# CHAPTER - V

# ANALYSIS OF STRATEGIC MANAGEMENT PRACTICES

The data collected has been analyzed and presented in this Chapter keeping in view the objectives and hypotheses of the present study. This Chapter is divided into three sections. The first section presents a brief profile of selected biomass power plants in Andhra Pradesh. The plants are selected on the basis of three important criteria:

i) The plants are being operated throughout the year in a financially viable way.
ii) They are consistently exporting an appreciable quantity of electricity to the State grid.
iii) The plants are adopting strategic management practices in some form or the other.

First section deals with profile of the selected Biomass power plants in Andhra Pradesh focusing on their location, raw materials used for production of electricity, investment in the project, technology used, installed capacity, biomass material purchased and power generation and export details of the plant for a period of ten years. This section also examines the process and technologies generally used in Biomass power plants and an appropriate organization structure required to operate the plants effectively. The second section deals with use of strategic management practices in Biomass power plants and also the management motives for adopting strategic management together with the reasons for not adopting the strategic management by some Biomass power plants in Andhra Pradesh are analyzed. This Chapter also examines the core competencies of Biomass power plants and critical success factors of Biomass power industry. The third section examines the components of strategic management process adopted by Biomass power plants and also the degree of emphasis on each component and element of strategic management process. The results are discussed in detail and presented in relevant Tables in each section. It may be recalled that in Chapter-IV of the present study dealing with sample design, it is mentioned that for the purpose of the present study 25 Executives and Supervisors of each operating biomass power plant having at least three years experience

in the industry have been taken as the sample for the study using quota sampling technique.

Thus, the total size of the sample taken for this study works out to 150. For the purpose of ascertaining their views a separate interview schedule was used which was pre-tested. As already mentioned in the 'data analysis' section of research design and methodology (Chapter-IV), Garret Ranking Method was used to identify the most preferred option among a range of options given by the respondents. This method gives a combined mean score for each of the choices so that the one with highest mean value is taken as the most preferred option, and the next highest is taken as the second most preferred option, and the rest in that order. To describe the method briefly, first of all, for each rank of the option given by the respondent, a Garrett percentage is found out using the following formula:

**Garrett Ranking Percentage:** $100\ (R_{ij} - 0.5_{)/}\ N_j$

Rij = Rank given for the ith variable by jth respondents

Nj = Number of variable ranked by jth respondents

A corresponding score for each of the percentages is worked out with the help of the above formula taken from the Garrett Table, and with such scores, a mean score is calculated for each option; the one with the highest mean is taken as the most preferred option. This method thus identifies the most preferred option among a range of options indicated by the sample respondents. Statistical Package for Social Sciences (SPSS) has also been used to analyze and interpret the data collected through the tools such as t-test, correlation analysis, multi regression analysis, mean and standard deviation. With the help of the tools mentioned, an analysis has been done which results in certain observations, findings and conclusions regarding strategic management practices of Biomass power plants in Andhra Pradesh.

## 5.1 PROFILE OF SELECT BIOMASS POWER PLANTS

The biomass power plants which have been selected for profiling are i) Greenko Energies Private Limited, ii) Rithwik Power Projects Limited, iii) Roshni Power, iv) Satyamaharshi Power Corporation Limited, v) Shalivahana Green Energy Limited and vi) Varam Power Projects Private Limited. Brief profiles of these Biomass power plants are given below.

### 5.1.1 Greenko Energies Private Limited

Greenko is a market leader, owner and operator of green energy projects in the state of Andhra Pradesh, India. The Group is at present building risk-minimized portfolios of wind power, hydro-power, natural gas power and biomass power. It intends to increase the installed capacity by building new green-field assets. Greenko is spread across different geographies with multiple projects to make good use of different technologies that are aligned with the environment. The company has set its sights on reaching one GW power by the year ending 2015. The central belief of the company is the sustainability in terms of both operational and environmental issues. Greenko relentlessly makes efforts to be a socially responsible business and plays a prominent role in the society beyond just generating power of various categories. Greenko continuously involves itself in localized projects and community programmes which focus on education, health and wellbeing, environmental stewardship and helping the rural infrastructure go to the next level. Greenko is a well-regarded contributor in the growing Indian power industry and a market leader as well as the operator of clean power energy in India. The plant is situated at Chennur Village within a radius of 10 kilometers from Kadapa District of Andhra Pradesh. The plant is spread over 14 acres of land surrounded by green fields and especially in the location where the biomass availability is abundant, particularly wood waste, rice husk and ground nut shells. The capacity of the plant is 6 MW. The plant was established in the year 2004 with an investment of Rs. 30 Crores, mainly procured from banks apart from contributing from their own sources. The sources of working capital are banks and other financial institutions. The fluidized bed technology has been employed to produce the biomass power from this plant. To point to

its magnitude of operations, the table 5.1 shows the power generation and export details during 2004-14.

**Table 5.1 - Power Generation and Export details of Greenko Energies Private Limited during 2004 - 2014.**

| Sl. No. | Financial Year | Generated Units | Exported Units |
|---|---|---|---|
| 1 | 2004-05 | 41365841 | 35033398 |
| 2 | 2005-06 | 30648323 | 26172509 |
| 3 | 2006-07 | 31687234 | 27548592 |
| 4 | 2007-08 | 34896423 | 30039763 |
| 5 | 2008-09 | 34347300 | 30729700 |
| 6 | 2009-10 | 41737200 | 35325600 |
| 7 | 2010-11 | 42218000 | 36850150 |
| 8 | 2011-12 | 40594700 | 34597900 |
| 9 | 2012-13 | 41747500 | 35716900 |
| 10 | 2013-14 | 43947183 | 36175394 |
| | **TOTAL** | **383189704** | **328189906** |

The size of the workforce of this plant is about 175 persons. There are about 70 employees working in the plant on full time basis while about 105 working on part time basis; that apart, indirect employment opportunities such as those of transporters, raw material suppliers etc., are provided by this plant. The turnover of the company is Rs. 20.79 crores per annum. The plant has generated 383189704 kWh units of power and exported 328189906 kWh units of power during 2004-14. The Table 5.1 shows power generation and export details during 2004-14.

The location of the plant is the biggest strength in terms of availability of the Raw material and workforce. As the plant is located in the rural area, the availability of skilled workforce is the biggest challenge. There is a great opportunity to this plant to expand the power generation capacity as the technology used to generate Biomass power is very simple. The plant is facing major challenge in respect of procurement of Biomass as the

same is used by other competitors, viz., brick manufacturers, hotels and other Biomass power generation units.

### 5.1.2 Rithwik Power Projects Limited

Rithwik Power Projects Limited is located in Tekulapalli village of Khammam in Andhra Pradesh. In and around this plant, the total surplus of biomass available is 3,38,400 MTs and the total power potential is expected to be 41.40 MW whereas, right now, the aggregate installed capacity of power in Khammam is only 29 MW ( Gowthami Power: 6MW, Kakatiya Sugars & Cements : 17 MW and Rithwik Power Projects Ltd: 6 MW). The total biomass used by power plants is 2,37,043 MTs. The management has invested in the shares of the plant worth Rs.8.93 Crores in 2002 - 03 and obtained a term loan of Rs.16.90 Crores from IREDA. It has signed a 20- year power purchase agreement with APTRANSCO on 12$^{th}$ March 2002. It has got an installed capacity of 7.5 MW but obtained license only for 6MW Capacity from APTRANSCO and commissioned the power plant on 22$^{nd}$ November 2002. In 2002 - 03 the power plant had fixed assets worth Rs 24.38 Crores and current assets of Rs.4.55 Crores. Rithwik Power plant has repaid the loan of IREDA on 4.07.2004 and obtained term loan of Rs.11.45 Crores from Union Bank of India on 4.07.2004 at an interest rate of 14 per cent per annum. The management has started facing the financial problems in 2004 as the APERC reduced Power Tariff from Rs.3.48 / Unit to Rs.2.80 /unit which was later increased to Rs.3.16 per unit in 2004. This was against the Power Purchase agreement entered into by the APTRANSCO.

Anyhow, the management represented the matter to the biomass power developers association and filed a case with Supreme Court on the Tariff dispute. Since, the management found it difficult to operate the power plant with the increased financial problems coupled with the Turbine high Specific steam consumption (4.90), the plant was sold to M/s Velcan Energy Limited on 30.10.2006.

The Velcan management also tried to sort out certain problems like fuel supply chain management, improvement of equipment efficiency and rectifying the high specific

steam consumption. But still the chronic high specific steam consumption problem persisted up to 2010 which resulted in heavy losses. Then the management realized their folly and sold the power plant to M/s Kohinoor Hatcheries in 2010.

The new management strengthened the fuel supply chain, improved the efficiencies of equipment and manpower. Subsequently the turbine leakages were arrested successfully and eventually the specific steam consumption has come down to 4.50 which has reduced the specific fuel consumption and the fuel cost. Thus the plant operations were made efficient. The plant has generated 379812660 kWh units of power and exported 326962750 kWh units of power during 2004-14. The Table 5.2 shows power generation and export details during 2004-14.

**Table - 5.2 Power Generation and Export details of Rithwik Power Projects Limited during 2004 - 2014.**

| Sl. No. | Financial Year | Generated Units | Exported Units |
|---|---|---|---|
| 1 | 2004-05 | 45705943 | 39373500 |
| 2 | 2005-06 | 30751614 | 26275800 |
| 3 | 2006-07 | 30759842 | 26621200 |
| 4 | 2007-08 | 37551760 | 32695100 |
| 5 | 2008-09 | 26393075 | 22833985 |
| 6 | 2009-10 | 42203103 | 36349669 |
| 7 | 2010-11 | 41068092 | 35218400 |
| 8 | 2011-12 | 42716032 | 36653600 |
| 9 | 2012-13 | 36604799 | 31035700 |
| 10 | 2013-14 | 46058400 | 39905796 |
| | **TOTAL** | **379812660** | **326962750** |

The location of the plant is the biggest strength in terms of availability of the Raw material, proximity to the grid / substation, water availability and workforce. The major strength of this plant is its layout and also better connectivity as it is located on the state highway. The transmission losses are reduced to a greater extent as the grid / substation is

closely located at the plant. As the plant is located in the rural area, the availability of skilled workforce is the biggest challenge. There is a great opportunity to this plant to expand the power generation capacity as the technology used to generate Biomass power is very simple. The competition is more for the procurement of Biomass from other Biomass power generation plants, brick manufacturers and hotels to a greater extent.

### 5.1.3 Roshni Power

Roshni Power is also a unit of Greenko Projects Limited. The plant is situated at Ayyanki village of Pamarru mandal in Krishna district of Andhra Pradesh. The plant is spread over 16 acres of land surrounded by green fields and the location where the biomass availability is abundant, particularly wood waste, rice husk and ground nut shells.

This plant produces 6MW. The plant was established in the year 2003 with an investment of Rs. 28 Crores. The fluidized bed technology has been employed to produce the biomass power from this plant.

To attest its magnitude of operations, the following table shows the biomass material purchased during the last five years. The size of the workforce of this plant is about 175 persons. There are about 70 employees working in the plant on full time basis while about 105 are working on part time basis; that apart, indirect employment opportunities such as transporters, raw material suppliers etc., are provided by this plant. The turnover of the company is Rs. 20.45 Crores per annum.

The plant has generated 375659423 kWh units of power and exported 321078545 kWh units of power during 2004-14. The Table 5.3 shows power generation and export details during 2004-14.

**Table 5.3 - Power Generation and Export details of Roshni Power tech Pvt. Ltd during 2004 - 2014.**

| Sl. No. | Financial Year | Generated Units | Exported Units |
|---|---|---|---|
| 1 | 2004 – 05 | 36425641 | 31093198 |
| 2 | 2005 – 06 | 30245689 | 26769875 |
| 3 | 2006 – 07 | 30127854 | 26989212 |
| 4 | 2007 – 08 | 35879546 | 31022886 |
| 5 | 2008 – 09 | 39573000 | 31788864 |
| 6 | 2009 – 10 | 42545700 | 36139547 |
| 7 | 2010 – 11 | 36241800 | 31043765 |
| 8 | 2011 – 12 | 37623250 | 32203760 |
| 9 | 2012 – 13 | 42245000 | 36553970 |
| 10 | 2013 – 14 | 44751943 | 37473468 |
| | **TOTAL** | **375659423** | **321078545** |

The availability of raw material is the major strength of this plant as it is located in the midst huge green fields providing varieties of Biomass. Since the plant is located in Ayyanki village the availability of skilled workforce is the major challenge. But there is a great opportunity to this plant to expand the power generation capacity as the technology used to generate Biomass power is very simple. Competition for Biomass procurement is very high as more number of Biomass power generation plants is located in the vicinity of the plant.

### 5.1.4 Sathyamaharshi Power Corporation Limited

In Guntur district total biomass available from field crops, agro- industrial waste and barren lands to the tune of 56,55,562 MTs every year. There are five biomass power plants (JOCIL: 6MW,KMS: 6MW, MATRIX: 4.5MW,SMPCL:6MW, Velagapudi: 4.0MW) situated in Guntur district with a total capacity of 26.50MW. Biomass Power plants, other agro industries, brick industries and by farmers consume 42,69,799 MTs biomass and there will be a surplus quantity of 13,85,763 MTs of biomass available in Guntur district.

Satyamaharshi Power Corporation Limited is a biomass power plant located in Muthayapalem (V), Amaravathi (M), Guntur (District).The promoters gave a share capital of Rs.9.24 Crores in 2004-05 and obtained a term loan of Rs.15.75 Crores from various local nationalized banks. It entered into a 20- year power purchase agreement with APTRANSCO on 5$^{th}$ October 2004. It has got an installed capacity of 7.5 MW but got license for 6MW Capacity from APTRANSCO and commissioned the power plant on 22$^{nd}$ July 2004. In 2004-05 the power plant had fixed assets of Rs 25.39 Crores and current assets of Rs.3.85 Crores.

The management faced financial problems in 2005 & 2006 as the APERC reduced Power Tariff from Rs.3.48 / Unit to Rs.2.80 /unit which was later increased to Rs.3.16 per unit in 2004. This was against the Power Purchase agreement entered by the APTRANSCO. The management represented the matter to the biomass power developers association and filed a case with Supreme Court on the Tariff dispute. Since, the management found it difficult to operate the power plant with the increased financial problems coupled with the shortages of fuel the plant was sold to M/s Velcan Energy Limited on 07.04.2006.
The Velcan management also tried to sort out certain problems like fuel supply chain management and improvement of equipment efficiency But still the chronic. The turbine broke in 2009 and plant was stopped for 12 months as the insurance did not respond in time for the settlement of the insurance claim which resulted into heavy losses. Then the management realized the issue and sold the power plant to M/s Kohinoor Hatcheries and Roshni green energy group in 2011.

The new management tried to strengthen the Fuel supply chain, the efficiencies of equipment and manpower. In spite the excellent efforts put in by the new management, the new problems crept up in boiler furnace, Boiler Feed water pumps, steep fuel prices and local villager's problems during 2012-13 & 2013-14. The management spent heavy investment of Rs.2 Crores on various equipment repairs and slowly all these problems are overcome by the management. Now the power plant is being operated at its 70 per cent PLF in each month.

In 2012-13, Biomass Energy developers association won the Old Tariff dispute case at Supreme Court and thus the old Tariff arrears were paid by APTRANSCO. The APERC as per the directions of Supreme Court reviewed the existing Biomass Power Tariff by updating the normative parameters. Now, as per APERC order at present APTRANSCO is paying Variable Cost of Rs.4.28 and Fixed cost of Rs.1.23 per unit to biomass power exported.

The plant has generated 333266474 kWh units of power and exported 285467742 kWh units of power during 2004-14. The Table 5.4 shows power generation and export details during 2004-14.

**Table 5.4 - Power Generation and Export details of Satyamaharshi Power Corporation Limited during 2004 - 2014.**

| Sl. No. | Financial Year | Generated Units | Exported Units |
|---|---|---|---|
| 1 | 2004-05 | 27322961 | 23671400 |
| 2 | 2005-06 | 28144722 | 24711800 |
| 3 | 2006-07 | 26692590 | 23454400 |
| 4 | 2007-08 | 41350700 | 35203400 |
| 5 | 2008-09 | 12724400 | 11108500 |
| 6 | 2009-10 | 30602400 | 26060100 |
| 7 | 2010-11 | 40437400 | 34328200 |
| 8 | 2011-12 | 41971200 | 35230640 |
| 9 | 2012-13 | 41671800 | 35064101 |
| 10 | 2013-14 | 42348301 | 36635201 |
| | **TOTAL** | **333266474** | **285467742** |

The plant location has been the major strength of the plant as it is situated in Amaravathi which is within the out skirts of Guntur. The abundance of water along with the raw material is the additional strength of this plant. As the plant is located between Guntur and Amaravathi, the major workforce may have more opportunities to work and hence it

is difficult to retain the skilled work force in the plant. There is a great opportunity to this plant to expand the power generation capacity as the technology used to generate Biomass power is very simple. The plant is facing major challenge in respect of procurement of Biomass as the same is used by other competitors, viz., brick manufacturers, more hotels and other Biomass power generation units.

### 5.1. 5 Shalivahana Green Energy Limited (SGEL)

SGEL is leading the pack of companies committed to advancing the use of clean, renewable biomass power. This company is contributing its mite to the community in combating the climate change and reducing reliance on fossil fuels by continuously increasing the use of biomass and other renewable energy. Biomass power plant produces carbon neutral electricity from natural organic waste, providing sustainable energy.

SGEL is generating electricity from agri - residues and waste from agriculture crops, forestry and related industries such as rice, mustard and soya bean husks, straw, cotton maize stalks, coconut and ground nut shells, wood chips, bagasse, and poultry litter. SGEL, at present, operates six biomass plants with a total installed capacity of 65.5 MW in Andhra Pradesh, Karnataka, Orissa and Maharashtra. They also have biomass power projects at various developmental stages in the states of Madhya Pradesh and Orissa. SGEL is creating thousands of green jobs in communities across the country. Biomass power is viable solution for energy independence.

The biomass power plant at Rangampet near Mancherial is the first biomass based power project executed by the M/s. Shalivahana Green Energy Limited, the flagship Company of the group to generate 6 MW. Total project cost to establish is around Rs.2585.40 lakhs, commissioned in the year 2002. The plant is spread over an area of 10.24 acres. Primary fuels used are rice husk, paddy straw, saw dust and cotton stalk supplemented by permitted quantity of coal. SGEL develops, implements, and operates renewable energy generation assets. SGEL is among the pioneers that operate businesses countrywide. The success is attributable to the people and their unrelenting efforts to deliver results in the

right way by operating responsibly, executing with excellence, applying innovative technologies and capturing new opportunities for profitable growth. Human resources play a significant role in almost every aspect of the energy industry. They are also investing in the development of energy technologies that emerge, such as those with nonfood-based bio fuels, and advanced solar technology.

SGEL supports renewable energy, because they are not as expensive as that from coal, at least now. Their effort is towards reducing CO2 emissions, driving down the costs, and hastening the transition to a clean energy future. Renewable energy projects are generally located outside highly populated urban areas, helping smaller, local economies while reducing our reliance on fossil and foreign energy resources. Their renewable energy carbon offset projects meet the toughest standards of industry and are third-party verified to achieve the highest quality.

SGEL is India's largest agro - waste based power producer with 88 MW operational capacity. The first biomass power plant with a capacity of 6.0 MW became operational in December 2002; another 12MW is on the way to be operational; one more with 7.5 MW is in early stages of construction. SGEL is aiming to have an operational capacity of 351 MW by the year 2016 through a mix of biomass, MSW, wind and hydro power plants.
The fluidized bed technology has been employed to produce the biomass power for this plant. The plant has generated 392251655 kWh units of power and exported 338076478 kWh units of power during 2004-14. Table 5.5 shows power generation and export details during 2004-14.

**Table 5.5 - Power Generation and Export details of Shalivahana Green Energy Ltd. during 2004 - 2014.**

| Sl. No. | Financial Year | Generated Units | Exported Units |
|---|---|---|---|
| 1 | 2004 – 05 | 40614857 | 34282414 |
| 2 | 2005 – 06 | 30925186 | 26449372 |
| 3 | 2006 – 07 | 33517359 | 29378717 |
| 4 | 2007 – 08 | 34748590 | 30891930 |
| 5 | 2008 – 09 | 34890798 | 30331700 |
| 6 | 2009 – 10 | 41359740 | 35506306 |
| 7 | 2010 – 11 | 46147966 | 39298274 |
| 8 | 2011 – 12 | 44713870 | 38651438 |
| 9 | 2012 – 13 | 41375910 | 35806811 |
| 10 | 2013 - 14 | 43957379 | 37479516 |
| | **TOTAL** | **392251655** | **338076478** |

Historically, the country has launched well-conceived programs for renewable energy like research and development. However, the fast progress across the world in terms of technology adoption and implementation, the optimisms as well as demand created by economic growth in India and the increasing concerns regarding climate change have led to a state where renewable energy is experiencing enthusiasm all across, whether in industry, or research institutions, or a common villager, or a developer, or an investor, or bankers. Each one has some aspirations and expectations from this sector. It in a way is laying foundation for a new economy that is inclusive and sustainable, and aspires for de-carbonization of energy in a definite time frame.

However, there is a long way to go. In order to create an enabling environment, new policy frameworks, technological innovations and human skills development programmes are under way.

As a part of SGEL, contribution made to be a part of these new programme we aim at the different renewable energy sources like Biomass, Wind, Hydro to be able to produce

electricity and to reach 351 MW by the year 2016 and to lighten rural parts of India bright.

In line with the vision made, SGEL has taken an oath to save our planet earth from ravages of climate change & ultimately to make clean, renewable energy. The investors of the company are currently, AMP Capital, IL&FS, Indian Renewable Energy Limited (IREL) and International Finance Corporation (IFC) and they are all the private equity investors in Shalivahana Green Energy Limited.

The availability of the Raw material and workforce is strength of Shalivahana Green Energy Ltd. As the plant is located in the rural area, the availability of skilled workforce is the biggest challenge. There is a great opportunity to this plant to expand the power generation capacity as the technology used to generate Biomass power is very simple. The major challenge for procurement of raw material is the competition from brick manufacturers, hotels and other Biomass power generation units.

### 3.1.6 Varam Power Projects Private Limited

Varam Power Projects Private Limited is located in the rural area of Chilakapalem Village, Etcherla Mandal of Srikakulam District in Andhra Pradesh. The plant is utilizing the rice husk as a main fuel of biomass, which is available in substantial quantities in the area of Chilakapalem. The shells of ground nuts, casuarinas branches, red gram stalks, jute sticks, and saw dust are the seasonal biomass raw materials available in and around the location of the plant.

The plant has 6 MW capacity steam turbine generator in Chilakapalem village, Etcherla mandal, Srikakulam district. It generates electricity by using biomass residues such as paddy husk, jute sticks, casurina branches, groundnut shells, woody biomass etc. and to export the generated electricity to the state owned power utility company named Transmission Corporation of Andhra Pradesh (APTRANSCO). The use of biomass feedstock lowers the green house gas emissions.

The technology of power generation process (Rankine cycle) using biomass fuels converts the kinetic energy available in the steam into mechanical energy using steam turbines and then to electrical energy using alternators. The generated power will be transferred to match the nearest grid substation for proper interconnection and smooth evacuation of power. The 11kV generated power from the unit is stepped up to 33/132 kV and is evacuated to 132kV Chilakapalem substation which is near the power plant. In this process no green house gas emissions or burning of any fossil fuels take place.

The 6 MW power project was commissioned and aligned with grid on 12th December 2001 and is in operation till date. The present monitoring report relates to the period starting from 25$^{th}$ March 2010 to 24$^{th}$ December 2010 (Both days included). The details of its power generation are in the Table given below. The net electricity export to the state grid by the project activity is 26.236 GWh and net emission reductions are of 19508 tCO2e for the present monitoring period.

The plant has generated 356897826 kWh units of power and exported 298855021 kWh units of power during 2004-14. Table 5.6 shows power generation and export details during 2004-14.

