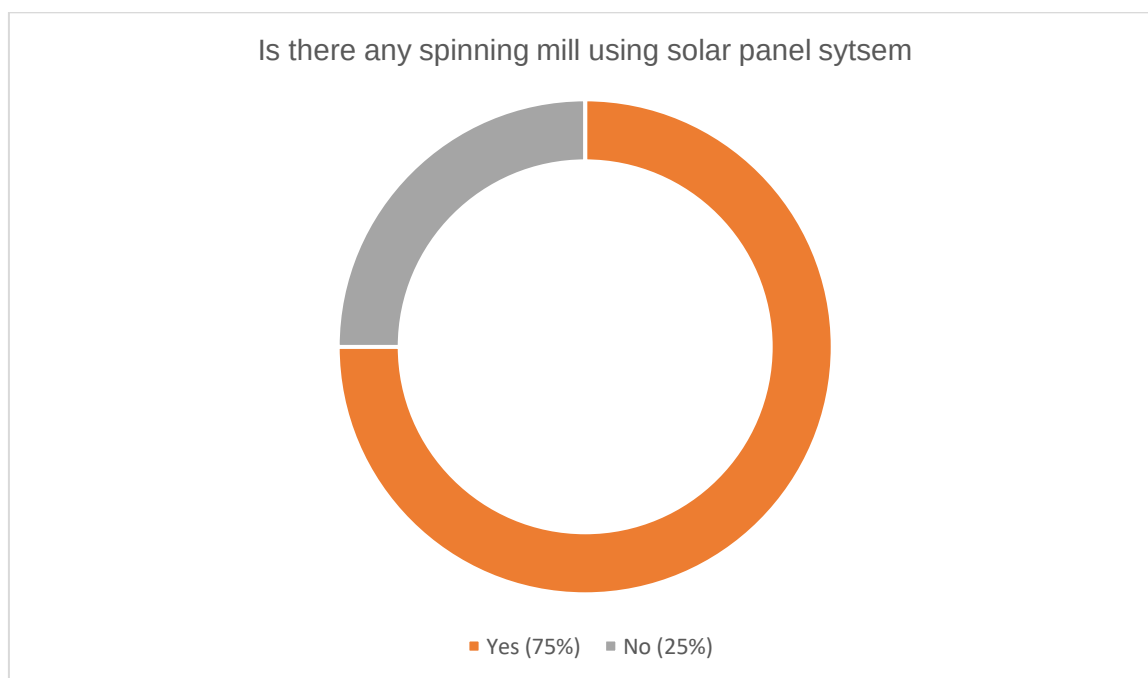


FIG 4.1.17According to your knowledge is there any spinning mill using this solar panel system

Interpretation

From the above table it is interpreted that 75% of the respondents answered for yes and 25% of the respondents answered for no.

Inference

Majority (75%) of the respondents specified that the solar panel system were used by other mills also.

Table 4.1.18 Which activity involves the least energy consumption in the spinning mill

S.NO	PARTICULAR	NO OF RESPONDENT	PERCENTAGE
1	Processing	37	46.3%
2	Spinning & Weaving	24	31.3%
3	Sizing & Size mixing	19	22.5%
	TOTAL	80	100%

