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Efficient Management of Power Generation and its Impact on Organizational Performance in Pakistan

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ABSTRACT
Energy sector in Pakistan has passed through a number of phases since came into being in 1947. The electricity generating capacity has improved a lot but not according to the increasing demand of energy. The one of foremost problems of Pakistan's energy sector is inefficient operation of power generating plants. This research work is a part of studies on efficient management of both private and public power generating companies in Pakistan. It observes the condition of efficient management including different variables connected with performance of the power generating companies. Efficiency is the comparison of what is actually produced with what can be achieved with the same consumption of resources. It is an important factor in determination of productivity and hence financial output of the company. Efficient management means, how efficiently every level of management of the organization is using the available resources to produce maximum output performance. The best way to do this is to empower skilled, qualified, and credentialed employees at all levels in the organizations. This research study provides the analysis and describes the impact of efficient management employee, methods, and strategy on the performance of power generating organizations in Pakistan. This study used a questionnaire comprising a five point Likert scale, to collect primary data from the employees of different public and private power generating organizations. There was government owned power sector only before 90s. Independent Power Producers (IPPs) started producing electricity in early 90s. As a result the load shedding duration in country had been reduced. The study considered several aspects including health safety and environment at work, company policy and strategic management decisions, competency of employees at all levels including their education, training, skills, motivation, appraisal and reward system, facilities including management information system of the organization. Primary data was collected from the employees of the power generating companies to find out the method of high performance through structured questionnaire and personal interviews, through emails and telephones. Results of study showed that four variables consisting company's Policy, Eduction, Skills & Experience of employees, Employees competency and Employees motivation impact the performance of the power companies in Pakistan. Coercive strategy is not always impact the companye's performance positively but working under perssure the coercive strategy may impacte the performance of the company positively but for longterm this strategy impact the performance negatively.
Key Words: Efficiency, Efficient management, Education, Competency, Performance

INTRODUCTION:

Energy sector in Pakistan has passed through many phases since independence. Installed electricity generating capacity has increased considerably but the increase was not according to the energy demand of the country. The one of key problems of energy sector is inefficient operating condition of power generating plants. There was only government owned power sector in Pakistan before the 1990s. Independent Power Producers (IPPs) started producing electricity in early 1990s. As a result the load shedding duration had been reduced. An Independent Power Producer (IPP) is an entity, which is not a public utility, but owns facilities to generate electric power for utilities and end users.

This study is a part of research studies on the topic of efficient management of power generating companies in Pakistan both private and public power generating companies. It scrutinized the circumstances of efficient management including variable associated with the performance of the power generating companies. Awan (2014) says that efficiency is the comparison of what is actually produced with what can be achieved with the same consumption of resources, for example money, time, labor etc. It is an important factor in determination of productivity and hence financial output of the company. Awan (2015) argues that efficiency is a level of performance that describes a process using the least number of inputs to create the greatest number of outputs. Efficiency relates to the use of all the inputs in producing any given output, including personal time and energy. Awan (2014) contends that efficient management means that how efficiently all the level of management of the organization is using the available resources to produce maximum output performance of the company. The best way to do this is by empowering skilled, credentialed employees at all levels in the organizations. Electricity is generated, transmitted, distributed, and supplied by two public sectors in Pakistan. First is Water and Power Development Authority (WAPDA) generating, transmitting, distributing and supplying electricity in all of

Pakistan except Karachi, and the Karachi Electric Supply Corporation (KESC) is supplying electricity in Karachi and its surrounding areas, Karachi is the biggest city of Pakistan. There are more than twenty five independent power producers (IPPs) that contribute considerably in electricity generation in Pakistan.

WAPDA (Water and Power Development Authority) was established through an act of parliament in February 1958 for integrated and rapid development and maintenance of water and power resources of the country. As per the charter, amended in March 1959, WAPDA has been assigned the duties of investigation, planning, and execution of projects and schemes for generating, transmission and distribution of power along with the other assignments. After first five years of its operation, the electricity generating capability rose to 636MW from 119MW in 1959. In 1980 the system capacity touched 3000 MW which rapidly increased over 7000 MW in 1990-91. Installing of thermal power generating projects has been shifted to the private sector under the Energy Policy 1994. Electricity generation in Pakistan has been reduced in recent years due to mainly dependent on fossil fuels. Pakistan was hit by its worst power crisis in 2007 when production fell by 6000 Megawatts and established massive blackouts. In 2008, availability of power in Pakistan falls short of the need by 15%. Load Shedding and power blackouts have become relentless in Pakistan in recent years. The electricity and power shortage is a chronic problem that has slowed Pakistan's social and economic growth rate. The problem is persisting since early 90s when the demand of thousands of MW exceeded the power supply for electricity. But now, the gap between the demand and supply has resulted in routine load shedding.