**Table 5.6 - Power Generation and Export details of Varam Power Projects Pvt. Ltd.**

| Sl. No. | Financial Year | Generated Units | Exported Units |
|---|---|---|---|
| 1 | 2004 - 05 | 21683947 | 15351504 |
| 2 | 2005 - 06 | 30573485 | 26097671 |
| 3 | 2006 - 07 | 41207250 | 35380070 |
| 4 | 2007 - 08 | 21953770 | 15515825 |
| 5 | 2008 - 09 | 30487965 | 26928875 |
| 6 | 2009 - 10 | 40334586 | 34481152 |
| 7 | 2010 - 11 | 41927489 | 35077797 |
| 8 | 2011 - 12 | 44819724 | 38757292 |
| 9 | 2012 - 13 | 40972451 | 34403352 |
| 10 | 2013 - 14 | 42937159 | 36861483 |
| | **TOTAL** | **356897826** | **298855021** |

The technology employed for the project activity is Rankine cycle based thermal power generation using direct combustion of biomass residues. The plant & machinery comprises mainly high pressure and high temperature boiler and a matching steam turbine generator. Steam parameters are 64ata/485 °C. The capacity of turbo generator is 6MW, which generates electricity at 11kV level.

Biomass residues like rice husk, jute sticks, casurina branches, groundnut shell etc are fed into the furnace through bunker. This material is fired on the furnace stoker and heat is generated. Raw water treated in DM Plant is pumped to the boiler through deaerator (Rising of water temperature from 30 °C to 105 °C and de-aeration takes place in de-aerator) and this feed water is converted into high pressure steam with the help of heat generated in the furnace. This high pressure steam is fed into the turbine and the kinetic energy in the steam is converted into the electrical energy with the help of generator, combined with steam turbine.

The plant equipment includes power evacuation facilities, ash handling system, cooling tower, compressed air plant, water treatment plant etc. Water treatment plant treats raw water. To cool the cooling water circulated in condenser to convert exhaust steam at the outlet of steam turbine into condensate water which is used as feed water to the boiler, cooling tower is used. The generated electricity is supplied to the APTRANSCO grid system through a 33/132 kV substation located close to the project site.

The storage and archiving of information in good condition is the job of the Plant Manager. He also brings out internal audit reports as per the monitoring plan and whenever necessary, and will be given to Managing Director. The Shift- in -Charges take care of recording the electricity meter readings in the electricity board meter and check meter on daily basis. They also take note of total power generation, power export to grid, auxiliary power consumption, power import from grid, plant shut down times, biomass consumption, other fuels consumption, if any etc.

The monthly reports are made and given to General Manager for verification of emission reduction calculations. Parameters are monitored according to monitoring plan. The following parameters were monitored on continuous basis

1. Energy (kWh): Electronic energy meters were installed at 132kV Substation at chilakapalem for the energy exported to the State grid and the energy imported from the State grid. Monthly energy meter readings have recorded and jointly certified by the representatives of APTRANSCO & VPPL. Daily readings for gross generation were aggregated to monthly readings. Daily readings for electricity export/import were aggregated to monthly readings. Aggregated daily Auxiliary energy consumption computed as difference of the gross energy generation values recorded in the plant and energy exported to the grid values certified by APTRANSCO & VPPL.

2. Fuel (MT): In this plant, the rice husk is used as a main fuel. Seasonal agro- residues like jute stalks, saw dust, ground nut shells, and casurina branches etc., are also used. The fuel is weighed at the Electronic weighbridge installed at the plant main gate, unloaded in the fuel yard and stacked properly.

The fuel quantities, vehicle number etc., are recorded by weighbridge staff; the same is certified by the fuel yard staff and security staff. The same procedure is adopted for fossil fuel, coal also. The coal on receipt in the plant premises is weighed at the electronic weighbridge set up at the plant main gate, unloaded in the fuel yard and stacked properly. Coal is being bought from Singareni collieries. The energy content (NCV) of fuel samples is checked periodically by reputed laboratories and as provided by the fuel (Coal) suppliers. In emission reduction calculations, base line emission factor (749.22tCO2/GWh) of Southern regional grid is reckoned. This is taken from www.cea.nic. Coal emission factor is taken as per IPCC 2006 default value (94.6 tCO2/TJ). Training Procedure for VPPL Personnel: Plant Manager will prepare annual training program calendar in consultation with managing director. Managing director will identify the faculties and arrange for the training as per training schedule. The training details of all the employees are kept in the training record registry.

Calibration: Main meter and check meter installed at 33/132 kV sub-station are being recalibrated and certified as per PPA or at least once in a year against an accepted laboratory standard meter in accordance with electricity standards. The calibration of the meters is carried out by APTRANSCO. APTRANSCO being a government owned company is deemed to be a competent authority. The meters are deemed to be working satisfactorily if the errors are within the meter specifications of 0.2 accuracy class. Methods of data transfer and archiving policy: The data will be kept both at the project location as well as at the grid substation, which is under the control of APTRANSCO. The energy will be measured using calibrated meters and recorded at APTRANSCO substation. Records of measurements will be used for verification of emission reductions. Sales bills/receipts may be compared as an alternative proof of the power exported to the grid. The storage and archiving of information in good condition also is the job of the designated person in charge. The person in charge does periodic verifications and onsite inspections to ensure the quality of the data collected by the team and take measures in case of any abnormal conditions.

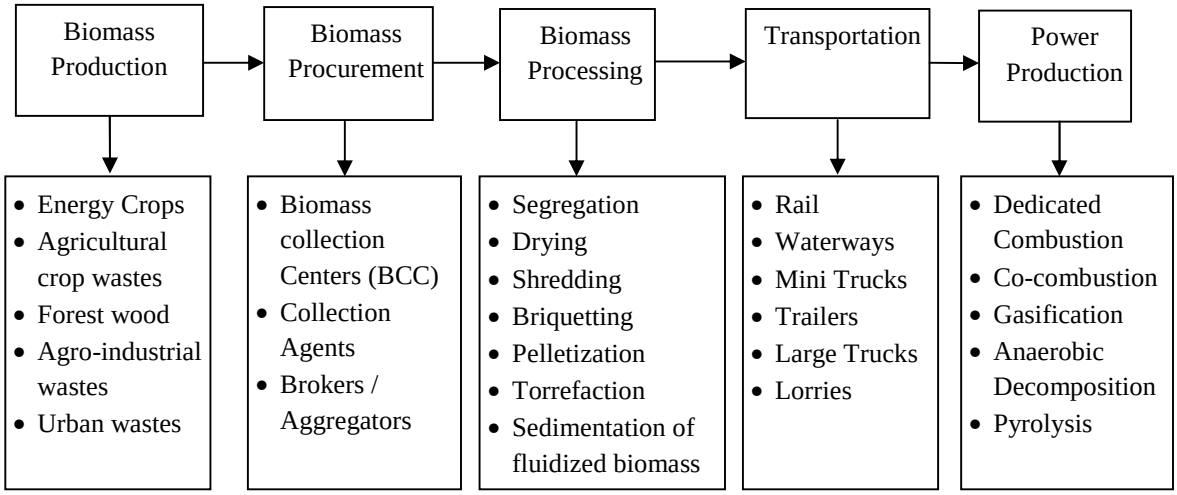
The major strength of this plant is its connectivity with the material suppliers as it is located on the national highway. More over the grid also is very much nearby the plant facilitating the evacuation of the generated power and also minimizing transmission losses. The availability of skilled workforce is the biggest challenge as the plant is located in the rural area. There is a great opportunity to this plant to expand the power generation capacity as the technology used to generate biomass power is very simple. The plant is facing major challenge in respect of procurement of biomass as the same is used by other competitors, viz., brick manufacturers, hotels and other Biomass power generation units.

## 5.2 PRODUCTION PROCESS AND TECHNOLOGY

Biomass to power value chain starts from collection of agricultural residue from various sources (so can even be exclusively produced from dedicated energy crops as well). The

biomass requires a pre-processing step, the pre-processed biomass fuel is subsequently transported to the biomass power plants. The major sources of biomass are energy crops, agricultural crop wastes, forest wood, agro-industrial wastes and urban wastes. The facilitators for procurement of biomass are biomass collection centers, collection agents, brokers and aggregators. The steps involved in processing of biomass to generate biomass power are segregation of biomass, drying, shredding, briquetting, pelletization, torrefaction and sedimentation of fluidized biomass. Rail, waterways, mini trucks, trailers, large trucks and lorries are the different modes of transport used for the transportation of the biomass. The transported biomass is used as fuel to produce power through various technologies such as dedicated combustion, co-combustion, gasification, anaerobic decomposition and pyrolysis. The fluidized bed technology with dedicated combustion and co-combustion processes are used to produce biomass power in all the plants under study. Exhibit 5.1 narrates the process of biomass power generation in biomass power plants.

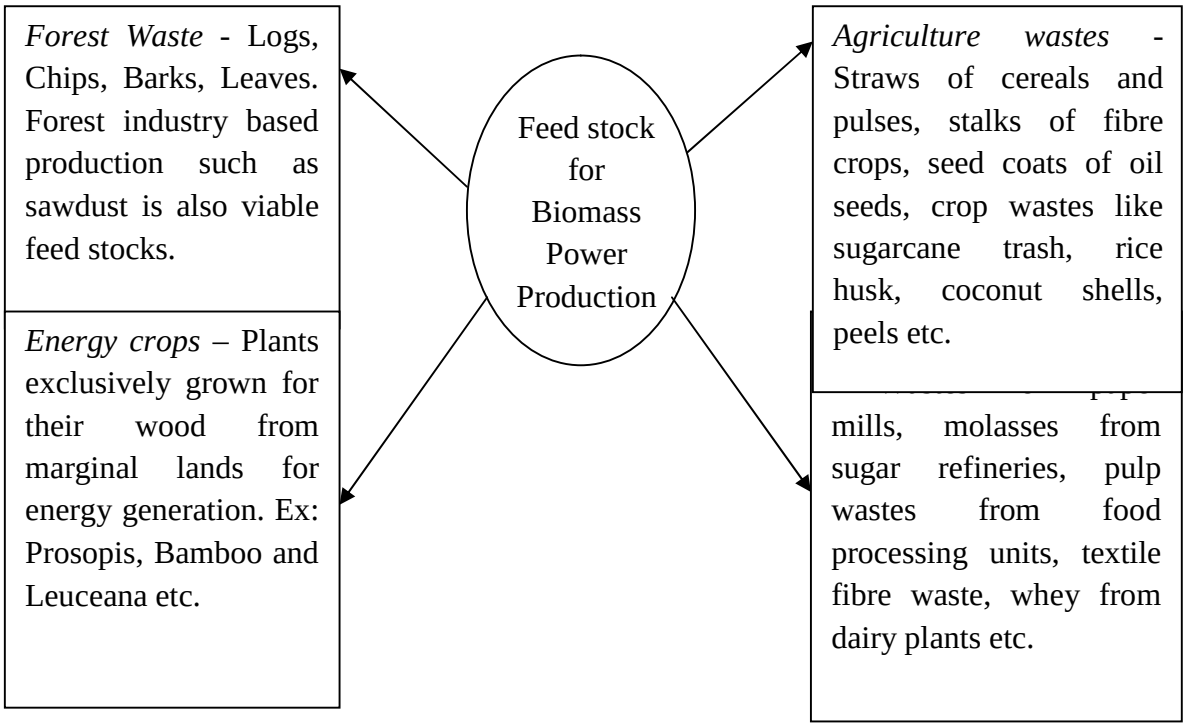
**Exhibit 5.1 – Process of Biomass Power Generation**




**Sources of Biomass Fuel:**

There are wide varieties of biomass available in the nature: from forest waste, agricultural crop residues, agro-industrial waste and irrigated high density energy plantations. The fuels used for producing biomass power are Bengal gram husk, chilli stalks, cotton stalks, corn cob, Eucalyptes bark, groundnut shells, juliflora, maize cob, palmoil bunches and subabul. Exhibit 5.2 explains the sources of feed stock that are used in the biomass power generation.

**Exhibit 5.2 - Feed stock for Biomass Power Production**




## 5.3 ORGANIZATION STRUCTURE OF BIOMASS POWER PLANTS

Organizations cannot function in isolation as they are open systems and continuously influenced by both external and internal environment factors. After globalization, the external environment has become more volatile. Further, new developments in technology brought several changes in production process and marketing which derived industrial establishments to redesign organizational structure facilitating flexibility and accountability**.**

To implement its strategy successfully a firm must have an appropriate organizational structure. An organizational structure is a set of formal tasks and reporting relationships which provide a framework for control and coordination within the organization. Thus the purpose of an organizational structure is to coordinate and integrate the efforts of employees at all levels – corporate, business and functional levels – so that they work together to achieve the specific set of strategies. Organizational structures based on high complexity, more formality and centralization result in tall structures, while organization

structures based on low complexity, less formality and decentralization result in flat structures. As too many hierarchical levels result in bureaucratic procedures and delay the decision making process, flat structures are more suitable to small businesses like biomass power plants.

In flat structures, the number of levels in the organizational hierarchy is a few and the span of control is relatively large. The major advantages of flat structures is quick decision making, low administrative costs, freedom and autonomy to the managers to operate, decision-making by the managers who are at the helm of affairs and general empowerment of managers. These benefits motivate the managers to accept responsibility and commit themselves to organizational objectives, besides enabling the organizations to be duly sensitive to the environmental demands and help the employees to become more innovative and creative. A functional structure which is flat would be effective in single business firms like Biomass power plants, where key activities revolve round well-defined skills and areas of specialization.

The organization structure of the biomass power plants under study varies from plant to plant. Further, it was also observed that the hierarchy and span of control are not clearly defined. It is also felt that the organization structures in some of the plants do not facilitate quick decision making leading to delays in executions. In view of this, it is felt that the organization structure of Biomass power plants needs to be professionally designed in order to facilitate effective decision making and exercise of control for both procurement of raw materials and efficient operation of the plant. Keeping the above in mind, an organization structure modeled on a functional type organization has been suggested to overcome the deficiencies in the existing organization structures of Biomass power plants.

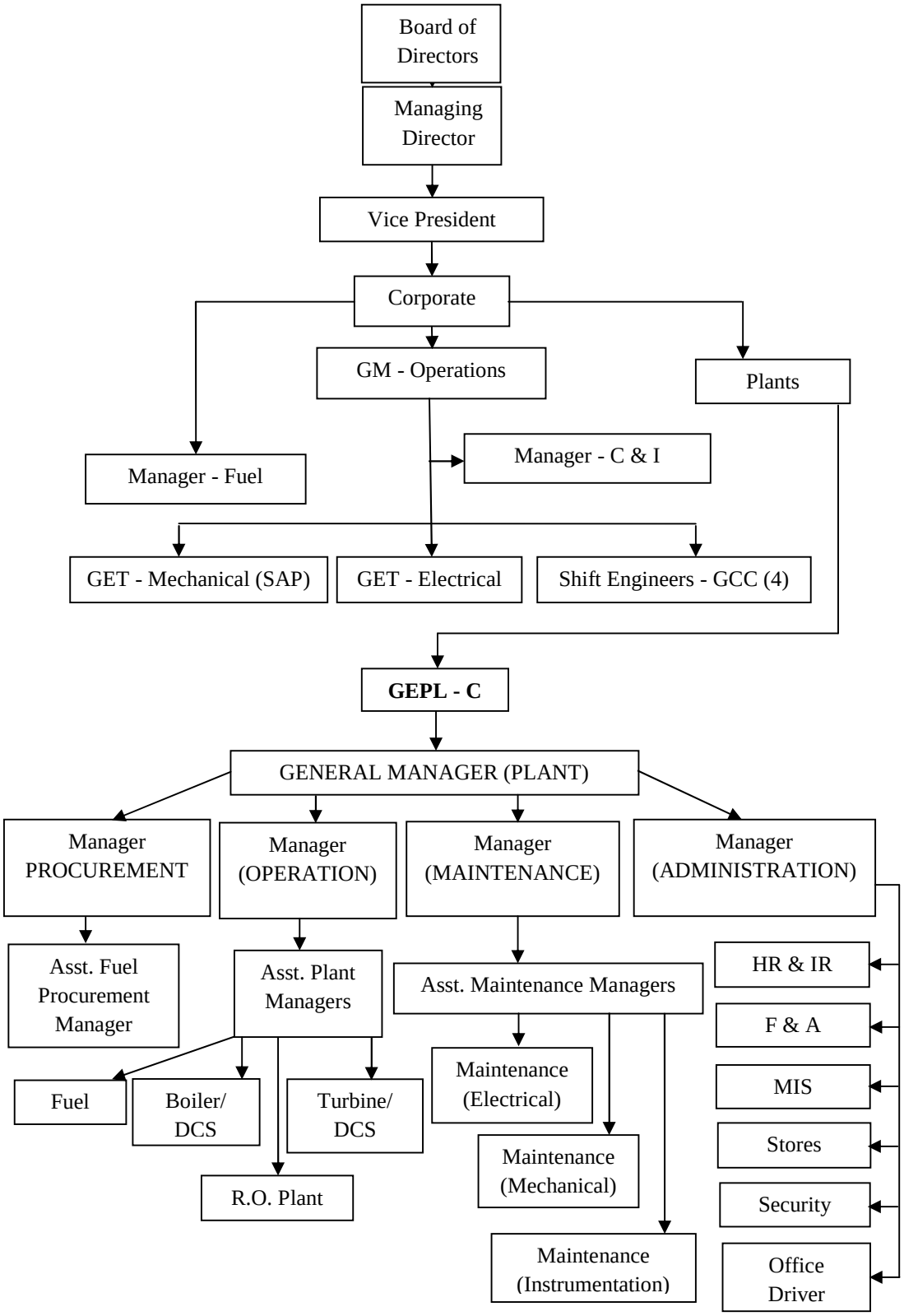
The functional structure suggested in Exhibit 5.3 is most appropriate for biomass power plants which compete on the basis of technical efficiency in a relatively small area. The suggested structure promotes maximum utilization of up-to-date technical skills and enables the firm to capitalize on specialization and efficiency. These are strategically

important considerations for small businesses like biomass power plants. This structure also promotes common values and goals among employees of the organization, facilitating cooperation and collaboration throughout the organization, and ultimately, to the smooth functioning of the biomass power plant. The suggested organizational structure is briefly explained below:

At the corporate level, the organization is headed by a Managing Director who is the chief executive officer of the biomass power plant. He functions under the overall control and guidance of the Board of Directors. He is assisted by a Vice President to whom the General Manager (Plant) and the General Manager (Operations) report. General Manager (Operations) looks after the corporate functions relating to biomass power plants such as fuel, coal, etc., and assisted by Mechanical Engineers, Electrical Engineers and Shift Engineers. The Vice President is also assisted by Manager (Fuel), and Manager (Computers & Instrumentation).

The General Manager (Plant) is the overall in-charge of the biomass power plant. He is assisted by the Manager (Raw Material Procurement), Manager (Operations), Manager (Maintenance) and Manager (Administration). The Raw Material Procurement Manager is assisted by Assistant Managers in-charge of fuel procurement, fuel storage, etc. Manager (Operations) is assisted by Assistant Plant Manager who in turn is assisted by In-charges dealing with Fuel, Boiler, Turbine and RO Plant. Further, the Manager (Maintenance) is assisted by Asst. Managers in-charge of electrical maintenance, mechanical maintenance and instrumentation. The Manager (Administration) is assisted by Asst. Managers who are in-charge of HR & IR, Finance & Accounts, MIS, Stores, Security and Admin office. The suggested organization structure is thus modeled on a functional type organization since operations are of small scale and concentrated in single location.

**Exhibit 5.3 - Suggested Organization Structure for Biomass Power Plants**



## 5.4 ADOPTION OF STRATEGIC MANAGEMENT IN BIOMASS POWER PLANTS

Strategic management has been advocated as one of the effective management tools in strengthening the organizational performance through effective decision making and systematic strategy formulation and implementation.

### 5.4.1 Level of Adoption of Strategic Management Practices

In this section, results of the first hypotheses, i.e., level of adoption of strategic management practices in Biomass power plants and also the managerial motivations for adopting strategic management together with the reasons for low adoption of strategic management practices were analyzed and interpreted.

**Table 5.7 Level of adoption of Strategic Management**

| Emphasis | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Very High | 9 | 6.00 | 6.00 | 6.00 |
| High | 21 | 14.00 | 14.00 | 20.00 |
| Moderate | 77 | 51.33 | 51.33 | 71.33 |
| Low | 39 | 26.00 | 26.00 | 97.33 |
| Very Low | 4 | 2.66 | 2.66 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

Table 5.7 presents the level of adoption of strategic management practices in Biomass power plants under study. As may be seen from the above Table, out of the total respondents, 51.33 per cent of the respondents have felt that the adoption level of strategic management in Biomass power plants is ‘moderate’ whereas 14.00 per cent of the respondents felt that the level of adoption is ‘high’ and 6.00 per cent of the respondents felt that the level of adoption is ‘very high’. The Table further reveals that 39 respondents representing 26.00 per cent of the total revealed that the level of adoption of strategic management practices is low and only 4 respondents representing 2.66 per cent

of the total felt that the level of adoption is 'very low'. From the above analysis it can be inferred that most of the Biomass power plants under study have adopted strategic management practices though the degree of the level of adoption varies from one plant to the other. As nearly 51.33 per cent of the respondents felt that the level of adoption of strategic management practices in Biomass power plants is 'moderate', there is ample scope to increase the efficiency of Biomass power plants by enhancing the use of strategic management practices by them. This rejects the Hypothesis ($H_1$ - a) that the adoption level of strategic management practices is 'high' in Biomass power plants and proves the Hypothesis ($H_1$ - b) that the adoption level of strategic management practices is moderate in Biomass power plants.

### 5.4.2 Motivating factors for Adoption of Strategic Management

It is further observed that the motivating factors for adoption of Strategic Management Practices vary from one biomass power plant to another. The objective of this analysis is to understand the dominant motivating factors across the industry so that it will be a guide to the biomass power industry as a whole. Table 5.8 presents the motivating factors for Biomass power plants to adopt the strategic management practices.