Source: Primary Data

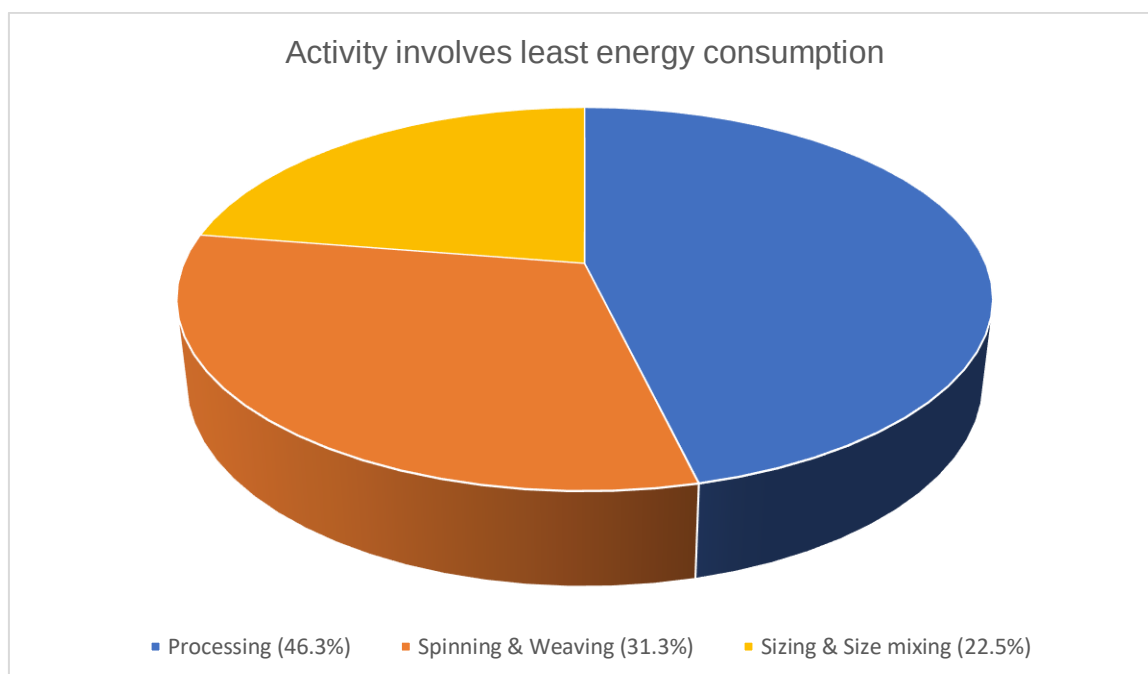


FIG 4.1.18 Which activity involves the least energy consumption in the spinning mill

Interpretation

From the above table it is interpreted that 46.3% of the respondents answered for processing, 31.3% of the respondents answered for spinning & weaving and 22.5% of the respondents answered for sizing & size mixing.

Inference

Majority (22.5%) of the respondents feel that sizing and size mixing involves in the least energy consumption in the spinning mill.

4.2 Statistical Analysis:

HYPOTHESIS:

A hypothesis is an assumption, an idea that is proposed for the sake of argument so that it can be tested to see if it might be true. In the scientific method, the hypothesis is constructed before any applicable research has been done, apart from a basic background review. In statistical hypothesis testing, two hypotheses are compared. These are called the null hypothesis and the alternative hypothesis. The null hypothesis is the hypothesis that states that there is no relation between the phenomena whose relation is under investigation, or at least not of the form given by the alternative hypothesis. The alternative hypothesis, as the name suggests, is the alternative to the null hypothesis: it states that there is some kind of relation. The alternative hypothesis may take several forms, depending on the nature of the hypothesized relation; in particular, it can be two-sided (for example: there is some effect, in a yet unknown direction) or one-sided (the direction of the hypothesized relation, positive or negative, is fixed in advance).

The hypothesis framed for the project on “A study on issues of power shortage in suriyagiri spinning mills”.

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Null hypothesis:

- A hypothesis, in general, is an assumption that is yet to be proved with sufficient pieces of evidence. A null hypothesis thus is the hypothesis a researcher is trying to disprove.
- A null hypothesis is a hypothesis capable of being objectively verified, tested, and even rejected.
- If a study is to compare method A with method B about their relationship, and if the study is preceded on the assumption that both methods are equally good, then this assumption is termed as the null hypothesis.

When to reject null hypothesis?

- When the p-value of the data is less than the significant level of the test, the null hypothesis is rejected, indicating the test results are significant.
- However, if the p-value is higher than the significant value, the null hypothesis is not rejected, and the results are considered not significant.
- The level of significance is an important concept while hypothesis testing as it determines the percentage risk of rejecting the null hypothesis when H_0 might happen to be true.
- In other words, if we take the level of significance at 5%, it means that the researcher is willing to take as much as a 5 percent risk of rejecting the null hypothesis when it (H_0) happens to be true.

Importance

The null hypothesis allows the acceptance of correct existing theories and the consistency of multiple experiments.

Alternative hypothesis

- An alternative hypothesis is usually used to state that a new theory is preferable to the old one (null hypothesis).
- This hypothesis can be simply termed as an alternative to the null hypothesis.
- The alternative hypothesis is the hypothesis that is to be proved that indicates that the results of a study are significant and that the sample observation is not results just from chance but from some non-random cause.
- If a study is to compare method A with method B about their relationship and we assume that the method A is superior or the method B is inferior, then such a statement is termed as an alternative hypothesis.
- Alternative hypotheses should be clearly stated, considering the nature of the research problem.