A Thermal Power Plant is a complex engineering system which provides electric power for domestic, commercial, industrial, and agricultural use. Availability and Reliability problems may cause shut down of the plant or reduce the generation of power resulting in load shedding and loss of productive activities. For improving the productivity, the availability and reliability of electrical systems and subsystems in operation must be maintained. To achieve high production goals, the systems should remain operative failure free for longest possible duration. But practically these systems are subjected to accidental failures due to poor design, wrong manufacturing techniques, lack of operative skills, poor maintenance, overloading, delay in maintenance and human errors. These causes lead to reduce the availability of electrical transmission, distribution, and generating plants. There should be highest availability of electricity generating, transmission and distribution systems are required to achieve high quality production.

LITERATURE REVIEW:

There has been a numerous and wide ranging collection of articles on the measurement of productivity and efficiency. There has always been a close link between the measurements of efficiency. Different techniques and variables have been used to estimate the level of performance. Understanding and comparing generating efficiency across power generating assets is a very challenging problem due to differences in technology, operation, fuel, size and age. Even, what in concept would seem very straightforward, such as monitoring fleet generating efficiency to produce realistic improvement targets, is a more difficult task than one might think at first glance. The reasons are many and include factors such as the simple fact that it is not easily measured, asset diversity and normal asset degradation. The primary metric of unit efficiency used in the industry is the heat rate of the unit, which is a ratio of the energy required to produce a unit of electricity, such as how many Btu per hour of fossil fuel are required to produce one kW of electricity at the generator terminal.

Private sector participation is arguably the most important element of electricity sector reforms. Private power plants are expected to result in improved cost efficiency, lower prices, reduced heat losses, and improved revenue collection. Between 1990 and 1999, private sector participation took place in the electricity sectors of seventy five developing countries. However, the distribution of private investments in electricity sectors across different activity areas and regions of the world has been rather uneven. Two thirds of the investment for projects with private participation has been in pure generating facilities, whereas distribution-only investment has been limited to sixteen percent of the total during this 1990-1999. The investment patterns also reveal notable differences among the main regions of the world. The Latin American and Caribbean and East Asian and Pacific countries accounted for forty percent and thirty five percent of total private investments, respectively, while only twelve percent of total private investments took place in South Asia countries. The remaining thirteen percent of private investments has taken place in Eastern Europe and Central Asia, the Middle East and North Africa, and Africa. Latin American and Caribbean countries exhibit the highest level of investments in distribution-only and transmission systems. At the same time, there has been a notable absence of distribution-only investments in South Asia and MENA countries. Almost all the new private investment in South Asia has been in generating-only facilities. Although privatization and new private investment in the South Asia distribution-only area has been very low, some progress has been made towards developing the necessary reform steps for distribution assets divestiture and privatization. Efficiency improvements can have broader impacts than simple monetary gains for the plant operator. Improvements can be viewed as a fuel supply. By increasing efficiency means decreasing the heat rate, less fuel is required to generate each kWh. [David 2007]. Heavy financial losses due to overstaffing and bureaucratic delays in handling routine matters in these public utilities, inappropriate and costly investments, poor quality of services, high system losses and poor collection of bills from the customer; all

negatively affected the financial health of the industry [Malik (2009)]. Author agreed with David and Malik.
Lovell (1993) defines the efficiency of a production unit in terms of a comparison between observed and optimal values of its output and input. The comparison can take the form of the ratio of observed to maximum potential output obtainable from the given input, or the ratio of minimum potential to observed input required to produce the given output. In these two comparisons the optimum is defined in terms of production possibilities, and efficiency is technical. Awan (2014) states that there has been a wide range of methods on the measurement of productivity and efficiency. There has always been a close link between the measurements of efficiency. The results of literature reviewed showed that a higher level of human capital affects positively the rate of technical progress and performance of the organization. It was realized that power generation of electrical generating company's capacity expansion and efficiency could only be achieved with the involvement of the private sector. Private power producers control about 30 percent of the total generating capacity in Pakistan. The electricity market was opened to independent power producers in 1990. This was quite new in technology and its experiences as compared to the public generating plants in Pakistan. The electricity generating sector of Pakistan is relaxed in early 1990s as result of first power policy, private electricity generation was allowed. So mostly private power generating plants were started their production after 1995.