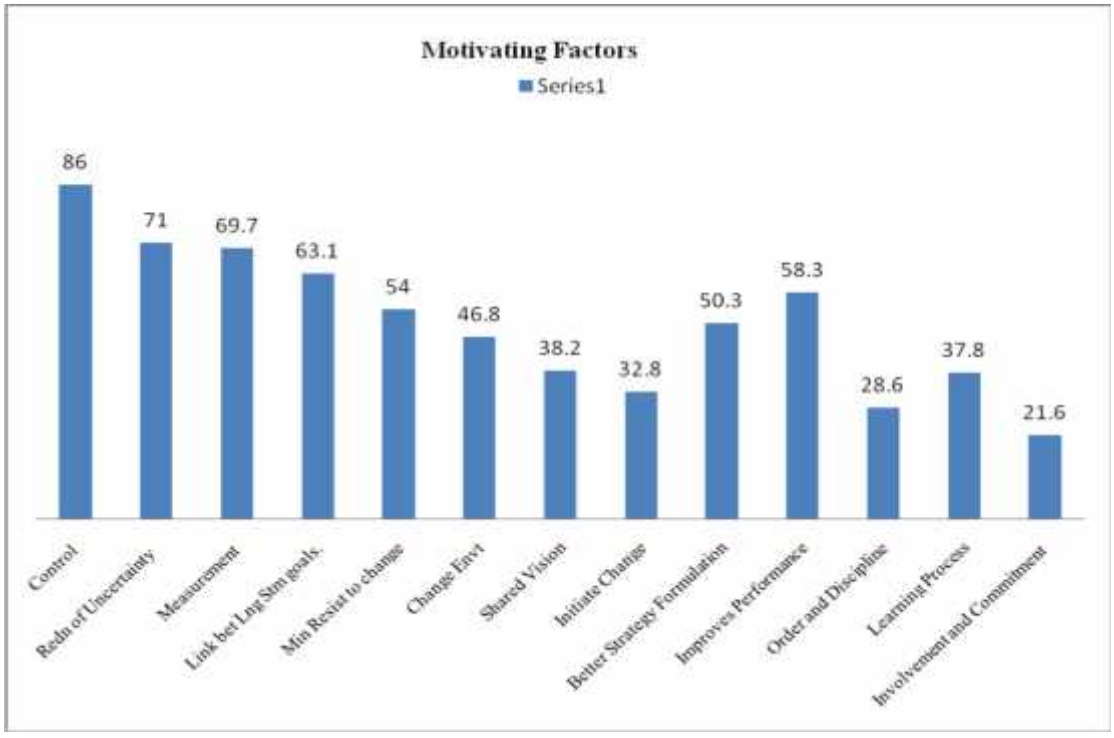
**Table: 5.8 Motivating factors for Adoption of Strategic Management Practices**

| Sl. No. | Choice | Garrett Ranking Scores |
|---|---|---|
| 1 | It facilitates control | 86 |
| 2 | It reduces uncertainty | 71 |
| 3 | It facilitates measurement | 69.7 |
| 4 | It provides a link between long and short term goals. | 63.1 |
| 5 | It minimizes resistance to change | 54 |
| 6 | It improves understanding of a rapidly changing environment | 46.8 |
| 7 | It creates shared vision | 38.2 |
| 8 | It helps to initiate change in the organization | 32.8 |
| 9 | It helps to formulate better strategies | 50.3 |
| 10 | It significantly improves performance | 58.3 |
| 11 | It brings order and discipline to the organization | 28.6 |
| 12 | It is a learning process | 37.8 |
| 13 | It improves involvement and commitment | 21.6 |

**Source: Computed from primary data**

It can be observed from Table 5.8 that the dominant motivating factors are 'the facilitation of control' (86), followed by 'uncertainty reduction' (71), measurement facilitation (69.7), providing a link between long and short term goals (63.1), significant improvement of performance (58.3), and minimization of resistance to change (54.0). Further, the discussions with the experts in the field reveal that the thought process and the primary concern of the industry is to have control over the operations of the plant and improve its performance. The main reason for this concern could be that most of the plants are focusing on operating the plant in a financially viable way by effectively tackling the problems that may arise due to shortage of raw materials, shortage of skilled manpower, problems of power transmission, etc. For more clarity, a visual representation of the above table is presented in Exhibit 5.4.

**Exhibit 5.4: Motivating factors for Adoption of Strategic Management Practices**




It can be inferred from the above analysis that there were valid reasons for Biomass power plants to adopt strategic management practices to continuously improve their

performance. This inference is drawn on the basis of the opinion expressed by the respondents, which is further supported by the secondary data collected by the researcher.

### 5.4.3 Reasons for Low Adoption of Strategic Management Practices

There are similarly valid reasons for low adoption of strategic management practices by Biomass power plants. These are analyzed in Table 5.9 by using the Garette ranking method. Since 39 respondents indicated 'low adoption' and 4 respondents indicated 'very low adoption', their opinion on the reasons for low adoption of strategic management practices is ascertained and Garrett ranking score is calculated in respect of these 43 respondents only.

**Table 5.9 Reasons for Low Adoption of Strategic Management Practices in Biomass Power Plants**

| Reasons (n=43) | Garrett Ranking Scores |
|---|---|
| Not having enough time | 32.8 |
| Unaware of strategic Management process | 71.2 |
| Irrelevant to the small business situation | 42.1 |
| Lack of Skills | 39.7 |
| Lack of trust and Openness | 26.4 |
| Limited flexibility | 16.6 |

**Source: Computed from Primary data**

Table 5.9 reveals the reasons for low adoption of strategic management practices by Biomass power plants as revealed by the respondents. As it can be seen from the above table, some of the major reasons given by the respondents include "unaware of strategic management process" (71.2), "not having enough time" (32.8) and "lack of skills" (39.7). The other reasons include "irrelevant to the small business situation" (42.1), "lack of trust and openness" (26.4) and "limited flexibility" (16.6). All these limitations can be overcome by the Biomass power plants by initiating appropriate steps like giving orientation on strategic management process, providing training for improving the skills, by creating good work culture to improve the morale and trust levels, etc. Further, the aforesaid initiatives will improve the efficiency of operations of the Biomass power plants under study.

## 5.5 CORE COMPETENCIES OF BIOMASS POWER PLANTS

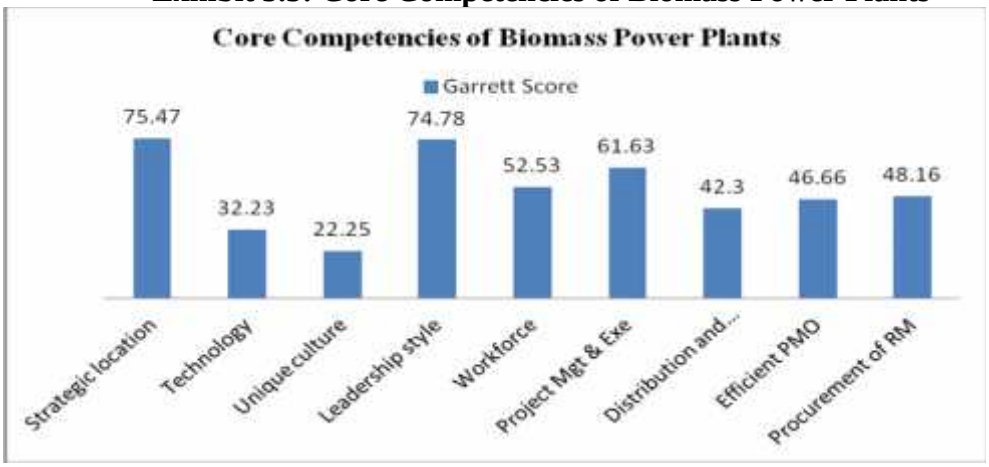
A fundamental concept in the formulation of strategies is “Core Competence”. Core competencies are unique set of capabilities that a company develops in key operational areas, such as technology, operations, human resources, etc., that gives an edge over others in the market. To be effective, the core competencies should be difficult for the competitors to imitate, and they must provide customers with some kind of perceived value. The Biomass power plants may have developed the core competencies over a long period of time which provides a wide range of advantages to the plant. This study tries to understand the most common core competencies of Biomass power plants through a survey conducted with respondents and its results.

**Table 5.10 Core Competencies of Biomass Power Plants**

| Sl. No. | Choice | Garrett Score |
|---|---|---|
| 1 | Strategic location of the plant | 75.47 |
| 2 | State-of-the-art technology | 32.23 |
| 3 | Unique culture | 22.25 |
| 4 | Organic leadership style | 74.78 |
| 5 | Young and educated workforce | 52.53 |
| 6 | Project management and execution | 61.63 |
| 7 | Distribution and logistics | 42.3 |
| 8 | Efficient production and maintenance operations | 46.66 |
| 9 | Effective raw material procurement | 48.16 |

**Source: Computed from primary data**

**Exhibit 5.5: Core Competencies of Biomass Power Plants**



It can be observed from Table 5.10 and Exhibit 5.5 that the majority (75.47 per cent) of the respondents felt that the 'strategic location of the plant' is the most important core competency of biomass power plants which enables the plant to conveniently procure adequate quantities of raw materials locally, secures proximity to the grid/sub-station besides ensuring water availability and adequate supply of skilled man power. The other core competencies indicated by the respondents include 'organic leadership style' (74.78 per cent) and 'efficient production and maintenance operations' (61.63 per cent). Interaction with the managements of some of the biomass power plants revealed that these core competencies enabled biomass power plants to produce electricity with the least cost, which in turn, helps them to run the plant throughout the year and export appreciable quantities of electricity to the State Grid. Thus, the core competencies provide distinctive advantage to the biomass power plants by way of sustained financial viability besides helping them to make a significant contribution in meeting the energy needs of the State. This analysis partly rejects Hypothesis ($H_4$ - b) that 'strategic location of the plant' is not a critical success factor of biomass power plants and supports Hypothesis ($H_4$ - a) that 'strategic location of the plant' is a critical success factor of Biomass power plants.

## 5.6 CRITICAL SUCCESS FACTORS OF BIOMASS POWER INDUSTRY

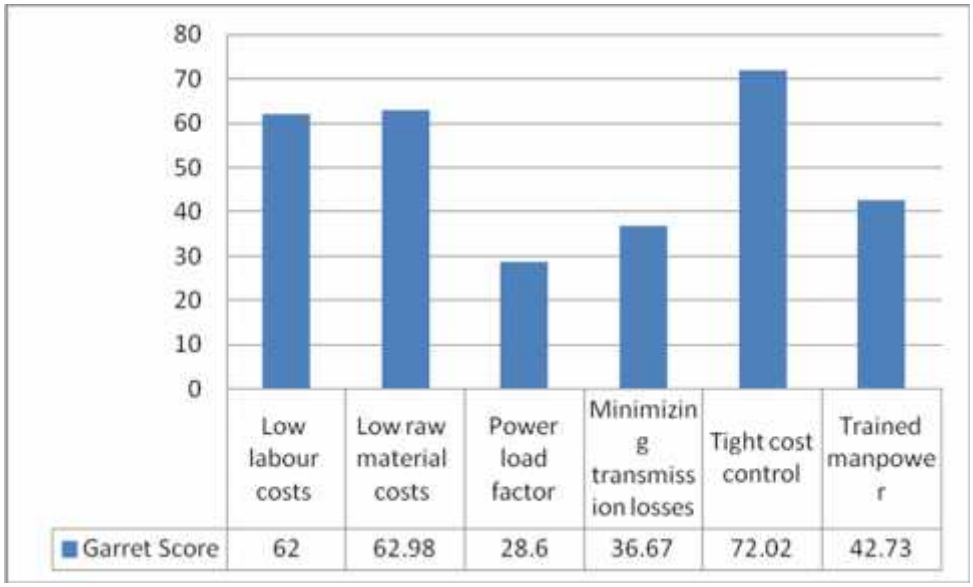
Critical success factors are specific to the industry while core competencies are particular to a plant. These are the factors that determine the success of any plant in the industry. Raw material costs, skilled labor, market proximity, etc., are some of the critical success factors of any industry. An attempt has been made to understand the critical success factors of the Biomass power industry. The opinions of the respondents were obtained through the schedule and presented in table 5.11 and exhibit 5.6

**Table 5.11 Critical Success Factors of Biomass Power Industry**

| Sl. No. | Choice | Garret Score |
|---|---|---|
| 1 | Low labour costs | 62 |
| 2 | Low raw material costs | 62.98 |
| 3 | Power load factor | 28.6 |
| 4 | Minimizing transmission losses | 36.67 |
| 5 | Tight cost control | 72.02 |
| 6 | Trained manpower | 42.73 |

**Source: Computed from primary data**

**Exhibit 5.6: Critical Success Factors of Biomass Power Industry**



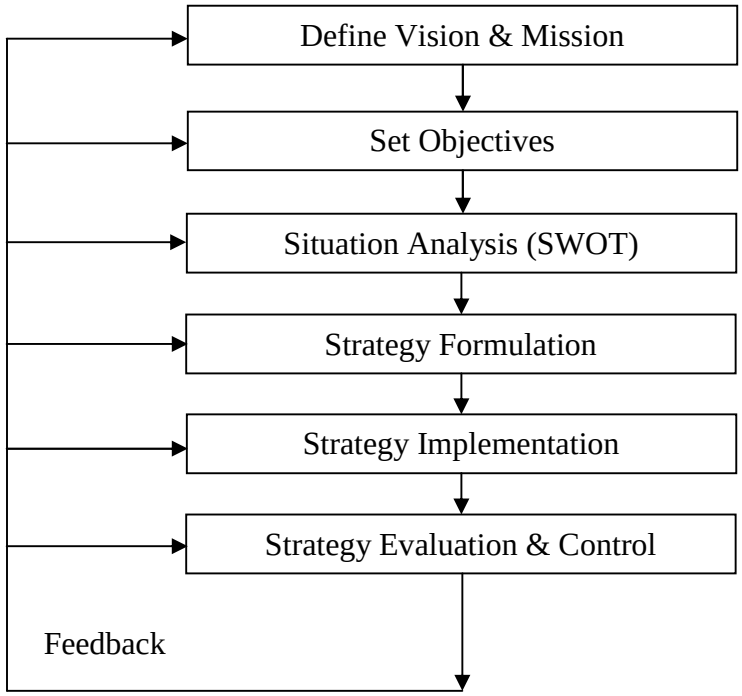

As per the results of the study which are presented in Table.5.11 and Exhibit 5.6, "tight cost control" (72.03), are the most important critical success factors of Biomass power industry. The other critical success factors include "low raw material costs" (62.98), and "low labor costs" (62.0) "trained manpower" (42.73) and "minimizing transmission losses" (36.67). Interaction with experts in the field of Biomass power plants revealed that most of the successful Biomass power plants focus on all the above critical success factors and have, therefore, been successful in the market place in the face of uncertainties in procurement of raw materials, shortage of skilled manpower, increasing input costs, variations in tariff rates fixed by the government, etc. This analysis partly rejects Hypothesis ($H_4$ - b) that 'tight cost control' is not a critical success factor of

biomass power plants and supports Hypothesis ($H_{4-a}$) that 'tight cost control' is a critical success factor of Biomass power plants.

## 5.7 STRATEGIC MANAGEMENT PROCESS IN BIOMASS POWER PLANTS

The strategic management process adopted in Biomass power plants is an important area selected for the present study. This process basically consists of three stages, i.e., strategy formulation, strategy implementation and strategy evaluation. Though the process of strategic management might appear simple, it has been a topic of extensive research, and no uniformity emerged in literature on the components of the process. Some components are emphasized by all researchers; other components differ from researcher to researcher. Bearing in mind the conventional view, Wheelen and Hunger (2004) suggested a simple framework consisting of six components for development of strategy as depicted in Exhibit 5.7.

**Exhibit 5.7: Strategic Management Model**




**Source: Adopted from Wheelen, Thomas L. and J. David Hunger (2004). Concepts in Strategic Management and Business Policy, Pearson Education Ltd., Singapore, p.7.**

Against the above background, an attempt has been made to examine the system of strategic management process adopted in Biomass power plants and the degree of emphasis placed on each component and element of strategic management process by biomass power plants.

In this section the process of strategic management being practiced in biomass power plants was analyzed. The elements of mission, objective setting, external environment analysis (EEA), internal environmental analysis (IEA), strategy formulation, strategy implementation and strategy evaluation and control have been analyzed through mean and standard deviation scores. Later, the degree of emphasis placed on each element was also analyzed in detail.

**Table 5.12: Degree of Emphasis on Strategic Management Process Components/ Elements in Biomass Power Plants**

| S.No | Strategic Management Process Elements | Sample Mean | Sample S.D | Rank |
|---|---|---|---|---|
| **1** | **Vision, Mission and Objective Setting** | **4.41** | **0.87** | **1** |
| **2** | **EEA (External Environment Analysis)** | **3.99** | **0.76** | 4 |
| 2.1 | Studying political trends | 2.98 | 1.02 | |
| 2.2 | Studying economic trends | 3.97 | 1.07 | |
| 2.3 | Studying socio-cultural trends | 3.62 | 0.98 | |
| 2.4 | Studying technological trends | 3.89 | 1.21 | |
| 2.5 | Analysis of competitors, supplier trends and customer preferences | 4.98 | 1.52 | |
| **3** | **IEA (Internal Environment Analysis)** | **4.01** | **0.97** | **3** |
| 3.1 | Identifying core competencies | 4.75 | 1.15 | |
| 3.2 | Identifying critical success factors | 4.53 | 1.09 | |
| 3.3 | Analysis of past performance | 3.98 | 1.12 | |
| 3.4 | Analysis of Customer services | 2.89 | 1.03 | |
| 3.5 | Analysis of Marketing function | 2.84 | 1.01 | |
| 3.6 | Analysis of Operations function | 4.28 | 1.08 | |
| 3.7 | Analysis of HRM function | 3.99 | 0.97 | |
| 3.8 | Analysis of Finance function | 4.85 | 1.02 | |
| 3.9 | Analysis of R&D function | 3.81 | 0.54 | |
| 3.10 | Analysis of Industrial Relations | 4.26 | 0.91 | |
| **4** | **Strategy Formulation** | **4.21** | **0.98** | **2** |
| 4.1 | Formulate strategic alternatives | 4.27 | 1.12 | |
| 4.2 | Strategy analysis and choice | 3.98 | 0.96 | |

| | | | | |
|---|---|---|---|---|
| 4.3 | Selection of best strategy | 4.36 | 1.02 | |
| **5** | **Degree of use of Planning Tools** | **3.85** | **0.87** | **7** |
| 5.1 | SWOT analysis | 4.56 | 1.06 | |
| 5.2 | Cost benefit analysis | 4.47 | 0.82 | |
| 5.3 | GAP Analysis | 2.97 | 0.78 | |
| 5.4 | Value chain analysis | 3.51 | 1.03 | |
| 5.5 | Financial analysis | 3.49 | 0.98 | |
| 5.6 | Strategic advantage profile | 3.88 | 0.87 | |
| 5.7 | Balanced scorecard | 3.72 | 1.01 | |
| 5.8 | Key factor rating | 3.85 | 0.85 | |
| 5.9 | Benchmarking | 4.25 | 1.23 | |

**Table 5.12: Degree of Emphasis on Strategic Management Process Components/ Elements in Biomass Power Plants (Contd…)**

| S.No | Strategic Management Process Elements | Sample Mean | Sample S.D | Rank |
|---|---|---|---|---|
| **6** | **Involvement in the Process** | **3.81** | **0.71** | 8 |
| 6.1 | Involvement of top management | 4.50 | 1.09 | |
| | Involvement of middle level management | 4.48 | 1.08 | |
| | Involvement of junior management | 3.78 | 0.98 | |
| 6.2 | Involvement of workers | 2.95 | 0.78 | |
| 6.3 | Involvement of consultants | 3.23 | 1.12 | |
| **7** | **Strategy Implementation** | **3.87** | **0.94** | 6 |
| 7.1 | Identify short-term objectives | 4.18 | 1.02 | |
| 7.2 | Formulate programmes, policies and procedures | 3.97 | 1.09 | |
| 7.3 | Initiate specific functional strategies | 3.89 | 0.88 | |
| 7.4 | Design appropriate reward systems | 3.65 | 1.01 | |
| 7.5 | Provision of strategic leadership | 3.84 | 0.91 | |
| 7.6 | Change of organizational culture | 3.74 | 0.97 | |
| 7.7 | Overall management of change | 3.53 | 0.88 | |
| **8** | **Strategy Evaluation and Control** | **3.91** | **0.89** | 5 |
| 8.1 | Changes in planning premises | 3.57 | 0.57 | |
| 8.2 | Compare expected results with actual results | 3.88 | 0.86 | |
| 8.3 | Take corrective action | 4.25 | 1.26 | |

**Note: SD : Standard Deviation**

**Source: Computed from primary data.**

Table 5.13 analyzes the manner in which the six components of strategic management process are implemented in Biomass power plants. The mean and standard deviation scores are calculated for each component from the primary data and a component rank is

given indicating the emphasis placed on that component of the strategic management process by biomass power plants.

It can be observed from the above analysis that the respondents ranked "objective setting" as the most important component (ranked 1st) amongst the strategic management process components. This implies that the biomass power plants give utmost priority to set objectives with care and attention reflecting their vision and mission. The component of "strategy formulation" was ranked 2nd which indicates that the biomass power plants place relatively more emphasis on formulation of strategies rather than "implementation of strategies" (ranked 6th).

The components of Internal Environmental Analysis (IEA) and External Environmental Analysis (EEA) respectively had been ranked as the 3rd and 4th important components of the strategic management process. This indicates that the biomass power plants give fairly good priority to analysis of internal and external environment. It is also observed that strategy evaluation and control has been ranked 5th. It is common knowledge that most organizations use several techniques to carry out forecasting and trend analysis, such as cost benefit analysis, gap analysis, value chain analysis, etc., as part of strategic management process. Degree of use of planning tools has been ranked as 7th and involvement of personnel in the strategic management process was given the least priority in Biomass power plants (ranked 8th).

It is observed from the above analysis that the respondents placed significantly greater emphasis (higher mean values) on vision, mission and objective setting, strategy formulation and external and internal analysis, strategy evaluation and control whereas comparatively less emphasis is placed on strategy implementation, degree of use of planning tools and involvement of personnel in the strategic management process.

In this section, the results of the third hypothesis relating the most preferred components of strategic management process practiced by biomass power plants has been analyzed.

The inferences drawn in this section proves part of Hypothesis ($H_2$ - a) that biomass power plants use all the six components of strategic management process as per Wheelen & Hunger's framework through the degree of emphasis placed on different components varies significantly.

## 5. DEGREE OF EMPHASIS ON ELEMENTS OF STRATEGIC MANAGEMENT PROCESS

One of the objectives of the study is to identify the emphasis placed on the six components of strategic management process in biomass power plants as per Wheelen & Hunger's framework which has been done in the foregoing section. After analyzing the manner in which the components of strategic management process are implemented in biomass power plants, another important area chosen for the study is the degree of emphasis placed on different elements of strategic management process. It may be noted here that highest emphasis is indicated by the term 'Very Strong Emphasis' and least emphasis is indicated by the term 'No Emphasis'; the other terms used to indicate the degree of emphasis in descending order are : 'Strong Emphasis', 'Moderate Emphasis', and 'Low Emphasis'.

### 5.8.1 Vision, Mission and Objective Setting

Vision is about foreseeing the future big picture so that the same can be communicated to the employees and the organization can brace itself for the same. Vision formulation is based on what the promoter thinks about what the plant can achieve in the long term. Mission is defining the purpose of the biomass power plant which involves defining the market, products, and technology. Objective setting refers to specific objectives for both short and long terms in unequivocal numbers. In this section, the researcher made an attempt to understand the importance the industry gives to vision and mission formulation and objective setting.

**Table 5.13 - Vision, Mission and Objective Setting**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 112 | 74.7 | 74.7 | 74.7 |
| Strong | 26 | 17.3 | 17.3 | 92 |
| Moderate | 6 | 4 | 4 | 96 |
| Low Emp. | 4 | 2.7 | 2.7 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from Primary Data**

**Exhibit 5.8- Vision, Mission and Objective Setting**

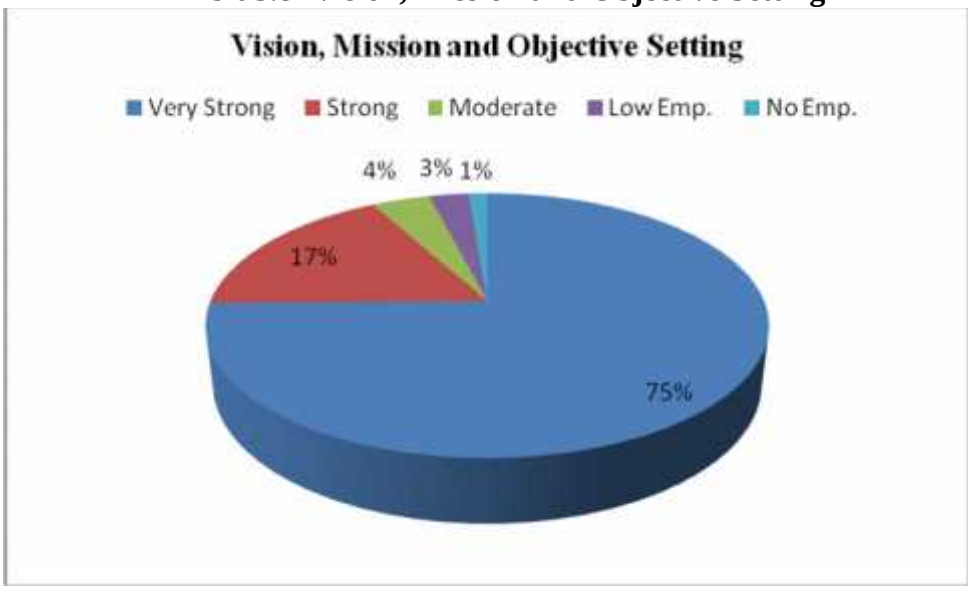



Table 5.13 and Exhibit 5.8 show that 74.7 per cent of the respondents placed 'very strong emphasis', 17.3 per cent 'strong emphasis', 4 per cent 'moderate emphasis', 2.7 per cent 'low emphasis' and 1.3 per cent 'no emphasis' respectively. It can be inferred that the majority are of the view that Vision, Mission and objective setting are of high importance.