Importance

Alternative hypothesis are important as it establishes a relationship between two variables, resulting in new improved theories.

4.3 Chi-square test

- A chi-square test (also chi-square or χ^2 test) is a statical hypothesis test that is valid to perform when the test statistic is chi-squared distributed under null hypothesis, specifically Pearson's chi-squared test and variants thereof.
- A chi-square statistic is one way to show a relationship between two categorical variables. In statistics, there are two types of variables: numerical (countable) variables and non-numerical (categorical) variables.

Case Processing Summary

		Valid	Cases Missing	Total
BY SETTING UP THE SOLAR PANELS DO YOU THINK IT WILL RAISE THE PRODUCTION QUANTITY FOR THE COMPANY * WHAT ARE THE ADVANTAGES WILL GET BY SETTING UP THE SOLAR PANELS Crosstabulation				
Count				

		WHAT ARE THE ADVANTAGES WILL GET BY SETTING UP THE SOLAR PANELS					Total
		BOTH A & B	HELPS IN ADMINISTRATI ON MANAGING	INCREASE PRODUCTION	NONE		
BY SETTING UP THE SOLAR PANELS DO YOU THINK IT WILL RAISE THE PRODUCTION QUANTITY FOR THE COMPANY		100	0	0	0	0	100
	Maybe	0	16	9	5	3	33
	No	0	2	5	4	2	13
	Yes	0	13	10	10	1	34
Total		100	31	24	19	6	180

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	195.579 ^a	12	<.001
Likelihood Ratio	254.817	12	<.001
N of Valid Cases	180		

a. 11 cells (55.0%) have expected count less than 5. The minimum expected count is .43.

Directional Measures

			Value	Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Nominal by Nominal	Lambda	Symmetric	.456	.039	8.407	<.001
		BY SETTING UP THE SOLAR PANELS DO YOU THINK IT WILL RAISE THE PRODUCTION QUANTITY FOR THE COMPANY Dependent	.488	.056	7.056	<.001
		WHAT ARE THE ADVANTAGES WILL GET BY SETTING UP THE SOLAR PANELS Dependent	.425	.055	6.474	<.001
	Goodman and Kruskal tau	BY SETTING UP THE SOLAR PANELS DO YOU THINK IT WILL RAISE THE PRODUCTION QUANTITY FOR THE COMPANY Dependent	.569	.016		<.001 ^c
		WHAT ARE THE ADVANTAGES WILL GET BY SETTING UP THE SOLAR PANELS Dependent	.524	.015		<.001 ^c
	Uncertainty Coefficient	Symmetric	.592	.021	40.850	<.001 ^d
		BY SETTING UP THE SOLAR PANELS DO YOU THINK IT WILL RAISE THE PRODUCTION QUANTITY FOR THE COMPANY Dependent	.620	.022	40.850	<.001 ^d
		WHAT ARE THE ADVANTAGES WILL GET BY SETTING UP THE SOLAR PANELS Dependent	.567	.022	40.850	<.001 ^d

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on chi-square approximation

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	1.042	<.001
	Cramer's V	.602	<.001
	Contingency Coefficient	.722	<.001
N of Valid Cases		180	

RESULT:

- The hypothesis frames the project issues of power shortages in Suriyagiri Spinning Mills
- The value I have got in chi-square test is 0.722 which means it's an null hypothesis.
- The chi square statistic is 0.722. the p-value is > 0.00001.the result is significant at $p > 0.5$.

CHAPTER – 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS

- Majority (68.8%) of the respondents are in the age between 30 to 35 years old.
- Majority (52.5%) of the respondents are Male.
- Majority (53.8%) of the respondents are Married.
- Majority (38.8%) of the respondents will adapt to the alternative resource.
- Majority (41.3%) of the respondents feels that in production process electricity plays the major role.
- Majority (45%) of the respondents feel that setting up a solar panel system will help in controlling power shortage.
- Majority (75%) of the respondents feels that the solar panel system will gain profit for the company.
- Majority (38.8%) of the respondents feel that solar panel system is renewable resource to fix the power shortage.
- Majority (38.8%) of the respondents feel that setting up the solar panel will help in increase the production and administration managing.
- Majority (42.5%) of the respondents feel that setting up the solar panels will raise the production quantity.
- Majority (40%) of the respondents feel that solar panel system will be lifetime solution for power shortage.
- Majority (32.5%) of the respondents feel that preparatory process, ring frame, compressor are the power saving regions in spinning process.
- Majority (36.3%) of the respondents feel that theft of costly goods, decrease in production, delay in the production will be the major effect for the industry

if power prolongs for a long time.