METHODOLOGY:

Research is a careful study that is done to find and report new knowledge about something. Webster's Collegiate Dictionary (1977) defines research as studious inquiry or examination, investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of new or revised theories or laws. Leedey (1985) defined research as "the manner in which we attempt to solve problem in a systematic way to push back the frontier of human ignorance to confirm the validity of solution to the problem other have presumably resolve". Don Etheridge define that "Research is the systematic approach to obtaining and confirming new and reliable knowledge".
Topic of the research study is "The impact of Efficient Management of Power Generating on Company's performance in Pakistan" and primary data has been collected by circulating a questionnaire to the employees of power generating companies in Pakistan to find out the solution. Descriptive research method has been used with the qualitative research approach. This study typically relied on questionnaire, observations and informal interviews from the employees of the power generating companies. Data has been compiled by using Microsoft excel software. Results have been analyzed and graphs have been drawn from the results obtained for analysis of the collected data for the research.

Objectives of study:

This research study described the impact of efficient management employee, methods, and strategy on the performance of the both publicly or privately managed power generating organizations in Pakistan. Research study investigated the solutions of following specific research questions.

What is the impact of efficient management employees on the performance of the power generating companies in Pakistan?

This study used a questionnaire comprising a five point Likert scale, to collect primary data from the employees of different public and private power generating organizations. It is important to examine the current position of the power generating companies in Pakistan. The study considered several aspects including health safety and environment at work place, company's policy and strategic management decisions, competency of employees at all levels including their education, training, skills, motivation of employees, appraisal and reward system and facilities including management of information system of the organization.

Scope of study:

Pakistan suffers from a massive electricity shortage. In 2008, availability of power in Pakistan falls short of the needs by fifteen percent. Electricity generation in Pakistan has reduced more in recent years. The electricity power shortage is an unending problem that has slowed economic growth rate of the country. The inefficiency of the power generating plant is a major contributing factor to short fall of electricity in addition to many other problems. The rate of electricity production by the power generating companies is lower than the efficient power companies. An efficient power company can produce more electricity as compared to an inefficient power company and hence comparatively less fuel consumption per kWh. This study will prove guidance to the management of relatively inefficient companies to improve the efficiency by adapting the methods and strategy, which the efficient power companies followed. This study will also prove useful for both privately and publicly managed power companies, who are keen to improve the efficiency of their power generating companies.

Findings & Results:

Primary research was conducted on the topic of "The impact of Efficient Management of Power Generating on Company's performance in Pakistan" and questionnaire was circulated for primary data collection from the employees of the different power generating companies in Pakistan. Employees of all the power generating plants both privately and publicly managed were the population for this study. Response of questionnaire was collected through email or hard copy from the employees of both public and privately managed power

companies from different management cadre through structured survey questionnaire.
Rating scale method was adopted to collect the data. Rating was as: strongly disagree, disagree, neutral, agree and strongly agree. Quantitative method employed to understand performance of the company. Primary data was collected from 200 employees including Associate Engineers, Engineers and Management Executives of public and private power generating companies of Pakistan. Variables for the impact of efficient management were included health, safety & environment, company policy, management information system, education, skills, experience of all employees, business strategies, competency of employees, effective planning, training program, continuous improvement projects for the replacement of the control systems and machineries with modern control system and machinery, motivation of employees, effective maintenance program including computerized maintenance management system, coercive strategy having the power company and performance appraisal system. Data was compiled in Microsoft excel software for the calculation, summation and analysis. Graphs were drawing by using the same software from the results obtained from the data against each variable for the study. Then the results are shown in percentage in graphical format which given are following;