### 5.8.2 External Environmental Analysis

External environment consists of the totality of all factors that affect a firm from outside its organizational boundaries. It is the “aggregate of all conditions, events and influences that surround and affect it” (Davis). The success of a business enterprise largely depends on its ability to adapt to environmental changes. Hence managers must continuously scan and monitor all changes that occur in the environment, because it is in the environment that an organization finds its opportunities and threats.

A business does not operate in a vacuum. It has to act and react to the circumstances outside the boundaries of the organization. Environmental scanning is therefore a must for any organization because such exercise gives information or prediction about opportunities and threats facing an organization. A plant has to grab the opportunities before the competitors does it and brace itself for the threats that are eminent or far off. The trends have to be observed on a regular basis. These actions are the key to small businesses such as Biomass power plants for their survival and growth. The exercise should cover political, economic, socio-cultural and technological facets of the external environment.

#### i) Studying Political Trends

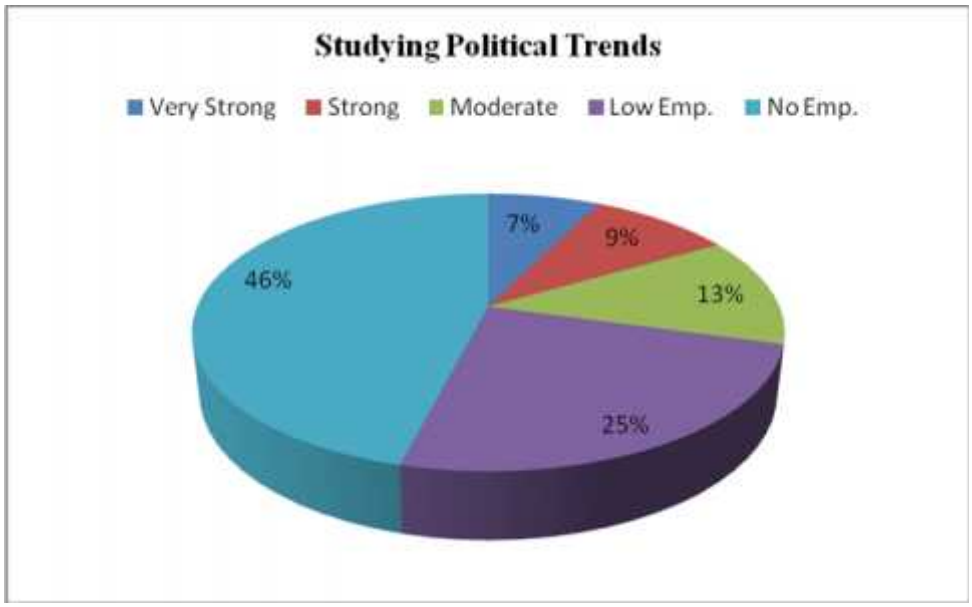
Political trends, if monitored, inform one about what changes will happen as far as the power sector is concerned, what priorities they will pursue, whether they would be favorable to the plant or not, etc. Particularly, biomass power plants depend heavily on who will be in power, since tariff rates for purchase of power will depend on the latter. This study has made an attempt to understand the respondents view about the emphasis placed on studying political trends as a component of strategic management process and the results are presented in Table 5.14 and Exhibit 5.9.

**Table 5.14 - Studying Political Trends**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 11 | 7.3 | 7.3 | 7.3 |
| Strong | 14 | 9.3 | 9.3 | 16.6 |
| Moderate | 19 | 12.7 | 12.7 | 29.3 |
| Low Emp. | 37 | 24.7 | 24.7 | 54 |
| No Emp. | 69 | 46 | 46 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.9 - Studying Political Trends**




Contrary to our expectations, about 46 per cent of the respondents placed 'No emphasis', 24.7 per cent 'low emphasis', 12.7 per cent moderate emphasis, 9.3 per cent 'strong emphasis' 7.3 percent 'very strong emphasis' respectively on studying political trends. It can be inferred from the above analysis that the biomass power industry sees no value in studying the political trends as a component of the strategic management process.

**ii) Studying Economic Trends**

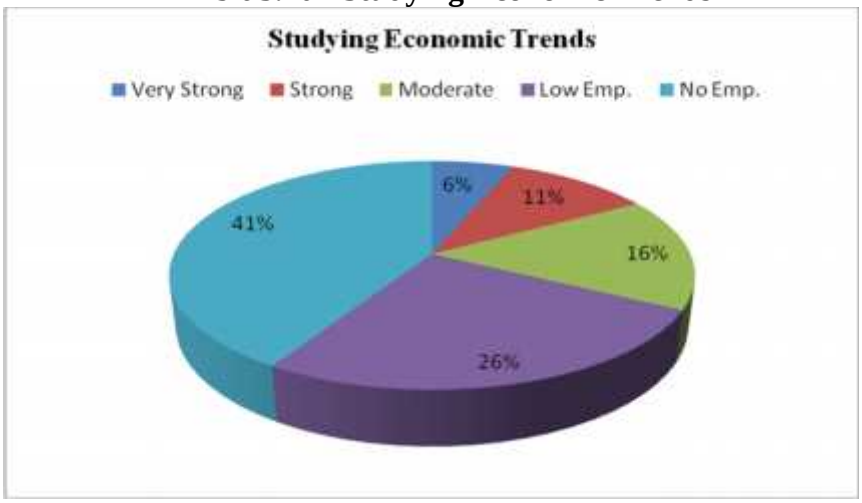
Studying economic trends brings out information about how economy is moving, how the employment situation is going to be, etc. Better economy and better employment means more consumption and greater demand for electricity. The survey results are presented in Table 5.15 and Exhibit 5.10.

**Table 5.15 - Studying Economic Trends**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 9 | 6 | 6 | 6 |
| Strong | 16 | 10.7 | 10.7 | 16.7 |
| Moderate | 24 | 16 | 16 | 32.7 |
| Low Emp. | 39 | 26 | 26 | 58.7 |
| No Emp. | 62 | 41.3 | 41.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.10 - Studying Economic Trends**




As regards the attitude of the industry about closely monitoring economic trends, the survey results show (Table 5.15 Exhibit 5.10) that 41.3 per cent laid no emphasis, 26 per cent low emphasis, 16 per cent moderate emphasis, 10.7 per cent strong emphasis and 6 per cent very strong emphasis respectively. It can be inferred from the above that the Biomass power plants do not attach much of importance to studying economic trends in the environment as a part of strategic management process.

### iii) Studying Socio-cultural Trends

In this country, which is not immune from the effects of global trends, social norms and behaviors are bound to change. The food, dresses, leisure time spending, life styles, communications, etc., are now more influenced by the foreign culture. Society as a whole

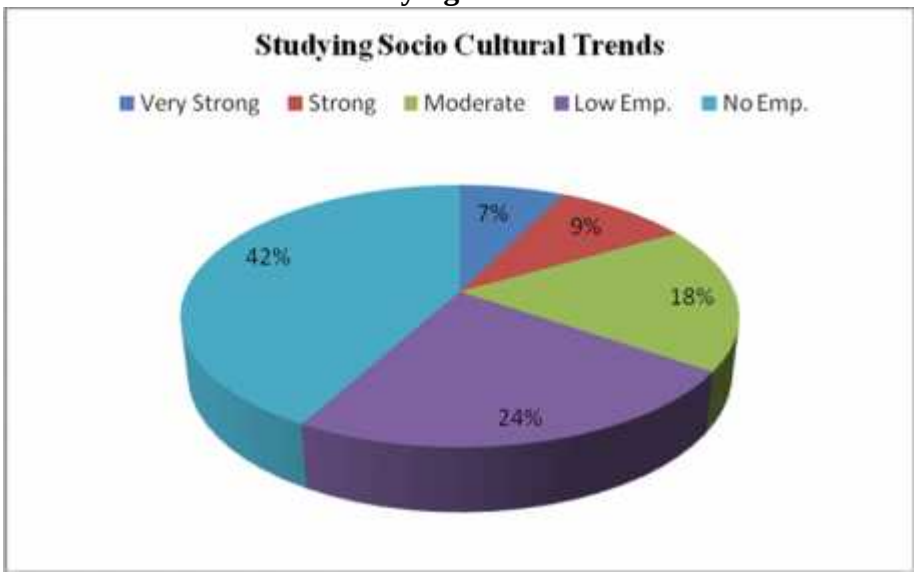
is on a fast change mode. These changes mean changes in what they consume and how they spend. Biomass industry being a utility provider is not as much influenced by culture as it is in the case of other consumer goods and services. Nevertheless, being sustainability-conscious, people of the nations like USA and UK prefer green products and services. Biomass is a utility that comes from greener raw materials. The present study made an attempt to obtain the views of the respondents as regards the emphasis placed on studying socio-cultural trends as a component of strategic management. The results of the survey are presented in Table: 5.16 and Exhibit No: 5.11.

**Table 5.16 - Studying Socio Cultural Trends**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 11 | 7.3 | 7.3 | 7.3 |
| Strong | 14 | 9.3 | 9.3 | 16.6 |
| Moderate | 27 | 18 | 18 | 34.6 |
| Low Emp. | 35 | 23.4 | 23.4 | 58 |
| No Emp. | 63 | 42 | 42 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.11 - Studying Socio Cultural Trends**




The survey results show (Table 5.16 Exhibit 5.11) that 42 per cent laid no emphasis, 23.4 per cent low emphasis, 18 per cent moderate emphasis, 9.3 per cent strong emphasis and

7.3 per cent very strong emphasis respectively. This means that this aspect is not given much importance in the strategic management process adopted in Biomass power plants.

**iv) Studying Technological Trends**

Developments in technology create new products, new production techniques and new processes. Innovations in technology can create entirely new industries and alter the boundaries of existing industries. Strategies developed taking advantage of technological innovation creates competitive advantage. A technological breakthrough can have a dramatic effect on the firm. To avoid obsolescence and promote innovation, a firm must be aware of technological changes that might influence the industry.

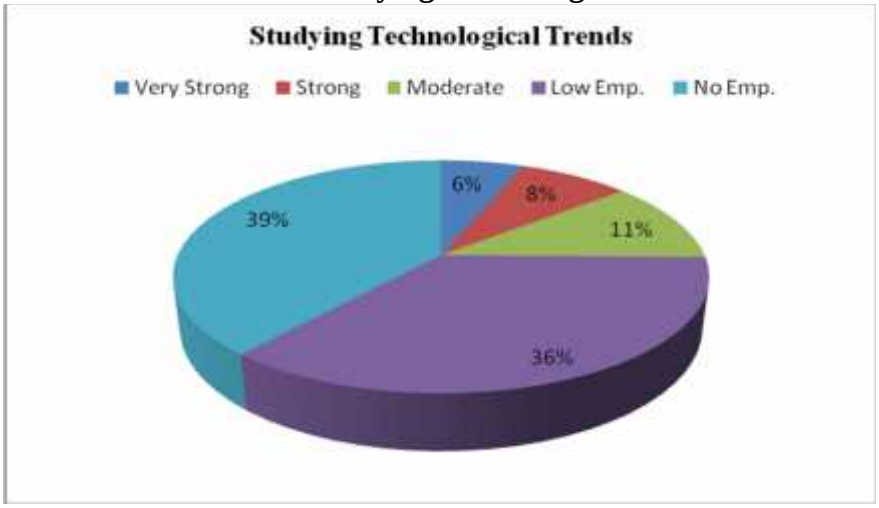
Technological trends especially in power generation technologies may change at a faster pace. If not closely monitored, they will throw the businesses out of gear and destroy their prospects of growth. New technologies are more productive and cost effective, which might displace the current technologies; if they are not welcomed, the business will be left behind while competitors gain an upper hand. The respondents' views about the importance given to this aspect of environmental scanning in strategic management are presented in Table 5.17 and Exhibit 5.12.

**Table 5.17 - Studying Technological Trends**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 9 | 6 | 6 | 6 |
| Strong | 12 | 8 | 8 | 14 |
| Moderate | 17 | 11.3 | 11.3 | 25.3 |
| Low Emp. | 54 | 36 | 36 | 61.3 |
| No Emp. | 58 | 38.7 | 38.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.12 Studying Technological Trends**




The survey results show (Table 5.17 Exhibit 5.12) that 38.7 per cent laid 'no emphasis', 36 per cent 'low emphasis', 11.3 per cent 'moderate emphasis', 8 per cent 'strong emphasis' and 6 per cent 'very strong emphasis' respectively. Hence it may be inferred that studying technological changes in the field the Biomass industry has no relevance as fluidized bed technology has been employed to produce the biomass power from most of the plants.

### v) Analysis of Competitors

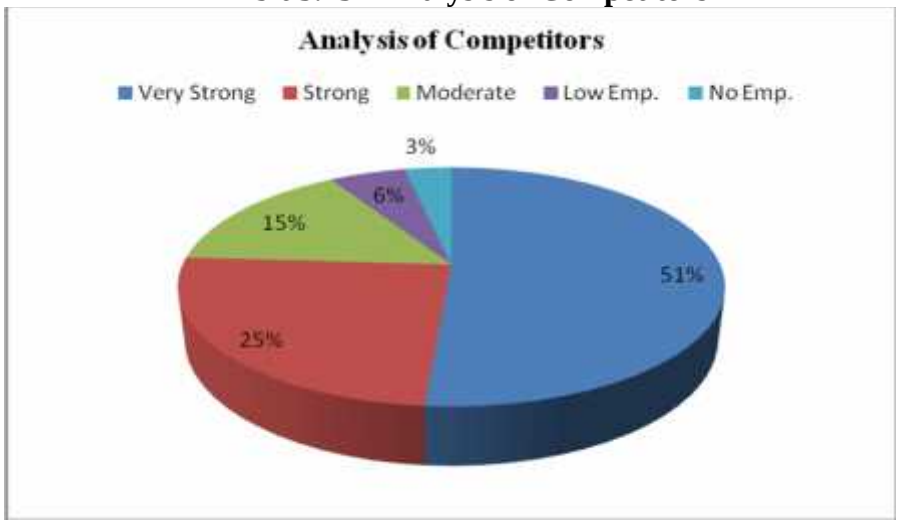
Competition in any business sphere is tough and its force unpredictable; and this critically affects the survival and growth of small businesses like biomass power plants. All businesses should, therefore, understand how competition behaves. Competition may come from new entrepreneurs, existing customers, existing raw material suppliers, substitute services, and existing businesses; the competition may be based on price, quality or delivery or technology. Competitor's strengths and their moves should be closed analyzed and monitored so that a plant can stay ahead of them. The study makes an attempt to gauge how the biomass industry is concerned on this aspect. The results of the survey are presented in table: 5.18 and Exhibit 5.13.

**Table 5.18 - Analysis of Competitors**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 77 | 51.3 | 51.3 | 51.3 |
| Strong | 37 | 24.7 | 24.7 | 76 |
| Moderate | 23 | 15.3 | 15.3 | 91.3 |
| Low Emp. | 8 | 5.4 | 5.4 | 96.7 |
| No Emp. | 5 | 3.3 | 3.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.13 - Analysis of Competitors**




The survey shows that the biomass industry is very much concerned about competition, supplier trends and customer preferences in the industry. On all these aspects, most of the respondents have placed 'very strong emphasis' indicating that it is an important aspect of external environment.

**vi. Analysis of Supplier Trends**

Another aspect of successful business management is to understand supplier behaviors involving increasing raw material prices, diverting the material to some other plant, or the supplier himself starting a plant. The survey results regarding supplier trends are present in Table 5.19 and Exhibit 5.14.

**Table 5.19 - Supplier Trends**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 91 | 60.7 | 60.7 | 60.7 |
| Strong | 29 | 19.3 | 19.3 | 80 |
| Moderate | 15 | 10 | 10 | 90 |
| Low Emp. | 9 | 6 | 6 | 96 |
| No Emp. | 6 | 4 | 4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.14 - Supplier Trends**

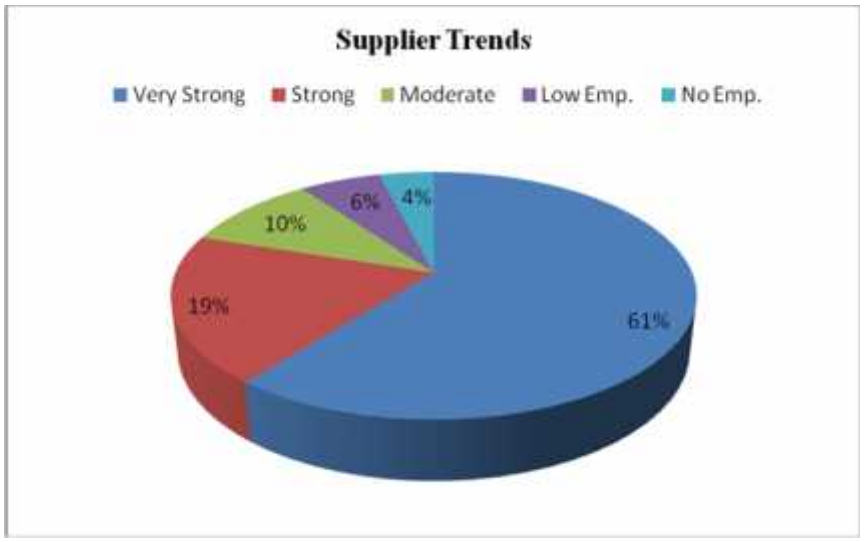



Table 5.19 and Exhibit 5.14 show that 60.7 per cent of the respondents placed 'very strong emphasis', 19.3 per cent 'strong emphasis', 10.0 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 4.0 per cent 'no emphasis' respectively. Hence it can be inferred that understanding the supplier behaviors involving increasing raw material prices, diverting the material to some other plant, or the supplier himself starting a plant has high relevance. More over this aspect needs more attention from the biomass power plants for continuous supply of raw materials and sustainable power generation.

### vii. Analysis of Customer Preferences

Another important aspect is to understand customer preferences; in the case of Biomass power plants, the only customer is the government and as such the industry has to

understand the concerns of the government in generating electricity from biomass. The results of the survey are presented in Table 5.20 and Exhibit 5.15.

**Table 5.20 - Customer Preferences**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 92 | 61.3 | 61.3 | 61.3 |
| Strong | 27 | 18 | 18 | 79.3 |
| Moderate | 21 | 14 | 14 | 93.3 |
| Low Emp. | 6 | 4 | 4 | 97.3 |
| No Emp. | 4 | 2.7 | 2.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

Source: Computed from primary data

**Exhibit 5.15 Customer Preferences**

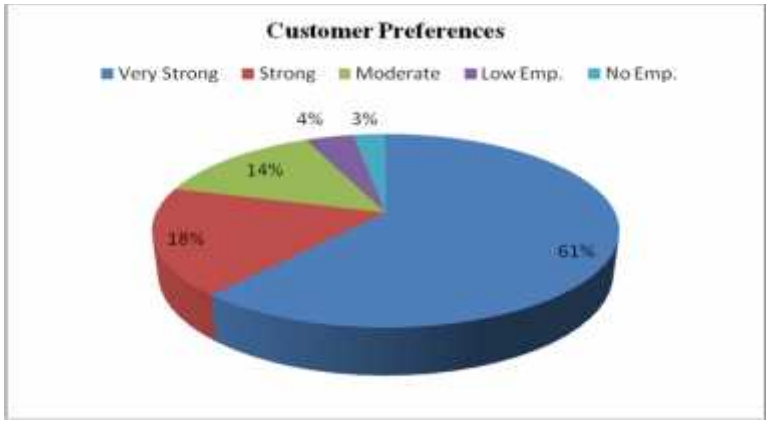



Table 5.20 and Exhibit 5.15 show that 61.3 per cent of the respondents placed 'very strong emphasis', 18.0 per cent 'strong emphasis', 14.0 per cent 'moderate emphasis', 4.0 per cent 'low emphasis' and 2.7 per cent 'no emphasis' respectively. Hence, it may be inferred that understanding customer preferences has strong relevance but in this case the customer is government alone, however, the industry is aligned with the concerns of the government.

**viii. Analysis of Industrial Relations**

Harmonious relations among the workforce in the industry are very much essential because the cohesiveness brings unity among the workforce resulting uninterrupted

running of the plant. The survey results regarding industrial relations are presented in Table 5.21 and Exhibit 5.16.

**Table 5.21 Industrial Relations**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 86 | 57.3 | 57.3 | 57.3 |
| Strong | 32 | 21.3 | 21.3 | 78.6 |
| Moderate | 22 | 14.7 | 14.7 | 93.3 |
| Low Emp. | 7 | 4.7 | 4.7 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.16 - Industrial Relations**

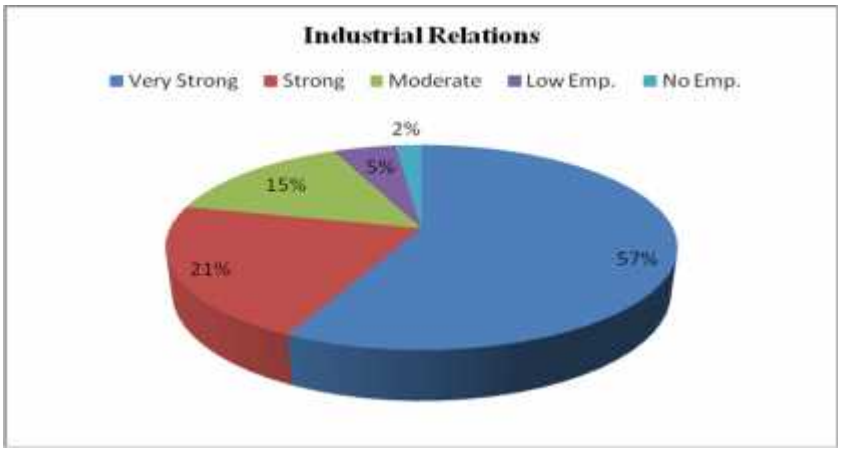



Table 5.21 and Exhibit 5.16 show that 57.3 per cent of the respondents placed 'very strong emphasis', 21.3 per cent 'strong emphasis', 14.7 per cent 'moderate emphasis', 4.7 per cent 'low emphasis' and 2.0 per cent 'no emphasis' respectively. Hence it may be understood that establishing harmonious industrial relations in the plant is very much essential.

### 5.8.3 Internal Environmental Analysis

The internal environmental factors are the events that occur within the organizations. These factors are generally easier to control than the external factors.

A systematic and methodical analysis of the strengths and weaknesses of a firm's internal resources and capabilities and also its functional areas is called 'internal environmental analysis' which is a crucial activity in strategy formulation. The basic purpose of this analysis is to build on the strengths and overcome the weaknesses in order to avail of the opportunities and minimize the effects of threats. The ultimate aim is to gain and sustain competitive advantage in the market place. Internal Environmental factors like Identifying core competences, identifying critical success factors, analysis of past performance, customer services, marketing function, operations function, HRM function, finance function and R & D function are discussed below.

**i) Identifying Core Competencies**

Core competency is a "harmonized combination of multiple resources and skills that distinguish a firm in the marketplace" as defined by Hamel and Prahlad. Core competency gives business opportunities from a wide variety of markets, and provides a significant customer value. Further, they cannot easily be imitated by the competitors. Such competencies should be identified and built diligently. The survey results are presented in Table 5.22 and Exhibit 5.17.