- Majority (51.2%) of the respondents feel that the electricity may be produced from the waste water released by the industry.
- Majority (72.5%) of the respondents feel that the energy of the spinning mill is intensive.
- Majority (43.8%) of the respondents feel that spinning consumes 34% of total energy production in the country.
- Majority (75%) of the respondents specified that the solar panel system were used by other mills also.
- Majority (22.5%) of the respondents feels that sizing and size mixing involves in the least energy consumption in the spinning mill.

5.2 SUGGESTION AND RECOMMENDATION

Solar power is a renewable resource, so it won't run out. Also solar power does not pollute the air around it, so it will not emit large amount of greenhouse gases. Once you have purchased the equipment for the solar panels, there is no further cost. Company could save billions and trillions of dollars by using solar power. It requires little maintenance and the installation of solar panels creates lots of job. But solar cells can last for a lifetime. Hence, we can use solar panel system as an alternative source for power shortage in spinning mills.

5.3 CONCLUSION

The suriyagiri spinning mills private limited is a private incorporated on 15 September 2006. It is involved in spinning, weaving and finishing of textiles. The major problem faced by the spinning mill is power shortage so by setting up the solar panels to generate power and avoid the power shortage problem in future. The findings revealed that setting up of solar panels will help to generate electricity & make the mill to run without power shortage. So, to avoid any kind of risk, for that we have collected the suggestions of the employees by making questions

related to the problem by using the analytical tools like percentage analysis, bar graphs, pie charts and have compared the benefits with other companies which have been already implemented this solar panel system. by setting up the solar panel the company will run without any power shortage because the solar energy is a renewable resource and it won't be run out. It will increase the production and gains profit for the mill.

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APPENDIX (Questionnaire)

1. Name of the respondent _____
2. Age
 - a) 25 – 30
 - b) 30 – 35
 - c) 35 & Above
3. Gender
 - a) Male
 - b) Female
4. Marital Status
 - a) Single
 - b) Married
5. How do you run the mill when there is power shortage?
 - a) Adapt to alternative resource
 - b) Wait for power supply
 - c) Others
6. What role does the electricity plays in the spinning mill
 - a) Production process
 - b) Packing
 - c) Main source for the mill
7. Do you think that setting up a solar panel system will help in controlling power shortage?
 - a) Definitely
 - b) May be
 - c) May not be

8. Is solar panel system gains profit for the company
- a) Yes
 - b) No
 - c) Maybe
9. Why we need a solar panel system to fix the power shortage
- a) Renewable resource
 - b) More efficient
 - c) Both a & b
10. What are the advantages will get by setting up the solar panels?
- a) Increase production
 - b) Helps in administration managing
 - c) Both a & b
 - d) None
11. By setting up the solar panels do you think it will raise the production quantity for the company?
- a) Yes
 - b) No
 - c) Maybe
12. Does the solar panel system will be a lifetime solution for power shortage?
- a) Yes
 - b) No
 - c) Maybe
13. What are the power saving regions in spinning process?
- a) Preparatory process
 - b) Ring frame
 - c) Compressor
 - d) All the above

14. If power shortage prolongs for a long time, what will be the major effect for the industry?
- a) Theft of costly goods
 - b) Decrease production
 - c) Delay in the production of products
 - d) All the above
15. Can the required electricity be produced from the waste water released by the industry?
- a) May be
 - b) Not at all
 - c) Yes
16. Is the spinning mill energy intensive?
- a) Yes
 - b) No
17. Spinning consumes how much percent of total energy production in the country?
- a) 34%
 - b) 23%
 - c) 38.5%
18. According to your knowledge is there any spinning mill using this solar panel system?
- a) Yes
 - b) No
19. Which activity involves the least energy consumption in the spinning mill?
- a) Processing
 - b) Spinning & weaving
 - c) Sizing & size mixing

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