**Table 5.22 - Identifying Core Competencies**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 95 | 63.3 | 63.3 | 63.3 |
| Strong | 26 | 17.3 | 17.3 | 80.6 |
| Moderate | 16 | 10.7 | 10.7 | 91.3 |
| Low Emp. | 8 | 5.4 | 5.4 | 96.7 |
| No Emp. | 5 | 3.3 | 3.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.17 - Identifying Core Competencies**

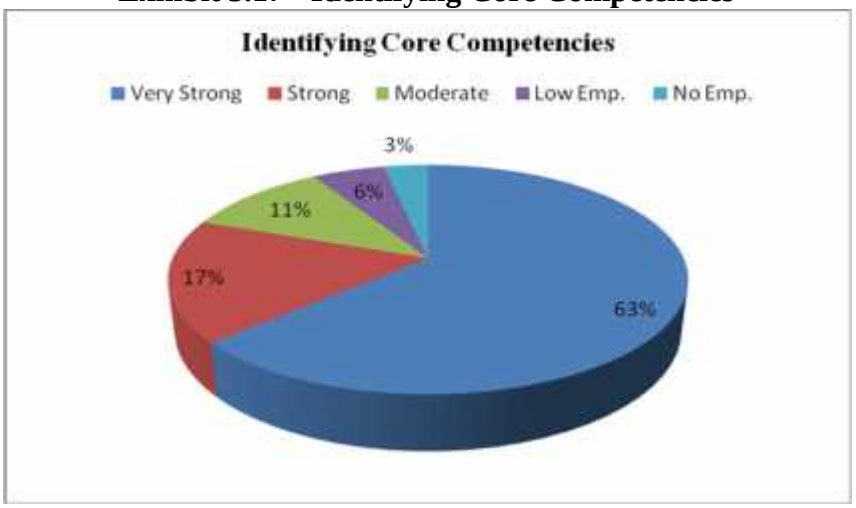



Table 5.22 and Exhibit 5.17 show that 63.3 per cent of the respondents placed 'very strong emphasis', 17.3 per cent 'strong emphasis', 10.7 per cent 'moderate emphasis', 5.4 per cent 'low emphasis' and 3.3 per cent 'no emphasis' respectively. Hence, it is inferred that the biomass power plants focus on their core competences to take maximum advantage from the resources.

### ii) Identifying Critical Success Factors

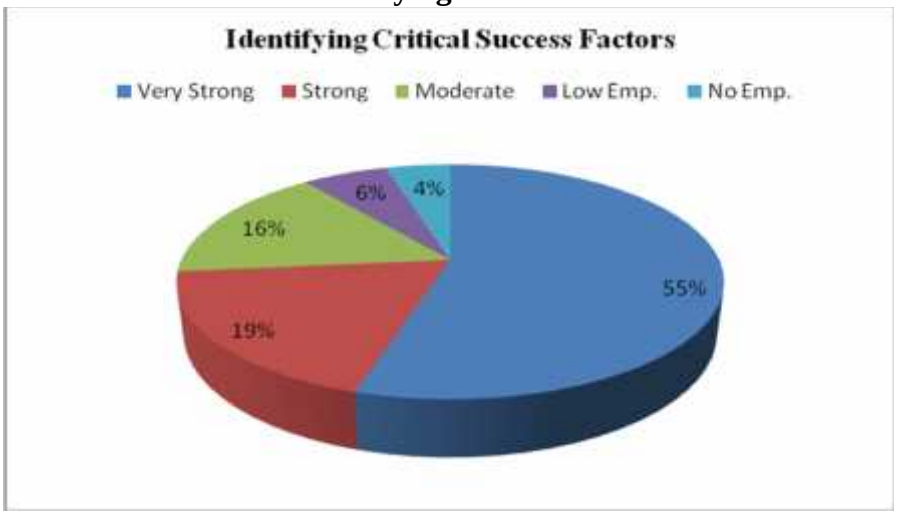
Critical success factor is an element or an issue in the managerial or enterprise area which if properly managed will bring about high performance of the plant. It requires special and continual attention of the management. The views of the respondents are brought up and the same are presented in Table 5.23 and Exhibit 5.18.

**Table 5.23- Identifying Critical Success Factors**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 82 | 54.7 | 54.7 | 54.7 |
| Strong | 28 | 18.7 | 18.7 | 73.4 |
| Moderate | 24 | 16 | 16 | 89.4 |
| Low Emp. | 9 | 6 | 6 | 95.4 |
| No Emp. | 7 | 4.6 | 4.6 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.18 - Identifying Critical Success Factors**




As can be seen from Table 5.23 and Exhibit 5.18, as many as 54.7 per cent of the respondents placed 'very strong emphasis', 18.7 per cent 'strong emphasis', 16.0 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 4.6 per cent 'no emphasis' respectively on identifying the critical success factors of the plants. Hence, it may be inferred that focusing on the critical success factors is given high importance in biomass power industry.

**iii) Analysis of Past Performance**

One way to compare performance and identify strengths and weaknesses of one's own organization over a period of time is Historical analysis or Analysis of past performance. Such an analysis looks at the performance of an organization in relation to previous years in order to identify any significant changes. Areas which have shown consistently good performance are indicators of strengths and areas which have shown consistently bad performances or its weaknesses.

Past predicts the future; and hence the likely success or failure of any move is indicated by analyzing past performance. One has to understand the past which gives insights about what should be done with reference to current and future problems. The entire industry shows concern about analysis of past performance. The survey results are presented in Table 5.24 and Exhibit 5.19.

**Table 5.24 - Analysis of Past Performance**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 72 | 48 | 48 | 48 |
| Strong | 37 | 24.7 | 24.7 | 72.7 |
| Moderate | 28 | 18.7 | 18.7 | 91.4 |
| Low Emp. | 9 | 6 | 6 | 97.4 |
| No Emp. | 4 | 2.6 | 2.6 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.19 - Analysis of Past Performance**


Table 5.24 and Exhibit 5.19 show that 48 per cent of the respondents laid 'very strong emphasis', 24.7 per cent 'strong emphasis', 18.7 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 2.6 per cent 'no emphasis' respectively. Hence, it may be inferred that the analysis of the past performance gives insights about what should be done with reference to current and future problems, and hence, this is given very strong emphasis in biomass power plants.

**iv) Analysis of Customer Services**

Customers are an integral part of firm's operating environment. Knowledge about the customer needs and fulfilling those needs is an organization's primary concern. Developing a profile of a firm's present and prospective customers and having a continuous interaction with them will improve the ability of managers to plan strategically in order to anticipate changes in the size of markets, and to re-allocate resources to support forecast shifts in demand patterns. Customer services constitute a

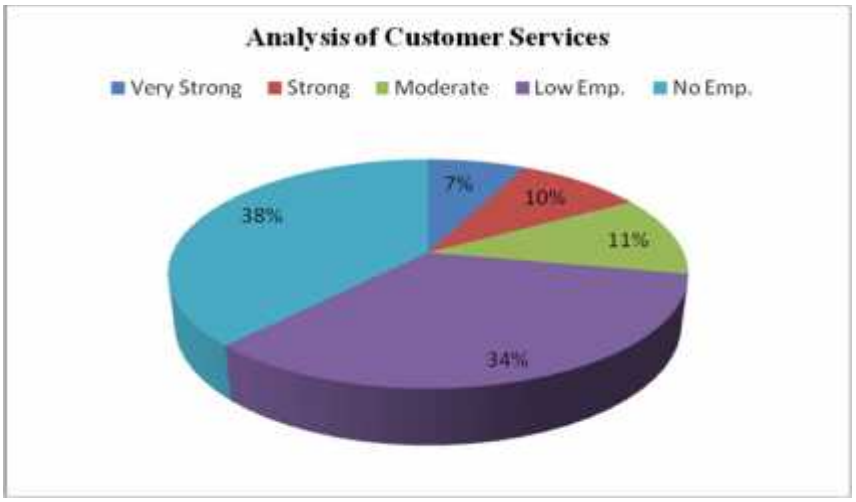
strategic necessity for biomass power plants though the power is being consumed by a single government entity and there is much scope for giving high quality customer services to the government. The survey results are presented in Table: 5.25 and Exhibit 5.20.

**Table 5.25 - Analysis of Customer Services**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 11 | 7.3 | 7.3 | 7.3 |
| Strong | 14 | 9.4 | 9.4 | 16.7 |
| Moderate | 17 | 11.3 | 11.3 | 28 |
| Low Emp. | 51 | 34 | 34 | 62 |
| No Emp. | 57 | 38 | 38 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

Source: Computed from primary data

**Exhibit 5.20 - Analysis of Customer Services**




The industry view is presented in the Table 5.25 and Exhibit 5.20. The survey findings show that 38.0 percent placed 'no emphasis', 34.0 percent 'low emphasis', 11.3 per cent 'moderate emphasis', 9.4 per cent 'strong emphasis' and 7.3 per cent 'very strong emphasis' respectively. On the whole, this is a low priority item of managerial agenda of this industry of this industry as the government is the only customer to which electricity sold by biomass power plants.

Functional competence refers to the strengths of the organization in the functional areas of management, namely, the strengths and weaknesses of production/operations, finance, marketing, HR, etc.

### v) Analysis of Marketing Function

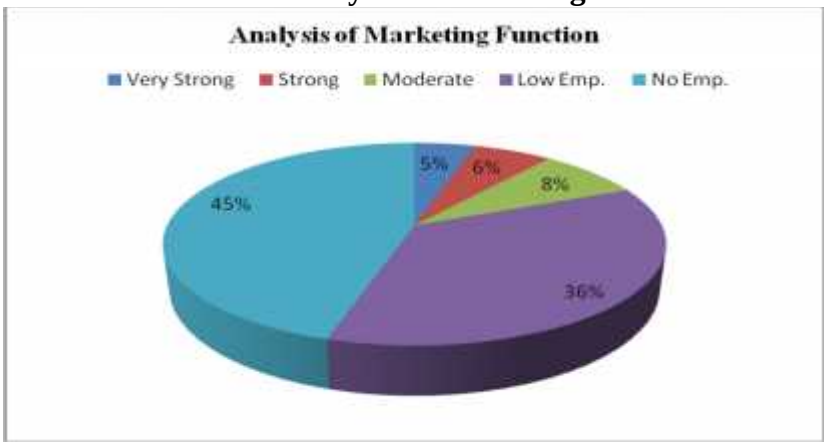
Analysis of marketing function covers a whole gamut of activities such as firm's product / service, breadth of product line, market share, channels of distribution, reputation and quality, efficient and effective sales promotion, etc. As far as marketing function is concerned, the emphasis placed on this is almost as that on customer services. The survey results are presented in Table 5.26 and Exhibit 5.21.

**Table 5.26 - Analysis of Marketing Function**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 7 | 4.7 | 4.7 | 4.7 |
| Strong | 9 | 6 | 6 | 10.7 |
| Moderate | 12 | 8 | 8 | 18.7 |
| Low Emp. | 54 | 36 | 36 | 54.7 |
| No Emp. | 68 | 45.3 | 45.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.21 Analysis of Marketing Function**



The survey findings show (Table 5.26 and exhibit 5.21) that 45.3 percent placed 'no emphasis', 36.0 percent 'low emphasis', 8.0 per cent 'moderate emphasis', 6.0 per cent 'strong emphasis' and 4.7 per cent 'very strong emphasis' respectively on this. This being a utility item supplied to a single government entity, this aspect is given least priority in Biomass power plants.

**vi) Analysis of Operations Function**

Operations refer to the power generation activity which has a lot of potential to create value. Grid quality power is a result of quality operations; technology and raw material used have a lot of role to play in making the operations successful and the final output acceptable. Since operations are a dominant function of biomass power plants, the respondents' view as reflected in the survey results is of serious nature. The survey results are shown in Table: 5.27 and Exhibit 5.22.

**Table 5.27 - Analysis of Operations Function**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 82 | 54.7 | 54.7 | 54.7 |
| Strong | 39 | 26 | 26 | 80.7 |
| Moderate | 19 | 12.7 | 12.7 | 93.4 |
| Low Emp. | 6 | 4 | 4 | 97.4 |
| No Emp. | 4 | 2.6 | 2.6 | 100 |
| **Total** | **150** | **100** | **100** | |

**Source: Computed from primary data**

**Exhibit 5.22 - Analysis of Operations Function**

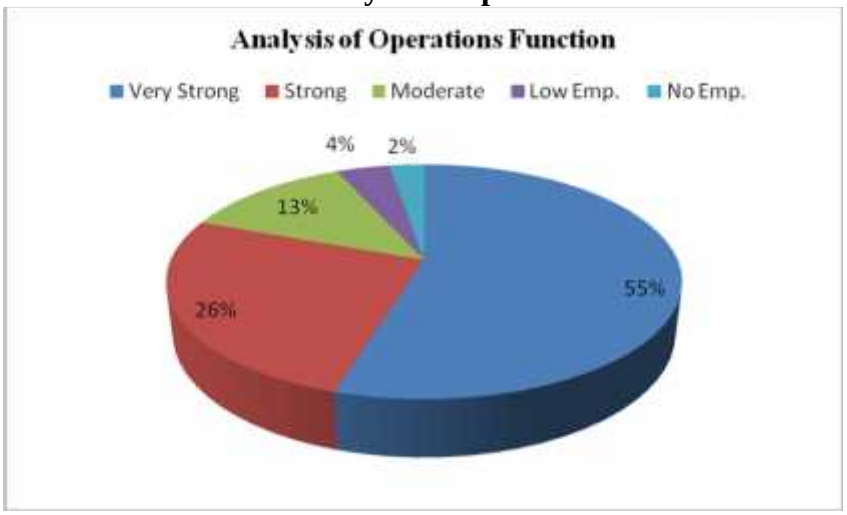



Table 5.27 and Exhibit 5.22 show that 54.7 per cent of the respondents placed 'very strong emphasis', 26.0 per cent 'strong emphasis', 12.7 per cent 'moderate emphasis', 4.0 per cent 'low emphasis' and 2.6 per cent 'no emphasis' respectively. Hence, it may be inferred that as the operational efficiency of the plant determine the profitability and sustainability of the plant, operations function has been given due weight age in the strategic management process of biomass power plants.

### vii) Analysis of HRM Function

Human resource management is very important function in any organization. More specifically in the biomass power plants the workforce plays a crucial role as they include both skilled and unskilled workers. The survey results are presented in Table 5.28 and Exhibit 5.23.

**Table 5.28 - Analysis of HRM Function**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 91 | 60.7 | 60.7 | 60.7 |
| Strong | 25 | 16.7 | 16.7 | 77.4 |
| Moderate | 14 | 9.3 | 9.3 | 86.7 |
| Low Emp. | 12 | 8 | 8 | 94.7 |
| No Emp. | 8 | 5.3 | 5.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.23 Analysis of HRM Function**

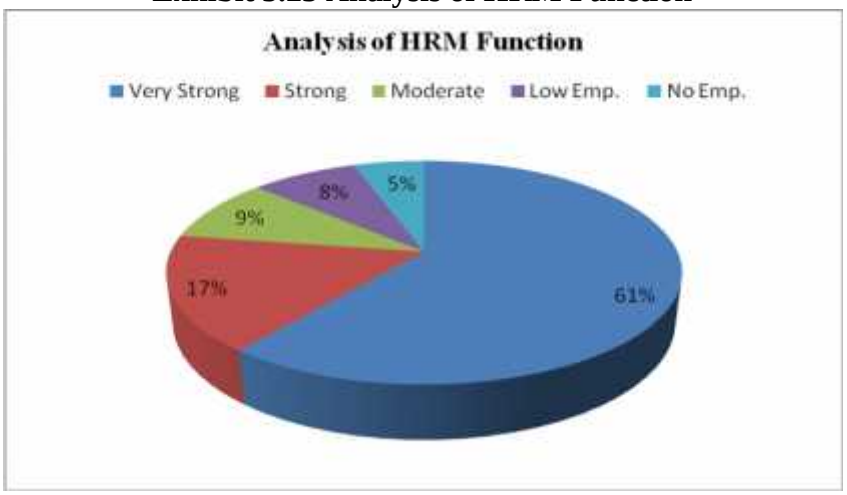



Table 5.28 and Exhibit 5.23 show that 60.7 per cent of the respondents laid 'very strong emphasis', 16.7 per cent 'strong emphasis', 9.3 per cent 'moderate emphasis', 8.0 per cent 'low emphasis' and 5.3 per cent 'no emphasis' respectively. Hence, it may be inferred that the management of human resources is given due importance in the organization as it has to be managed properly for optimum utilization of the workforce.

### viii. Analysis of Finance Function

Management of finance is an integral part of any organization. This function includes planning for sources of finance, acquisition and allocation of finance for maximization of the value and wealth of the organization. The survey results are presented in Table 5.29 and Exhibit 5.24.

**Table 5.29 - Finance Management**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 118 | 78.7 | 78.7 | 78.7 |
| Strong | 18 | 12 | 12 | 90.7 |
| Moderate | 8 | 5.3 | 5.3 | 96 |
| Low Emp. | 4 | 2.7 | 2.7 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.24 Finance Management**


Table 5.29 and Exhibit 5.24 show that 78.7 per cent of the respondents laid 'very strong emphasis', 12.0 per cent 'strong emphasis', 5.3 per cent 'moderate emphasis', 2.7 per cent 'low emphasis', and 1.3 per cent 'no emphasis' respectively. Hence, it may be understood that finance function is given utmost priority as the biomass power industry is very highly competitive in nature and needs tight cost control to maximize the profitability.

### viii. Analysis of R & D Function

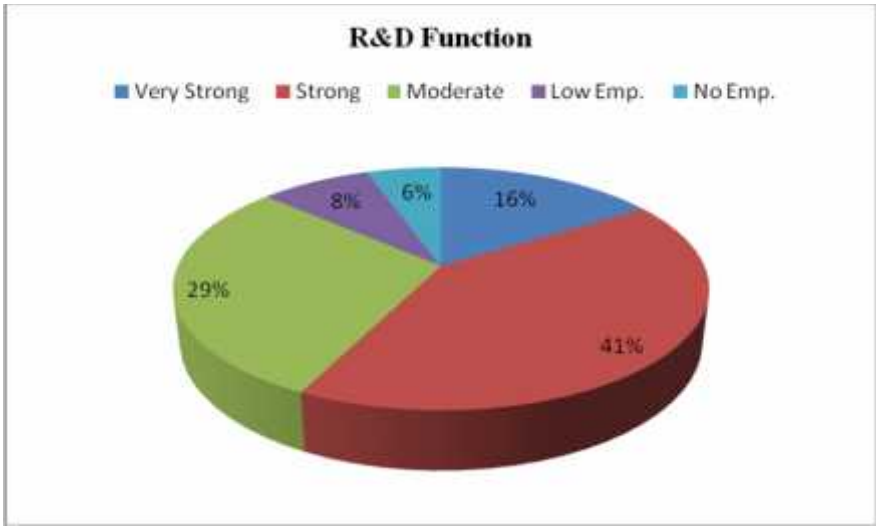
The research and development function is very much relevant in the industry where technology plays a very prominent role. The study also supports this statement. The survey results are presented in Table 5.30 and Exhibit 5.25.

**Table 5.30 - R&D Function**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 24 | 16 | 16 | 16 |
| Strong | 62 | 41.3 | 41.3 | 57.3 |
| Moderate | 44 | 29.3 | 29.3 | 86.6 |
| Low Emp. | 12 | 8 | 8 | 94.6 |
| No Emp. | 8 | 5.4 | 5.4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.25 - R&D Function**




The study reveals that 41.3 per cent of the respondents placed 'strong emphasis', 29.3 per cent 'moderate emphasis', 16.0 per cent 'very strong emphasis', 8.0 per cent 'low emphasis', and 5.4 per cent 'no emphasis' respectively as shown in Table 5.30 and Exhibit 5.25. Hence, it may be inferred that the R&D function is relevant in the biomass power industry also and given strong emphasis in the strategic management process.

### 5.8.4. Strategy Formulation

The strategy formulation refers to the process of choosing most appropriate course of action for the realization of the goals and objectives of the organization and thereby achieving the organizational vision. The following aspects such as formulation of strategy alternatives, strategy analysis and choice and selection of the best strategy are discussed below.

#### i) Formulation of Strategic alternatives

Strategic alternatives are the different courses of action available to a firm to pursue its objectives at a given point of time. Generation of feasible alternatives is crucial for formulating and selecting appropriate strategies. But this is by no means an easy task, because there may be different strategic options available for accomplishing a particular

objective. Formulation of strategies depends upon the size, style of management, characteristics of the industry and such other factors. In a small organization like biomass power plant, all decisions are made by the owner or chief executive himself. Therefore, formulation of strategies mainly revolve around taking decisions on various aspects like what new businesses to enter, what businesses to abandon, how to allocate resources, whether to expand operations or diversify, etc. The industry was surveyed about how it feels about selection of the best strategy. All the respondents are fully in favor of formulation of strategic alternatives. The results of the survey are presented in Table 5.31 and Exhibit 5.26.

**Table 5.31 - Formulation of Strategic Alternatives**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 87 | 58 | 58 | 58 |
| Strong | 33 | 22 | 22 | 80 |
| Moderate | 18 | 12 | 12 | 92 |
| Low Emp. | 9 | 6 | 6 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.26 Formulation of Strategic Alternatives**

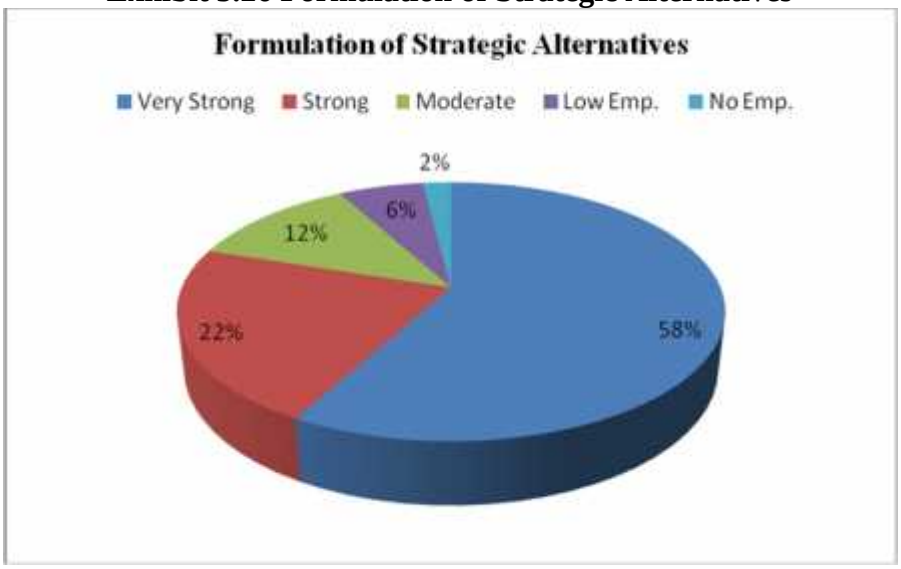


Table 5.31 and Exhibit 5.26 show that 58.0 per cent of the respondents laid 'very strong emphasis', 22.0 per cent 'strong emphasis', 12.0 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 2.0 per cent 'no emphasis' respectively. Hence, it may be inferred that formulation of strategic alternatives which guides the biomass power plants to steer their operations in a more focused way has been given very strong emphasis.

### ii) Strategy Analysis and Choice

Given the vision, mission and objectives and having analyzed the environmental opportunities and threats as well as the internal strengths and weaknesses of the firm, the next step in the strategic management process is generating feasible alternatives, evaluating those alternatives and choosing appropriate strategie4s for implementation. This process of generating, evaluating and selecting appropriate strategies is broadly referred to as "strategy analysis and choice". The firm's current vision, mission and objectives as well as the firm's strategy coupled with information gathered through environmental and internal analysis, provide the basis for generating and evaluating feasible alternative strategies. The survey results are presented in Table 5.32 and Exhibit 5.27.

**Table 5.32 - Strategy Analysis and Choice**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 87 | 58 | 58 | 58 |
| Strong | 41 | 27.3 | 27.3 | 85.3 |
| Moderate | 13 | 8.7 | 8.7 | 94 |
| Low Emp. | 7 | 4.7 | 4.7 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.27 - Strategy Analysis and Choice**


Table 5.32 and Exhibit 5.27 show that 58 per cent of the respondents laid 'very strong emphasis', 27.3 per cent 'strong emphasis', 8.7 per cent 'moderate emphasis', 4.7 per cent 'low emphasis' and 1.3 per cent 'no emphasis' respectively on this. This means that the respondents consider this as a very determinant strategic action in biomass power plant and have placed very strong emphasis on this element of strategic management process.

### iii) Selection of Best Strategy

Prudent choice relating to product, market and technology make all the difference to the survival and growth of an organization. Inappropriate choice of a strategy will result in failure. Strategy selection is of great importance as it reinforces the strengths and weaknesses of an organization. Placing the strengths against the opportunity and using them to get over the threats is the key to achieve good results. The industry was surveyed about how it feels about selection of the best strategy. All the respondents are fully in favor of selecting the best strategy. The survey results are presented in Table 5.33 and Exhibit 5.28.

**Table 5.33 - Select the Best Strategy**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 93 | 62 | 62 | 62 |
| Strong | 27 | 18 | 18 | 80 |
| Moderate | 13 | 8.7 | 8.7 | 88.7 |
| Low Emp. | 11 | 7.3 | 7.3 | 96 |
| No Emp. | 6 | 4 | 4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.28 - Select the Best Strategy**

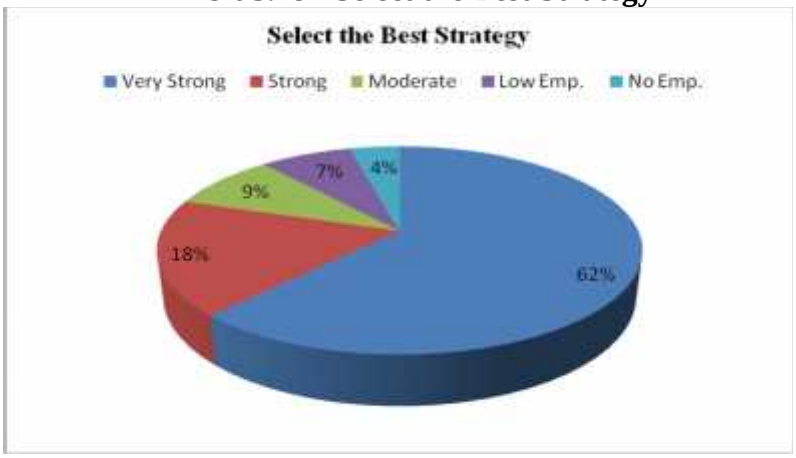



Table 5.33 and Exhibit 5.28 show that 62.0 per cent of the respondents laid 'very strong emphasis', 18.0 per cent 'strong emphasis', 8.7 per cent 'moderate emphasis', 7.3 per cent 'low emphasis' and 4.0 per cent 'no emphasis' respectively on this. Hence, it may be inferred from the above analysis that the selection of the best strategy will help the survival and growth of the organization and as such most of the respondents placed very strong emphasis on this element of strategic management process.

In addition to the above steps, there are certain other aspects relating to the strategic management process which need to be examined to get an overall idea about the manner in which the whole process is carried out in biomass power plants. These additional aspects relate to the use of planning tools and involvement of personnel in the strategic management process. It is common knowledge that most organizations use several tools and techniques such as SWOT analysis, cost benefit analysis, gap analysis, value chain

analysis, etc. Involvement of personnel in the strategic management process is another important component to be looked into while examining the emphasis laid on various components of the strategic management process. Both these elements are examined below:

### 5.8.5 Use of Planning Tools

Planning tools like SWOT analysis, cost benefit analysis, GAP analysis, value chain analysis, financial analysis, strategic advantage profile, balanced scorecard, key factor rating and benchmarking are discussed below.

#### i) SWOT Analysis

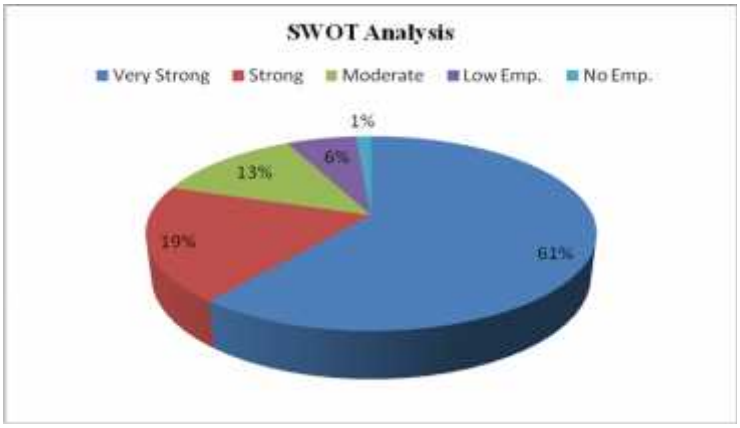
A strategically oriented plant will use planning tools like SWOT Analysis which informs the plant about its strengths, weaknesses, opportunities and threats. The findings of the survey are presented in Table 5.34 and Exhibit 5.29.

**Table 5.34 - SWOT Analysis**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 91 | 60.7 | 60.7 | 60.7 |
| Strong | 29 | 19.3 | 19.3 | 80 |
| Moderate | 19 | 12.7 | 12.7 | 92.7 |
| Low Emp. | 9 | 6 | 6 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.29 SWOT Analysis**




As can be seen from Table 5.34 and Exhibit 5.29, as many as 60.7 per cent of the respondents placed 'very strong emphasis', 19.3 per cent 'strong emphasis', 12.7 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 1.3 per cent 'no emphasis' respectively on this. Hence, it can be inferred that SWOT analysis helps in interpreting the key areas of the biomass power plants and also guides them in taking relevant and focused decisions and as such most of the respondents placed very strong emphasis on SWOT analysis.

**ii) Cost Benefit Analysis**

Cost Benefit Analysis throws light on the ratio between costs and benefits relating to a project. On the use of this analysis, the research tried to find out the relationship between costs and the associated benefits with them. The results of the survey are presented in Table 5.35 and Exhibit 5.30.

**Table 5.35- Cost Benefit Analysis**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 97 | 64.7 | 64.7 | 64.7 |
| Strong | 29 | 19.3 | 19.3 | 84 |
| Moderate | 14 | 9.3 | 9.3 | 93.3 |
| Low Emp. | 7 | 4.7 | 4.7 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.30 - Cost Benefit Analysis**

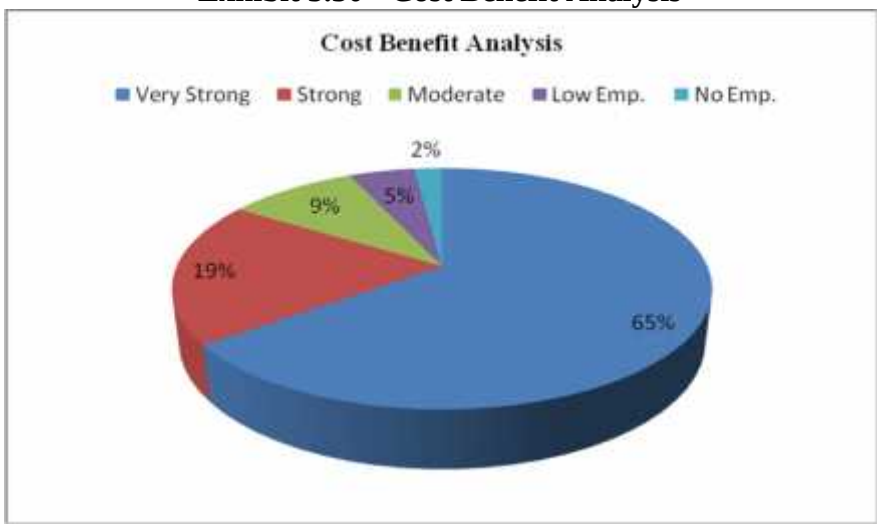



Table 5.35 and Exhibit 5.30 show that 64.7 per cent of the respondents laid 'very strong emphasis', 19.3 per cent 'strong emphasis', 9.3 per cent 'moderate emphasis', 4.7 per cent 'low emphasis' and 2.0 per cent 'no emphasis' respectively on this. Hence, it may be inferred that cost benefit analysis is of high relevance in taking decisions relating to eliminating or minimization of costs or maximizing the benefits and most of the respondents have placed very strong emphasis on cost benefit analysis.

### ii) GAP Analysis

GAP analysis refers to understanding the difference between actual performance and the performance that the company has the potential to show. Failure to make good use of the potential results in a wide gap. The company should invest in resources so that the maximum performance is displayed. Gap analysis informs the plant of the laxity or shortcomings of the management in realizing the full potential of the plant. The survey results are presented in Table 5.36 and Exhibit 5.31.

**Table 5.36 - GAP Analysis**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 77 | 51.3 | 51.3 | 51.3 |
| Strong | 32 | 21.3 | 21.3 | 72.6 |
| Moderate | 24 | 16 | 16 | 88.6 |
| Low Emp. | 9 | 6 | 6 | 94.6 |
| No Emp. | 8 | 5.4 | 5.4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.31 - GAP Analysis**

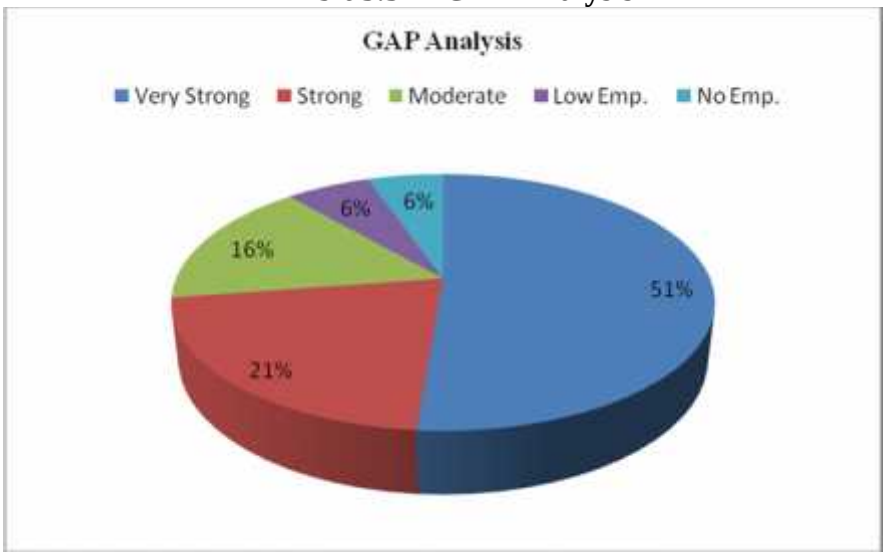



Table 5.36 and Exhibit 5.31 show that 51.3 per cent of the respondents laid 'very strong emphasis', 21.3 per cent 'strong emphasis', 16.0 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 5.4 per cent 'no emphasis' respectively on this. Hence, it may be inferred that the GAP analysis which is given very strong emphasis by the respondents is an important element of strategic management in biomass power plants.

### iii) Value Chain Analysis

Value chain views the organization as a sequential process of value-creating activities. This approach is useful for understanding the building blocks of competitive advantage. A firm is profitable to the extent that the value it receives exceeds the total costs involved

in creating its product or service. Creating value for manufacturers that exceeds the cost of production reflects the profit margin which is a key concept used in analyzing a firm's competitive position.

Value chain analysis involves analyzing the chain of activities that have a fertile avenue to create value. Inbound logistics, operations, outbound logistics, marketing and sales, and services are the primary activities while infrastructure, HRM, technology and procurement are support activities that offer a lot of opportunities to create value. The survey results are presented in Table 5.37 and Exhibit 5.32.

**Table 5.37 - Value Chain Analysis**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 87 | 58 | 58 | 58 |
| Strong | 34 | 22.7 | 22.7 | 80.7 |
| Moderate | 14 | 9.3 | 9.3 | 90 |
| Low Emp. | 9 | 6 | 6 | 96 |
| No Emp. | 6 | 4 | 4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.32 - Value Chain Analysis**

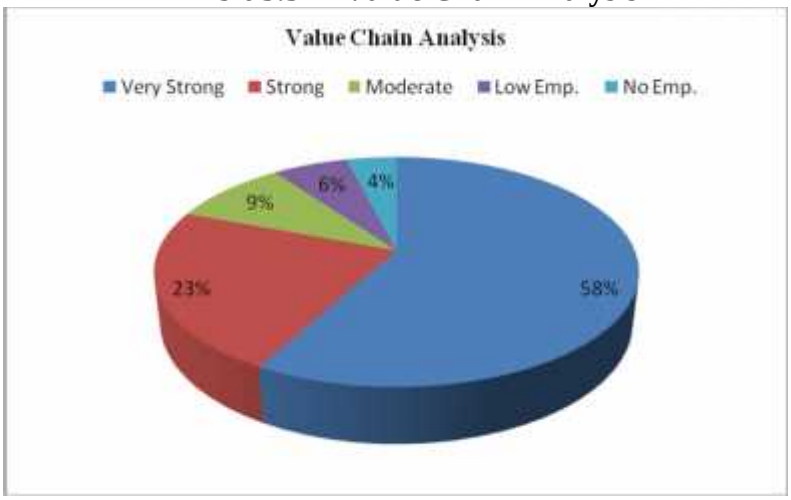



Table 5.37 and Exhibit 5.32 show that 58.0 per cent of the respondents placed 'very strong emphasis', 22.7 per cent 'strong emphasis', 9.3 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 4.0 per cent 'no emphasis' respectively on this. Hence, it may be inferred that the value chain analysis which helps the biomass power plants in

identifying the activities which add a significant value are given very high emphasis by the respondents.

### iv) Financial Analysis

Financial analysis shows the plant's financial performance, i.e. on profits and costs. Financial ratios show liquidity, profitability, operating efficiency, leverage, return on investment, return on operation, etc. The emphasis given by the industry on this is shown in Table 5.38 and Exhibit 5.33.

**Table 5.38 - Financial Analysis**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 78 | 52 | 52 | 52 |
| Strong | 33 | 22 | 22 | 74 |
| Moderate | 24 | 16 | 16 | 90 |
| Low Emp. | 11 | 7.3 | 7.3 | 97.3 |
| No Emp. | 4 | 2.7 | 2.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.33 - Financial Analysis**


Table 5.39 and Exhibit 5.33 show that 52.0 per cent of the respondents laid 'very strong emphasis', 22.0 per cent 'strong emphasis', 16.0 per cent 'moderate emphasis', 7.3 per

cent ‘low emphasis’ and 2.7 per cent ‘no emphasis’ respectively on this. Overall, the emphasis on this is high.

### v) Strategic Advantage Profile

Strategic Advantage Profile (SAP) refers to understanding the strengths and weaknesses of functional areas like operations, finance, marketing, HR, and R&D. The whole industry lays ‘strong emphasis’ on SAP as shown in Table: 5.39 and Exhibit 5.34.

**Table 5.39 - Strategic Advantage Profile**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 32 | 21.3 | 21.3 | 21.3 |
| Strong | 72 | 48 | 48 | 69.3 |
| Moderate | 22 | 14.7 | 14.7 | 84 |
| Low Emp. | 16 | 10.6 | 10.6 | 94.6 |
| No Emp. | 8 | 5.4 | 5.4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.34 - Strategic Advantage Profile**

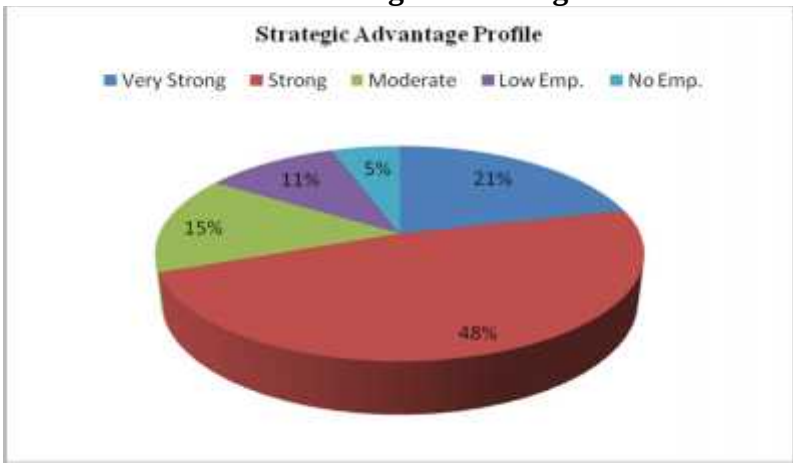



Table 5.39 and Exhibit 5.34 show that 48.0 per cent of the respondents laid ‘strong emphasis’, 21.3 per cent ‘very strong emphasis’, 14.7 per cent ‘moderate emphasis’, 10.6 per cent ‘low emphasis’ and 5.4 per cent ‘no emphasis’ respectively on this. Hence, it

may be inferred that the respondents placed only strong emphasis on this element of strategic management.

### vi) Balanced Scorecard

Balance Scorecard is a strategic management tool to assess financial and non-financial performance outcomes of a plant; it focuses on financial results, customer outcomes, internal business processes, and learning and growth. Performance assessment of any manager or a unit is done with the help of this tool. The biomass industry does not appear to have realized the usefulness of this tool if one goes by the results of the survey which are presented in Table.5.41 and Exhibit No: 5.35.

**Table 5.40 - Balanced Scorecard**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 83 | 55.3 | 55.3 | 55.3 |
| Strong | 49 | 32.7 | 32.7 | 88 |
| Moderate | 12 | 8 | 8 | 96 |
| Low Emp. | 4 | 2.7 | 2.7 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.35 - Balanced Scorecard**

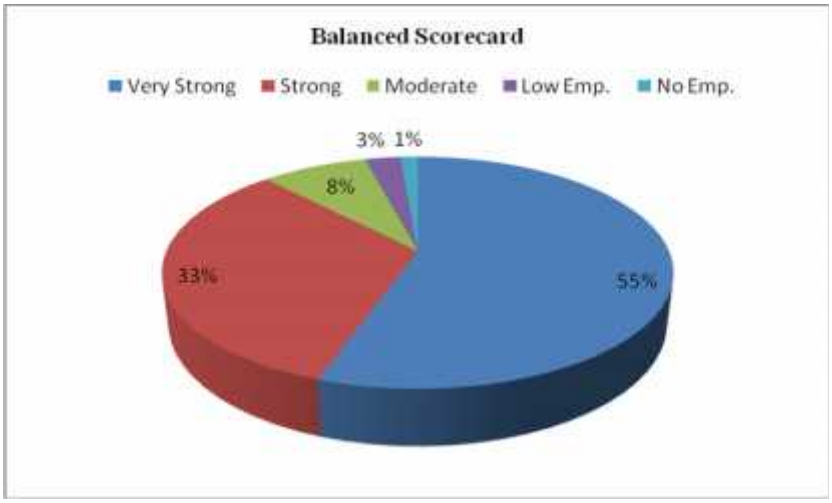


Table 5.40 and exhibit 5.35 show that 55.3 per cent of the respondents laid 'very strong emphasis', 32.7 per cent 'strong emphasis', 8.0 per cent 'moderate emphasis', 2.7 per cent 'low emphasis' and 1.3 per cent 'no emphasis' respectively on this. It can be inferred from the above that balanced score card is given very strong emphasis as a tool to assess the overall performance of the plant.

**vii) Key Factor Rating**

Key factors include labor, raw material, infrastructure, distribution, finances, and management; on these factors, the plant has to assess what are the strengths and weaknesses in comparison to the nearest competitors. This is similar to benchmarking where, in regard to some areas like infrastructure, a plant tries to understand what competitors are doing so that the gap can be bridged. On both practices, all the respondents have placed either 'strong' or 'very strong' emphasis. On key factor rating, all the respondents have placed 'very strong emphasis' and on 'bench marking' all of them placed 'strong emphasis'. The results of the survey are placed in Table: 5.41 and Exhibit 5.36.

**Table 5.41 - Key Factor Rating**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 66 | 44 | 44 | 44 |
| Strong | 54 | 36 | 36 | 80 |
| Moderate | 23 | 15.3 | 15.3 | 95.3 |
| Low Emp. | 4 | 2.7 | 2.7 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.36 - Key Factor Rating**

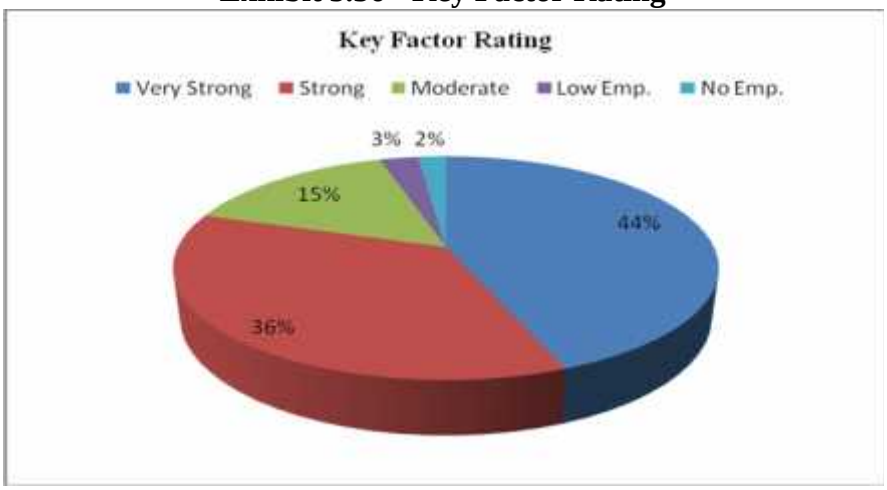



Table 5.41 and Exhibit 5.36 show that 44.0 per cent of the respondents laid 'very strong emphasis', 36.0 per cent 'strong emphasis', 15.3 per cent 'moderate emphasis', 2.7 per cent 'low emphasis' and 2.0 per cent 'no emphasis' respectively on this. The above analysis indicates that the key factor rating is given due emphasis.

**viii) Benchmarking**

Benchmarking allows the plants to compare the parameters with other plants in the same industry while helping to set meaningful targets.

**Table 5.42- Benchmarking**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 94 | 62.7 | 62.7 | 62.7 |
| Strong | 35 | 23.3 | 23.3 | 86 |
| Moderate | 14 | 9.3 | 9.3 | 95.3 |
| Low Emp. | 5 | 3.4 | 3.4 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.37 – Benchmarking**

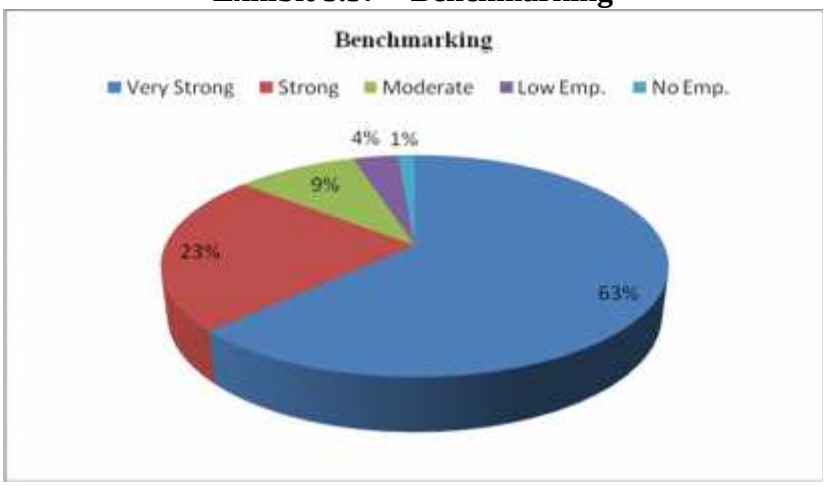



Table 5.42 and Exhibit 5.37 show that 62.7 per cent of the respondents placed 'very strong emphasis', 23.3 per cent 'strong emphasis', 9.3 per cent 'moderate emphasis', 3.4 per cent 'low emphasis' and 1.3 per cent 'no emphasis' respectively on this. Hence, it is inferred from the analysis that benchmarking is important and helps in determination of the areas of improvement, analysis of the reasons how other organizations achieving high performance and improvement of their own performance.

### 5.8.6 Involvement of Personnel in Strategic Management Process

Involvement of people in management of a plant is the key to superior performance since all the resistance is broken once the people who are involved in the planning and decision making process are fully involved in the implementation also. Involvement of managers such as top managers, middle managers and junior managers are discussed below. In addition, involvement of workers and also consultants are covered in the above discussion.

#### i) Involvement of Top Managers in the Process

Involvement of people in management of a plant is the key to superior performance since all the resistance is broken once the people involved in the implementation are involved in the planning and decision making process.

**Table 5.43 - Involvement of Top Managers in the Process**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 96 | 64 | 64 | 64 |
| Strong | 27 | 18 | 18 | 82 |
| Moderate | 17 | 11.3 | 11.3 | 93.3 |
| Low Emp. | 7 | 4.7 | 4.7 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.38 - Involvement of Top Managers in the Process**

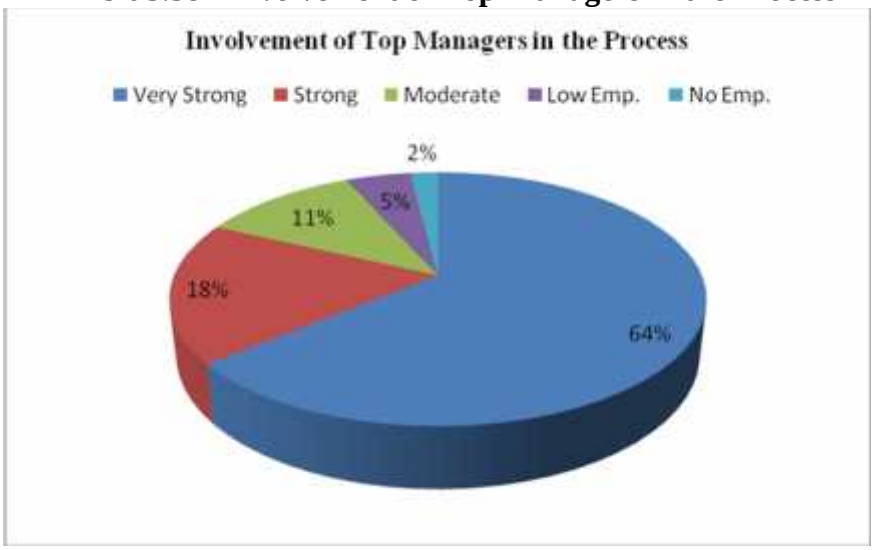



Table 5.43 and Exhibit 5.38 show that 64.0 per cent of the respondents laid 'very strong emphasis', 18.0 per cent 'strong emphasis', 11.3 per cent 'moderate emphasis', 4.7 per cent 'low emphasis' and 2.0 per cent 'no emphasis' respectively on this. Hence, it may be inferred that the involvement of top managers is very much vital to achieving the desired results and is given very strong emphasis.

### ii) Involvement of Middle Managers

Involvement of middle level managers in strategic management of a plant is also very important as they are responsible in implementing the decisions since they are also part of the decision making process.

**Table 5.44 - Middle Managers**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 86 | 57.3 | 57.3 | 57.3 |
| Strong | 36 | 24 | 24 | 81.3 |
| Moderate | 18 | 12 | 12 | 91.3 |
| Low Emp. | 8 | 5.3 | 5.3 | 98.6 |
| No Emp. | 2 | 1.4 | 1.4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.39 - Involvement of Middle Managers**

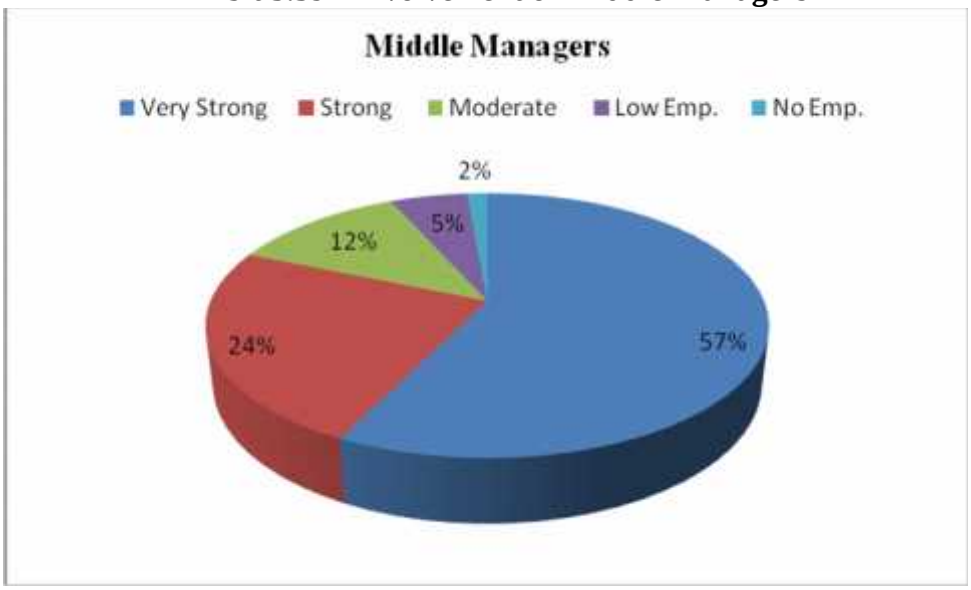



Table 5.44 and Exhibit 5.39 show that 57.3 per cent of the respondents laid ‘very strong emphasis’, 24.0 per cent ‘strong emphasis’, 12.0 per cent ‘moderate emphasis’, 5.3 per cent ‘low emphasis’ and 1.4 per cent ‘no emphasis’ respectively on this. Hence, it can be inferred from the above analysis that the role of middle level managers is considered important in the strategic management process since they influence the organizational performance through implementing the decisions.

### iii) Involvement of Junior Managers

The junior level managers act as the link between workers and middle level managers and are more involved in the operational process.

**Table 5.45 Involvement of Junior Managers**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 26 | 17.3 | 17.3 | 17.3 |
| Strong | 32 | 21.3 | 21.3 | 38.6 |
| Moderate | 44 | 29.4 | 29.4 | 68 |
| Low Emp. | 38 | 25.3 | 25.3 | 93.3 |
| No Emp. | 10 | 6.7 | 6.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.40 Involvement of Junior Managers**

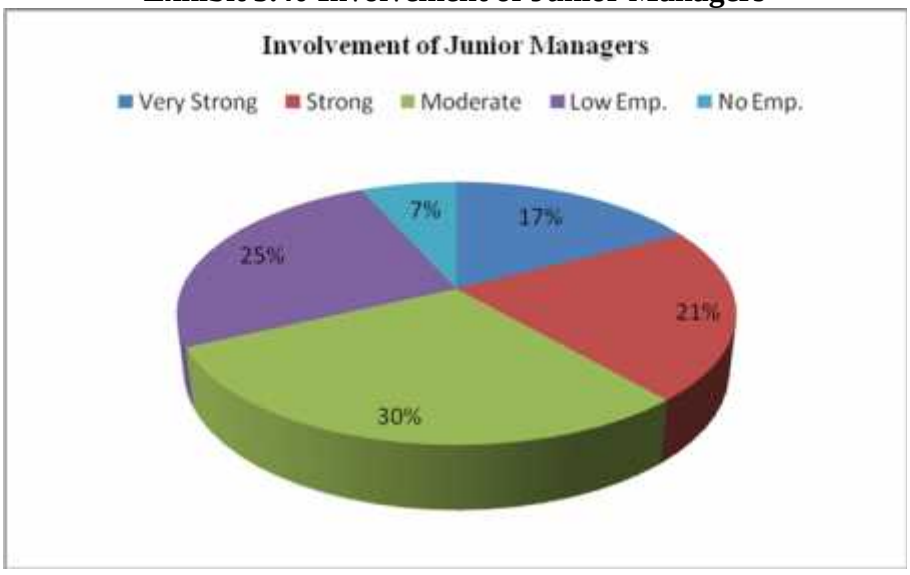



Table 5.45and Exhibit 5.40 show that 29.4 per cent of the respondents laid 'moderate emphasis', 25.3 per cent 'low emphasis', 21.3 per cent 'strong emphasis', 17.3 per cent 'very strong emphasis' and 6.7 per cent 'no emphasis' respectively on this. Hence, it can be inferred from the analysis that though the junior level managers are important as they are responsible in getting the work done from the workers, they have limited authority

and limited scope for participation in strategic management process and hence the respondents gave only moderate emphasis on this.

### ii) Involvement of Workers

Involvement of workers in the strategic management process is assessed in the survey. The results are presented in Table 5.46 and Exhibit 5.41.

**Table 5.46 - Involvement of Workers in the Process**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 16 | 10.7 | 10.7 | 10.7 |
| Strong | 18 | 12 | 12 | 22.7 |
| Moderate | 33 | 21.3 | 21.3 | 44 |
| Low Emp. | 41 | 27.3 | 27.3 | 71.3 |
| No Emp. | 43 | 28.7 | 28.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.41 - Involvement of Workers in the Process**

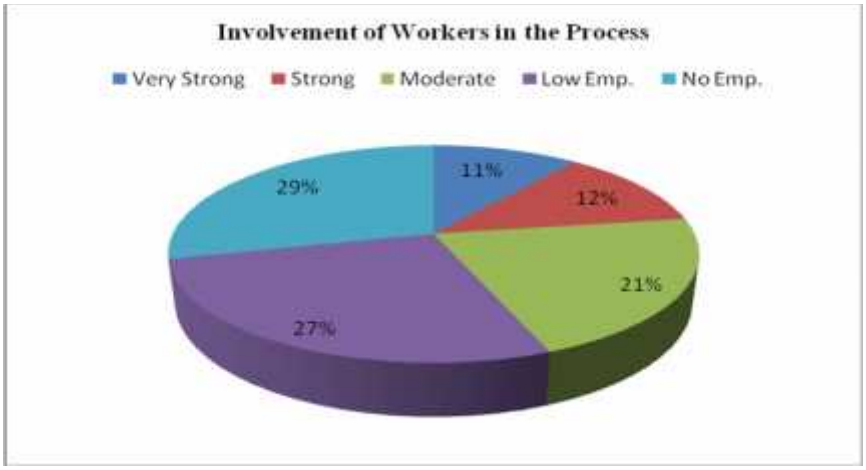



Table 5.46 and Exhibit 5.41 show that 28.7 per cent of the respondents laid 'no emphasis', 27.3 per cent 'low emphasis', 21.3 per cent 'moderate emphasis', 12.0 per cent 'strong emphasis' and 10.7 per cent 'very strong emphasis' respectively on this.

### iii) Involvement of Consultants

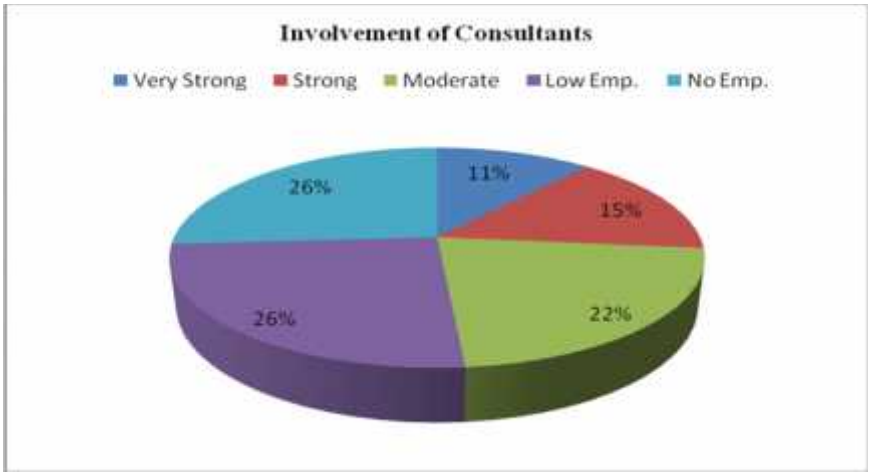
Further, the research also tried to understand the importance given to involvement of consultants in the strategic management process.

**Table 5.47 - Involvement of Consultants**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 17 | 11.3 | 11.3 | 11.3 |
| Strong | 23 | 15.3 | 15.3 | 26.6 |
| Moderate | 33 | 22 | 22 | 48.6 |
| Low Emp. | 38 | 25.4 | 25.4 | 74 |
| No Emp. | 39 | 26 | 26 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.42 - Involvement of Consultants**




The survey results show that 26.0 per cent of the respondents laid ‘no emphasis’, 25.4 per cent ‘low emphasis’, 22.0 per cent ‘moderate emphasis’, 15.3 per cent ‘strong emphasis’ and 11.3 per cent ‘very strong emphasis’ respectively on this. The results are presented in Table 5.47 and Exhibit 5.42.

### 5.8.7 Strategy Implementation

Strategy implementation is the process of putting organization's various strategies into action by setting annual or short-term objectives, allocating resources, developing programmes, policies, structures, functional strategies, etc. Even the best strategic plan will be useless unless it is implemented properly. The strategy implementation is, therefore, the most difficult element of the strategic management process. This is so because there has to be a 'fit' between the strategy and the organization.

As Fred R. David observes, successful strategy formulation does not guarantee successful strategy implementation. It affects an organization from top to bottom; it affects all divisional and functional areas of business. It requires the right alignment between the strategy and various activates, processes within the organization. The complexities in the task of implementation arise from a number of organizational adjustments that are required over an extended period of time and the need to match them all to the strategy. Key people need to be added or reassigned, resources have to be mobilized and allocated, functional strategies and policies are to be designed, organizational structure may have to be changed, a strategy-supportive culture may have to be developed, reward and incentive plans are to be revised and if necessary, restructuring, re-engineering and redesigning becomes imperative. In short, the difficulties in affecting the organizational adjustments arise from the tasks associated with change. The success of strategy implementation, to a large extent, therefore, depends on the way the task of change management is carried out.

Strategy implementation involves identification of short-term objectives, formulation of programmes, policies and procedures, initiation of specific functional strategies, design of effective reward systems, mobilization of resources, provision of strategic leadership, change of organizational culture and overall management of change. All these aspects are discussed below.

### i) Identification of Short-term Objectives

Long-term objectives can be achieved only when they are converted into short-term objectives which are quantifiable, and achievable. For goal achievement, programs, policies and procedures have to be formulated. Policies are the decisions made in advance, that give direction to all future questions and confusion. Policies have to be made on all issues relating to HRM, Finance, Operations, etc. Procedures are the predetermined ways of going about activities like approvals of purchases, allotting budgets, placing orders, selecting functionaries, etc. These procedures are the systems that work on their own regardless of whether an individual is present or not, besides keeping the vested interests away from the original objectives set by the plant.

Similarly, the plants should put in place the functional strategies besides converting long-term objectives into short-term targets and formulation of policies, plans and procedures for implementation of the strategies. This will ensure smooth functioning of various departments of the organization to achieve the set goals. The survey results on this component of strategic management process are presented in Table 5.48 and Exhibit 5.43.

**Table 5.48 - Identification of Short-term Objectives**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 78 | 52 | 52 | 52 |
| Strong | 37 | 24.7 | 24.7 | 76.7 |
| Moderate | 25 | 16.7 | 16.7 | 93.4 |
| Low Emp. | 8 | 5.3 | 5.3 | 98.7 |
| No Emp. | 2 | 1.3 | 1.3 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

Source: Computed from primary data

**Exhibit 5.43 Identification of Short-term Objectives**

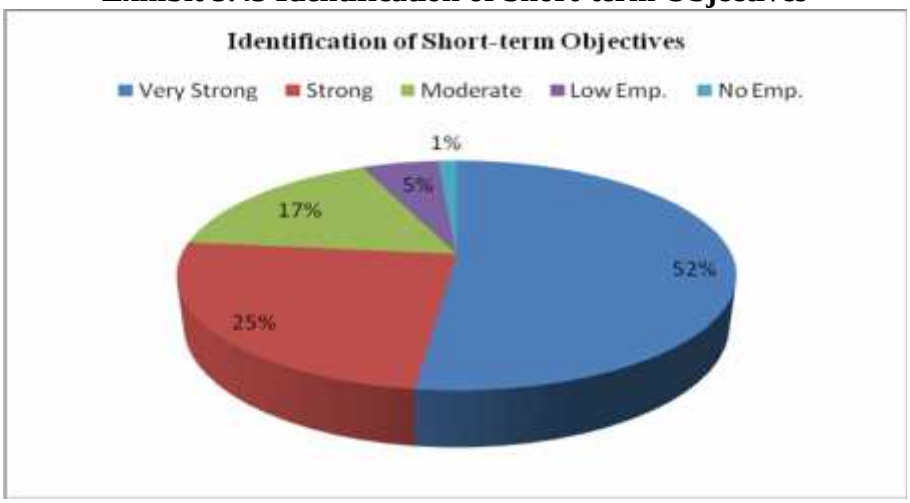



Table 5.48 and Exhibit 5.43 show that 52.0 per cent of the respondents laid 'very strong emphasis', 24.7 per cent 'strong emphasis', 16.7 per cent 'moderate emphasis', 5.3 per cent 'low emphasis' and 1.3 per cent 'no emphasis' respectively on identification of short term objectives. Hence it is inferred that identification of short-term objectives are very crucial in achieving long-term results and sustainability and hence the respondents gave very strong emphasis on this element.

**ii) Formulation of Programs, Policies & Procedures**

For goal achievement, programs, policies and procedures have to be formulated. Policies are the decisions made in advance, that give direction to all future questions and confusions. Policies have to be made on all issues relating to HRM, Finance, and Operations. Procedures are the predetermined ways of going about activities like approvals of purchases, allotting budgets, placing orders, selecting functionaries, etc.

These procedures are the systems that work on their own regardless of whether an individual is present or not, besides keeping the vested interested away from the original objectives set by the plant.

**Table 5.49 - Formulation of Programs, Policies & Procedures**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 86 | 57.3 | 57.3 | 57.3 |
| Strong | 27 | 18 | 18 | 75.3 |
| Moderate | 17 | 11.3 | 11.3 | 86.6 |
| Low Emp. | 14 | 9.4 | 9.4 | 96 |
| No Emp. | 6 | 4 | 4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

Source: Computed from primary data

**Exhibit 5.44 - Formulation of Programs, Policies & Procedures**

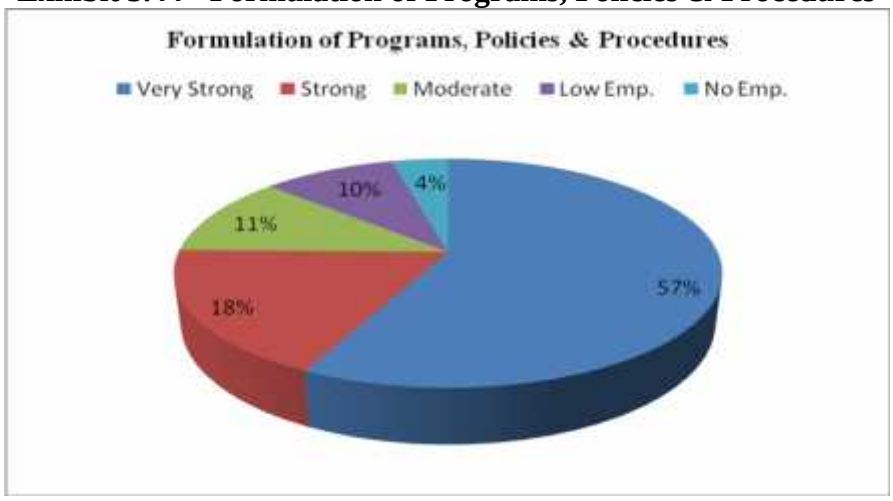



Table 5.49 and Exhibit 5.44 show that 57.3 per cent of the respondents laid ‘very strong emphasis’, 18.0 per cent ‘strong emphasis’, 11.3 per cent ‘moderate emphasis’, 9.4 per cent ‘low emphasis’ and 4.0 per cent ‘no emphasis’ respectively on this. Hence, it may be inferred that the formulation of programs, policies and procedures that are necessary to put the strategy in action is of high importance.

**iii) Initiation of Specific Functional Strategies**

The plant should put in place the functional strategies, notwithstanding formulation of vision, mission, long term objectives, and policies. This will ensure smooth performing of each of the functions.

**Table 5.50 - Initiation of Specific Functional Strategies**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 81 | 54 | 54 | 54 |
| Strong | 32 | 21.3 | 21.3 | 75.3 |
| Moderate | 24 | 16 | 16 | 91.3 |
| Low Emp. | 9 | 6 | 6 | 97.3 |
| No Emp. | 4 | 2.7 | 2.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.45 - Initiation of Specific Functional Strategies**

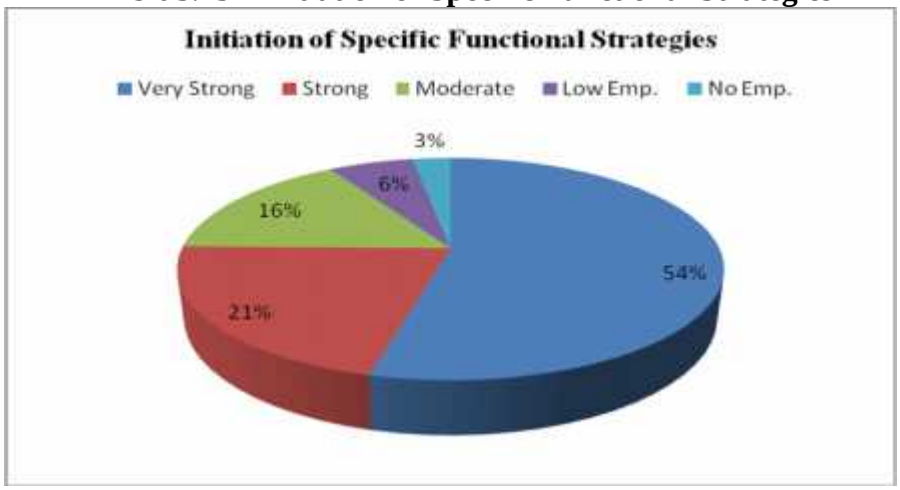



Table 5.50 and Exhibit 5.45 show that 54.0 per cent of the respondents placed 'very strong emphasis', 21.3 per cent 'strong emphasis', 16.0 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 2.7 per cent 'no emphasis' respectively on this Hence, it may be inferred that the overall strategic success requires the functional activities to be tightly integrated.

**iv) Design of Appropriate Reward Systems and Mobilization of Resources**

The design of reward systems is a key element in the implementation of strategy for a number of reasons: i) reward systems enable creation of a proper climate for strategic change, by influencing the behavior of people; ii) reward systems have a symbolic impact as they are visible signals of desirable behavior; iii) reward systems can be tailored to individual and group needs offering both monitory and non-monetary rewards; and iv)

linking of rewards to personal targets based on performance appraisal systems also helps in identifying personal development needs.

Organizations run smoothly if effective reward systems are put in place. If good behaviors have to repeat, reward systems should be designed in such a way that they are fair and give appropriate rewards to the most deserving. Reward systems should be linked to an individual's capability, effort and results achieved by him. If rewards are geared to only one aspect, it may have a negative effect on performance in other aspects.

An important issue in reward systems is whether to have individual rewards or group rewards. Rewarding individuals for effort and performance may be difficult unless the organizational structure permits individual performance to be isolated from that of others. Thus, for example, with respect to managerial contribution to corporate performance, individual rewards may be beneficial and appropriate because individual's contribution is relatively independent of others. On the other hand, if individual's contributions are relatively interdependent, it would be appropriate to adopt schemes based on group performance. Again, rewarding individuals may be necessary where entrepreneurial or creative behaviors are sought to be encouraged. On the contrary, if greater cooperation and teamwork is sought to be rewarded, group reward schemes would be more desirable. Similarly, mobilization of resources is very important for achieving the desire results. The survey results are presented in Table 5.51 and Exhibit 5.46.

**Table 5.51 - Designing Effective Reward Systems and Mobilization of Resources**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 87 | 58 | 58 | 58 |
| Strong | 26 | 17.3 | 17.3 | 75.3 |
| Moderate | 23 | 15.3 | 15.3 | 90.6 |
| Low Emp. | 9 | 6 | 6 | 96.6 |
| No Emp. | 5 | 3.4 | 3.4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.46 - Designing Effective Reward Systems and Mobilization of Resources**

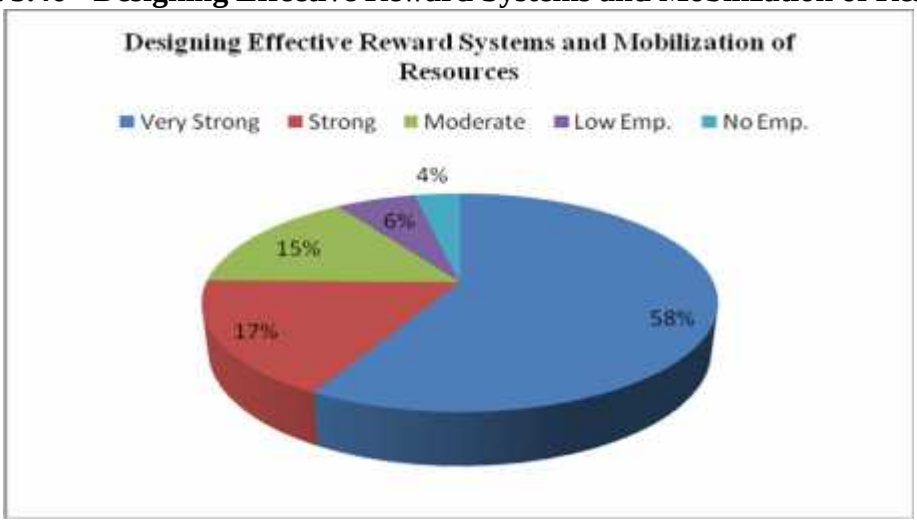



Table 5.51 and Exhibit 5.46 show that 58.0 per cent of the respondents laid 'very strong emphasis', 17.3 per cent 'strong emphasis', 15.3 per cent 'moderate emphasis', 6.0 per cent 'low emphasis' and 3.4 per cent 'no emphasis' respectively on this. Hence, it may be inferred from the analysis that designing effective reward systems and mobilization of resources are very important in achieving the desired results.

### iv) Provision of Strategic Leadership

Strategic leadership is vital in ensuring that strategies are formulated and implemented in an effective manner. Strategic leadership establishes the firm's direction by developing and communicating a vision of the future and inspiring organization members to move in that direction. Unlike managerial leadership which is generally concerned with the short-term day-to-day activities, strategic leadership is concerned with determining the firm's strategy, direction, aligning the firm's strategy with its culture, modeling and communicating high ethical standards, and initiating changes in the firm's strategy when necessary. The most successful leadership is not just to define the vision and mission of an organization in a cold, abstract manner but to communicate trust, enthusiasm and commitment to strategy.

Organizations without leadership are like rudderless ships without any direction. Organizations fall by the wayside when the leadership is not spirited. The survey results are presented in Table 5.52 and Exhibit 5.47.

**Table 5.52 - Provision of Strategic Leadership**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 83 | 55.3 | 55.3 | 55.3 |
| Strong | 27 | 18 | 18 | 73.3 |
| Moderate | 23 | 15.3 | 15.3 | 88.6 |
| Low Emp. | 11 | 7.4 | 7.4 | 96 |
| No Emp. | 6 | 4 | 4 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.47 - Provision of Strategic Leadership**


Table 5.52 and Exhibit 5.47 show that 55.3 per cent of the respondents laid 'very strong emphasis', 18.0 per cent 'strong emphasis', 15.3 per cent 'moderate emphasis', 7.4 per cent 'low emphasis' and 4.0 per cent 'no emphasis' respectively on this. Hence, it may be inferred that Strategic Leadership plays a significant role in steering the organization for better performance.

### iv) Change of Organizational Culture

Every organization has its own unique culture. Organizational culture is defined as the set of beliefs, values and assumptions that members of an organization share in common. A

company's culture is manifested in the values and business principles that management preaches and practices. An organization's culture can exert a powerful influence on the behavior of all employees. It can, therefore, strongly affect a company's ability to adopt new strategies. Organizational culture should, therefore, support high performance and quick response to change. Pro-performance culture has to be built and negative culture needs to be changed. In this study, an attempt has been made to find out what kind of importance is given to change of organizational culture in the strategic management process. The survey results are presented in Table 5.53 and Exhibit 5.48.

**Table 5.53 - Change of Organizational Culture**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 34 | 22.7 | 22.7 | 22.7 |
| Strong | 31 | 20.7 | 20.7 | 43.4 |
| Moderate | 53 | 35.3 | 35.3 | 78.7 |
| Low Emp. | 23 | 15.3 | 15.3 | 94 |
| No Emp. | 9 | 6 | 6 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.48 - Change Organizational Culture**


Table 5.53 and Exhibit 5.48 show that 35.3 per cent of the respondents laid 'moderate emphasis', 22.7 per cent 'very strong emphasis', 20.7 per cent 'strong emphasis', 15.3 per cent 'low emphasis' and 6.0 per cent 'no emphasis' respectively on this overall, this aspect has received moderate to low emphasis; it could be inferred that not much

emphasis is given to this component in the strategic management process being following in Biomass power plants.

### v) Overall Management of Change

Implementation of strategy invariably involves change for people working in organizations. Sometimes they resist change and make strategy difficult to implement. Sometimes, they welcome change and enthusiastically contribute to strategy implementation. Understanding and exploring the impact of change on people is, therefore, important for strategy implementation.

Change has to be introduced in such a way that it is accepted without resistance; surgical and non-surgical methods have to be used depending on what is most appropriate in a particular context. Employees have to be convinced about the change; and for this to happen, a suitable communication strategy has to be designed. Employees should be made partners in the process of change. The industry was surveyed to find out what kind of importance is given to this aspect of strategic management process. The survey results are presented in Table 5.54 and Exhibit 5.49.

**Table 5.54 - Overall Management of Change**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 31 | 20.7 | 20.7 | 20.7 |
| Strong | 27 | 18 | 18 | 38.7 |
| Moderate | 44 | 29.3 | 29.3 | 68 |
| Low Emp. | 27 | 18 | 18 | 86 |
| No Emp. | 21 | 14 | 14 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.49 - Overall Management of Change**

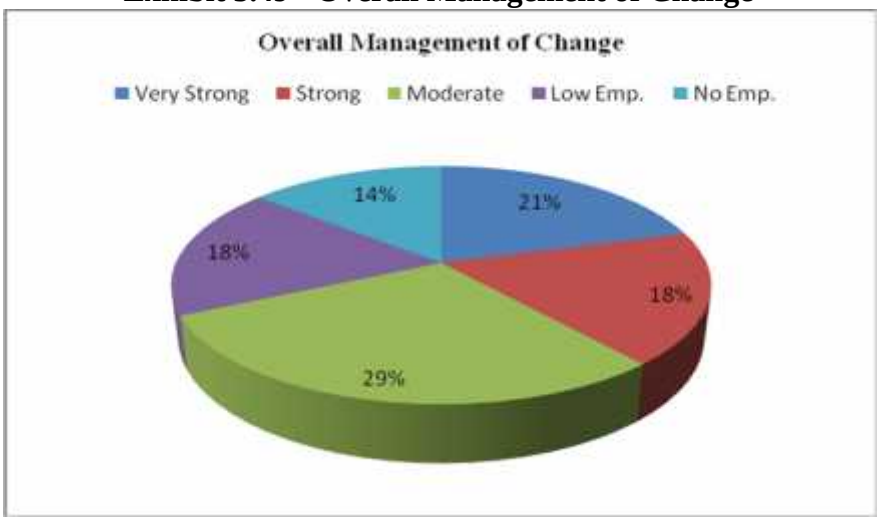



Table 5.54 and Exhibit 5.49 show that 29.3 per cent of the respondents placed 'moderate emphasis', 20.7 per cent 'very strong emphasis', 18.0 per cent 'strong emphasis', 18.0 per cent 'low emphasis' and 14.0 per cent 'no emphasis' respectively on this. This industry being new and not exposed to the global scenarios, it seems that it doesn't focus enough on the management of change.

### 5.8.8 Strategy Evaluation and Control

Strategy evaluation and control is the final phase in the process of strategic management. Its basic purpose is to ensure that the strategy is achieving the goals and objectives set for the strategy. It compares performance with the desired results and provides the feedback necessary for management to take corrective action.

According to Fred R. David strategy evaluation includes three basic activities (1) examining the underlying premises of a firm's strategy, (2) comparing expected results with actual results, and (3) taking corrective action, to ensure that performance conforms to plans. Sometimes whenever changes occur in either internal or external environments the best formulated strategies become obsolete and the firm needs to redesign its organizational structure. Managers should, therefore, identify important milestones and set strategic thresholds to assist them in knowing the changes in the underlying

assumptions of a strategy and, if necessary, alter the basic strategic direction. The evaluation process thus works as an early warning system for the organization.

Strategy evaluation is generally done at two levels i.e. strategic level and operational level. At the strategic level, the manager of a firm needs to examine the consistency of strategy in relation to environment. In addition to this the manager at the operational level tries to know on how a given strategy is effective and giving the desired results. To make the system more effective, a firm needs to develop different control systems at both strategic and operational levels. Strategy evaluation and control involves activities like identifying changes in planning premises, determining and measuring performance, and taking corrective action which are discussed below.

**i) Identification of Changes in Planning Premises**

Strategy is built around several assumptions or predictions, which are called planning premises. Premises control checks systematically and continuously whether the assumptions on which the strategy is based are still valid. If a vital premise is no longer valid, the strategy may have to be changed. The sooner these invalid assumptions are detected and rejected, the better are the chances of changing the strategy. The premise control is concerned with two types of factors: i) Environment factors such as factors like change in technology, government regulations, demographic and social changes, etc., and ii) Industry factors such as suppliers, buyers, new entrants, etc.

The respondents' view is obtained through the survey and results are presented in Table 5.55 and Exhibit 5.50.

**Table 5.55 - Identification of Changes in Planning Premises**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 8 | 5.3 | 5.3 | 5.3 |
| Strong | 11 | 7.3 | 7.3 | 12.6 |
| Moderate | 41 | 27.4 | 27.4 | 40 |
| Low Emp. | 44 | 29.3 | 29.3 | 69.3 |
| No Emp. | 46 | 30.7 | 30.7 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.50 - Identification of Change in Planning Premises**

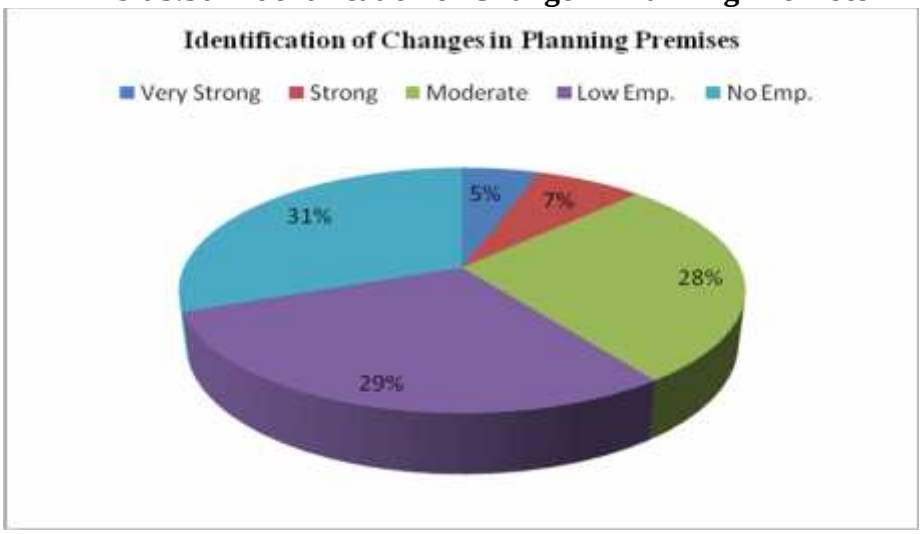



Table 5.55 and Exhibit 5.50 show that 30.7 per cent of the respondents laid 'no emphasis', 29.3 per cent 'low emphasis', 27.4 per cent 'moderate emphasis', 7.3 per cent 'strong emphasis' and 5.3 per cent 'very strong emphasis' respectively on identification of changes in the premises. From the above analysis, it can be inferred that the biomass industry is not very much concerned about the changes in planning premises.

### ii) Determining and Measurement of Performance

The second step in operational control is the measurement of actual performance. Here, the actual performance is measured against the standards fixed. Standards of performance act as the benchmark against which the actual performance is to be compared. It is

important, however, to understand how the measurement of performance actually takes place. Operationally measuring is done through accounting, reporting and communication systems. Another important issue in measurement is 'how often to measure', generally, finical statements like budgets, balance sheets, and profit and loss accounts are prepared every year. But there are certain reports like production reports, sales reports, etc., which are done on a daily, weekly, monthly basis. These help in periodic measurement of performance. A variety of evaluation techniques are also used for this purpose such as benchmarking, balanced score card, key factor rating, network techniques like PERT and CPM, etc. With the help of valid measures, performance should be periodically measured so that necessary corrective actions can be taken to address the inadequacies of performance. The survey results are presented in Table 5.56 and Exhibit 5.51.

**Table 5.56 - Determining and Measurement of Performance**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 92 | 61.3 | 61.3 | 61.3 |
| Strong | 28 | 18.7 | 18.7 | 80 |
| Moderate | 23 | 15.3 | 15.3 | 95.3 |
| Low Emp. | 4 | 2.7 | 2.7 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.51 - Determining and Measurement of Performance**

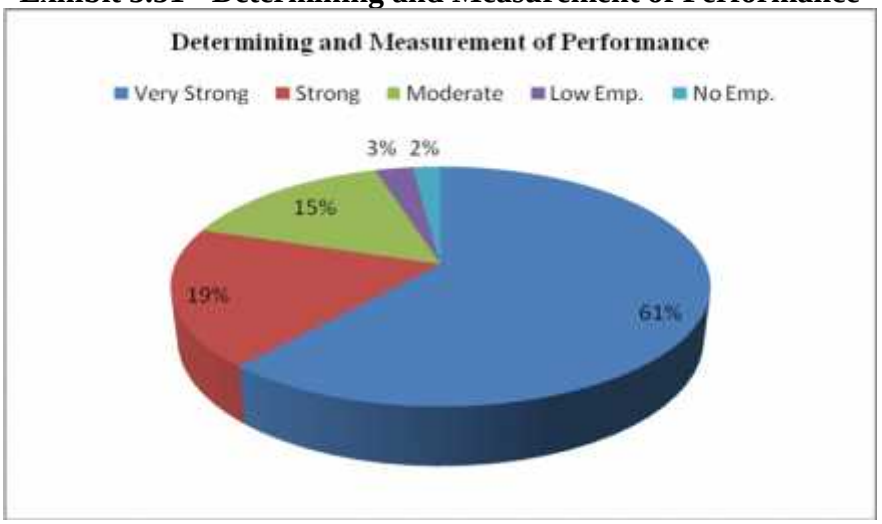


Table 5.57 and Exhibit 5.51 show that 61.3 per cent of the respondents laid ‘very strong emphasis’, 18.7 per cent ‘strong emphasis’, 15.3 per cent ‘moderate emphasis’, 2.7 per cent ‘low emphasis’ and 2.0 per cent ‘no emphasis’ respectively on this. Hence, it may be inferred that Measurement of Performance is very crucial to achieving high performance from the organization as it facilitates comparison between what has been expected and achieved.

**iii) Taking Corrective Action**

In strategic evaluation and control taking corrective action is an essential component. In contrast to post-action control, strategic control seeks to guide actions as they are taking place and when the end results are still several years off. Strategic control in an organization is similar to what the ‘steering control’ is in a ship. Steering keeps a ship, for instance, stable on its course. Similarly, strategic control systems sense to what extent the strategies are successful in attaining goals and objectives, and this information is fed to the decision-makers for taking corrective action in time. Strategic control systems thus offer a framework for tracking, evaluating or reorienting the functioning of the firm’s strategy.

Corrective action depends on the discovery of deviations and ability to take necessary action. When things go wrong or are likely to happen so, corrective action has to be taken to avoid damage and prevent future difficulties. ‘A stitch in time saves nine’ is a maxim that is applicable with a strong force in the industry too. The respondents are unanimous in voicing concern for taking corrective action. The survey results are presented in Table 5.57 and Exhibit 5.52.

**Table 5.57 - Taking Corrective Action**

| Emphasis | Frequency | Per cent | Valid Per cent | Cumulative Per cent |
|---|---|---|---|---|
| Very Strong | 95 | 63.3 | 63.3 | 63.3 |
| Strong | 31 | 20.7 | 20.7 | 84 |
| Moderate | 14 | 9.3 | 9.3 | 93.3 |
| Low Emp. | 7 | 4.7 | 4.7 | 98 |
| No Emp. | 3 | 2 | 2 | 100.0 |
| **Total** | **150** | **100.0** | **100.0** | |

**Source: Computed from primary data**

**Exhibit 5.52 - Taking Corrective Action**

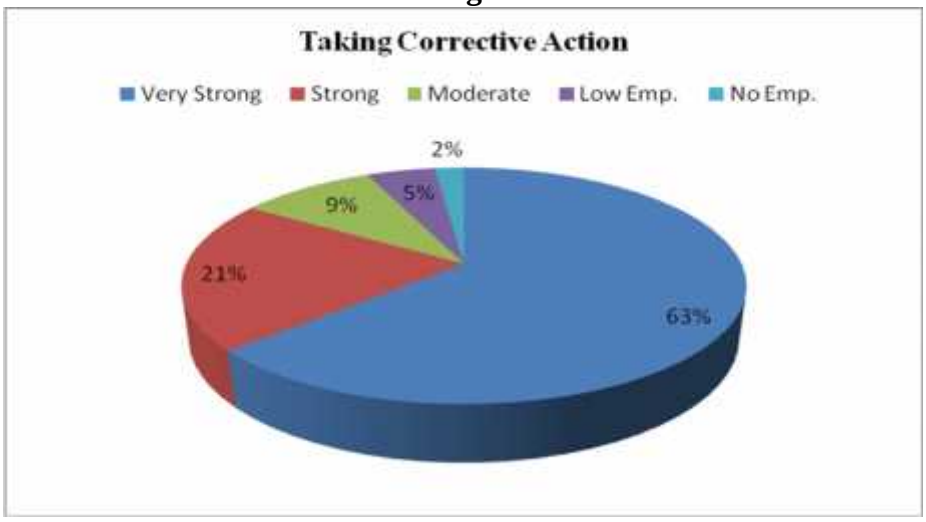



Table 5.58 and Exhibit 5.52 show that 63.3 per cent of the respondents laid ‘very strong emphasis’, 20.7 per cent ‘strong emphasis’, 9.3 per cent ‘moderate emphasis’, 4.7 per cent ‘low emphasis’ and 2.0 per cent ‘no emphasis’ respectively on this. Hence, it may be inferred that when the actual performance does not meet the expected performance, the corrective action is required in terms of either revision of objectives and strategies or revision of activities.

## 5.9 CONCLUSION

The primary goal of this study is to understand the strategic management practices being adopted by biomass power plants under study. Out of the total 34 Biomass power plants, 6 units were selected for study since they were viably functioning throughout the year

and strategic management practices are adopted. Out of about 850 employees working in all the 6 plants, 150 respondents selected at the rate of 25 persons from each plant consisting of promoters, executives and supervisors and a pre-tested questionnaire has been administered among them. To understand the dominant purpose of the use of vision, mission, planning tools, environmental scanning practices, strategy formulation and implementation, strategic evaluation, a set of choice alternatives as given in the following are used. 1. 'No Emphasis', 2. 'Low Emphasis', 3. 'Moderate Emphasis', 4. 'Strong Emphasis' and 5. 'Very Strong Emphasis' and their opinions are analyzed on a five point scale.

The researcher first attempted to understand the dominant factors (motivating factors) for adopting strategic management practices in biomass power plants and also the reasons for low adoption of strategic management practices by some of the biomass power plants. Prior to this, the level of adoption of strategic management by the select biomass power plants as a management tool for improving the performance has been ascertained. It was found that only 51.33 per cent of Biomass power plants are 'moderately' using strategic management practices. This proves the Hypothesis ($H_1$ - b) that the level of adoption of strategic management practices in Biomass power plants is moderate.

The researcher later made an attempt to identify the dominant core competencies of biomass power plants and also the critical success factors of the industry. It is found that the "strategic location of the plant", "effective raw material procurement", and "efficient production and maintenance operations" are the dominant core competencies of biomass power plants. Managements which focused their attention on these core competencies have been successful in profitably operating the biomass power plants and others faced severe financial problems and sold out/closed down some of the plants. While core competencies are specific to the plant, critical success factors apply to the biomass power industry as a whole. The present study found that "tight cost control", "low raw material costs " and "low labour costs" are the dominant critical success factors of the biomass power industry. On the whole, the above analysis proves Hypothesis ($H_4$ - a) and supports

the inference that “strategic location of the plant” and “tight cost control” are the critical success factors of biomass power plants.

Later, degree of emphasis placed by biomass power plants on vision, mission and objective setting, each component of the external and internal environment analysis, different elements of strategy formulation, use of different planning tools, involvement of different groups of persons in the process, strategy implementation, and evaluation and control was found out with the help of a survey done with the respondents.

The key elements that are given priority in the component of External Environmental Analysis (EEA), as per the opinion of the respondents, are “analysis of competitors”, ‘supplier trends’ ,‘customer preferences’ and ‘industrial relations’, which are generally considered as the most important element of external analysis have been given strong emphasis, by biomass power plants. Surprisingly “studying political trends”, “studying economic trends”, “Studying socio-cultural trends” and “studying technological trends”, etc. received the least priority in strategic management process adopted by biomass power plants. This is a serious drawback in the strategic management process adopted by the biomass power plants.

The key elements that are given priority in the component of Internal Environment Analysis (IEA), as per the opinion of the respondents, are “analysis of core competencies”, “identifying critical success factors”, “analysis of past performance”, “analysis of operations function” and “analysis of HRM , Finance and R&D functions” are given very strong emphasis. While “analysis of strategies in functional areas of “marketing”, and “analysis of customer services”, etc., are given the least priority.

In the component of formulation of strategies, all the individual elements that were given priority by the biomass power plants are “formulating strategic alternatives”, “strategy analysis and choice”, and “selecting the best strategy”. However, “Strategy Implementation” received the least priority by the respondents indicating that the company places relatively less emphasis on implementation of strategies. The key

elements emphasized in this component are “identification of short-term objectives”, “formulation of programmes, policies and procedures”, “initiation of specific functional strategies”, “designing appropriate reward systems”, “mobilization of resources” and “provision of strategic leadership”. However, it is observed that the most important elements relating to “change of organization culture” and “overall management of change” which should have been given topmost priority, received the least priority among the elements. This is another serious drawback in the strategic management process adopted by biomass power plants.

In respect of planning tools majority of the respondents gave priority to “SWOT analysis”, “cost benefit analysis”, “gap analysis”, “value chain analysis”, “financial analysis”, “strategic advantage profile”, “balanced score card” and “benchmarking”. Planning tools such as “key factor rating” is given least priority in biomass power plants. This is not a serious limitation.

It is disheartening to note that, while involvement of top and middle-level managers in the strategic management process is given more importance, involvement of junior managers and workers (even on selective basis) in the process received little or no priority in biomass power plants. This is another serious drawback in the strategic management process followed by the biomass power plants. It is observed during interaction with the respondents that non-involvement of junior level managers and workers in the strategic management process virtually alienated them and their commitment to the vision, mission and strategies adopted by the plants was suspect. In this context, it is found appropriate to suggest to biomass power plants that they may find some way of involving junior managers and workers in the process of strategic management even on a selective basis so that they become committed to organizational goals and strategies.

In strategic evaluation and control, the key elements given priority by the respondents include “determining and measurement of performance” and “taking corrective action”, while “changes in planning premises” was not given due importance.

Most crucial elements of strategic management process, did not receive as much priority as they should receive. This indicates that biomass power plants need an appropriate model of strategic management so that the company can give due priority to the important components and elements involved therein.

On the whole, it may be inferred that though biomass power plants follow all the six components of strategic management process as per Wheelen & Hunger's framework, the priority given to the components and elements of the process by them differ and needs re-orientation.

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