1. Health, Safety & Environment:

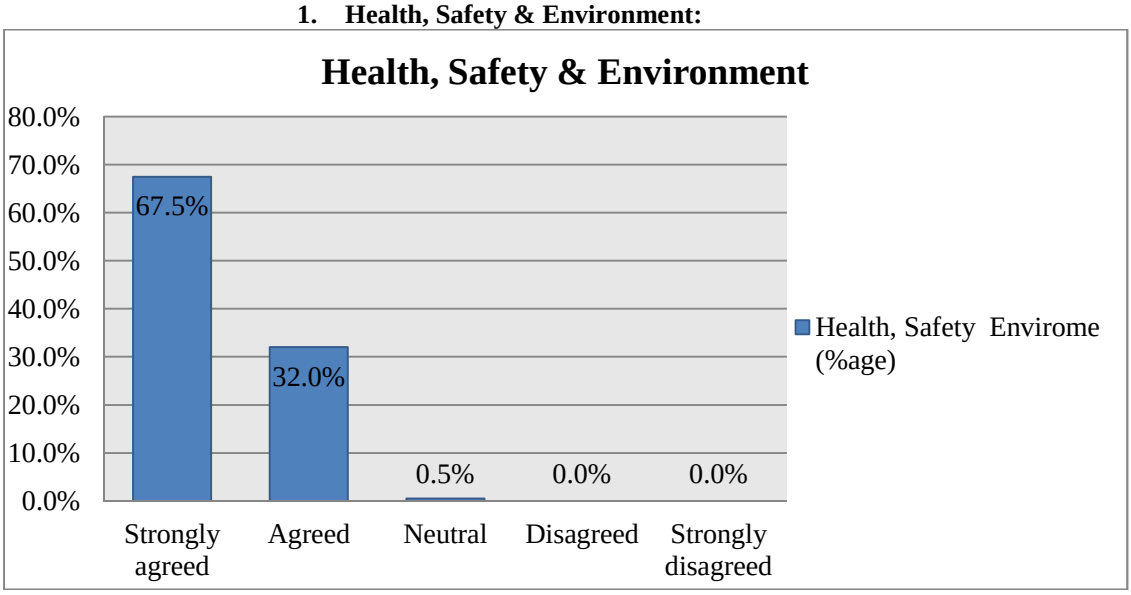

Figure 1 shows the percentage of respondents about the impact of Health, Safety & Environment on performance of the company.The above data show that the 135 (67.5%) respondents are strongly agreed and 64 (32%) respondents agreed and as a total 199 respondents out of 200 have been agreed or strongly agreed with statement that "Health, Safety and Environment administration, implementation of safety procedures and behavior base safety plays major role to improve company's performance". Only one respondent was shown as neutral and commented that he don't think so that HSE administration and procedures linked with performance. Safety is a driving force behind every action taken by each employee of high performer companies, whether out from the field, inside the work area, or in the company's office. Companies caring of their employee raises a culture of safety in which each and every person is responsible for safety. Apart from the clear concern, companies have for human life, safety is a core company value of the most of the private power companies in Pakistan and possibly one of the most important areas for accountability for everyone in the company. There is no any concept of the health, safety and environment in publicly managed power companies in Pakistan. Employees have not wear safety personal protective equipment at work place.

2. Company Policy

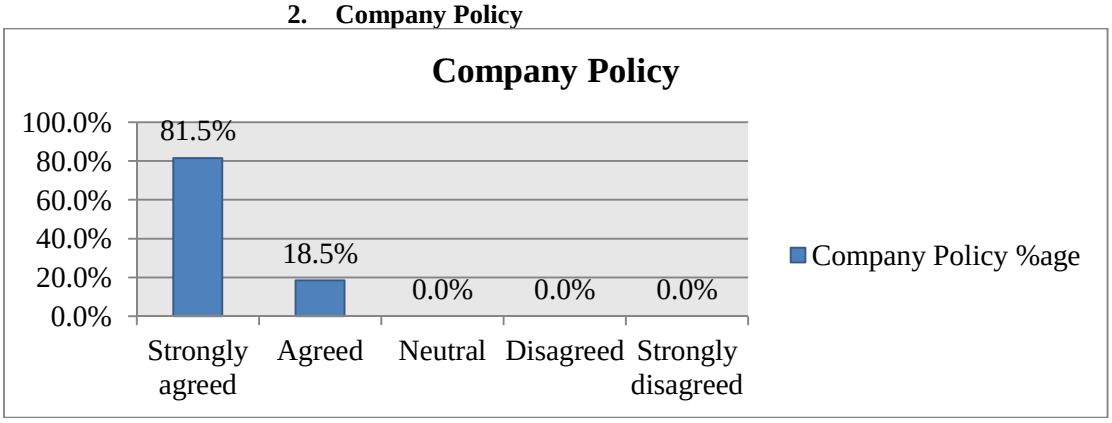

Figure 2: shows the percentage of respondents about the impact of company policy on performance of the company. It also shows that the 163 respondents strongly agreed and remaining 37 respondents are agreed and it showed that 100 percent respondents are agreed or strongly agreed with the statement that "Company Policy, Strategic management decisions including Technical & commercial decisions impact the company's performance." It revealed that the 100 percent respondents having thoughts that the company policy totally effect the performance of the power company.

Company policy and strategic management decision is a process of making and implementing decisions at the right time. The objective of business owners is profitability. The organization's success depends on the performance of employees. Poor performances of employees can sure damaging to the success of company. Teaching the employees of the company requires strong company policy, expertise of management and the support of the company's management. Performance of company activates when an efficient employee joins the team of the power generating company. The employee's job description, new hire orientation, and introductory discussions with his manager are essential steps in creating a performance management plan which should be the part of the company policy. Management provides guidance during the employee's first few months of employment. Learning new processes, meeting contemporaries, contributing on work teams and becoming accustomed to company policies and rules consume a great deal of time. Real department leaders observe employee performance so any deficiencies can be addressed right away to improve the company's performance and productivity. If companies focus on the business and give importance the development of an innovative, high-quality product, employee performance plays an essential role in achieving business goals. The design, engineering, quality assurance, and marketing of your company's products are essential components of employee performance and employees' performance in these areas is critical for the success of the power generating company.

3. Management Information System

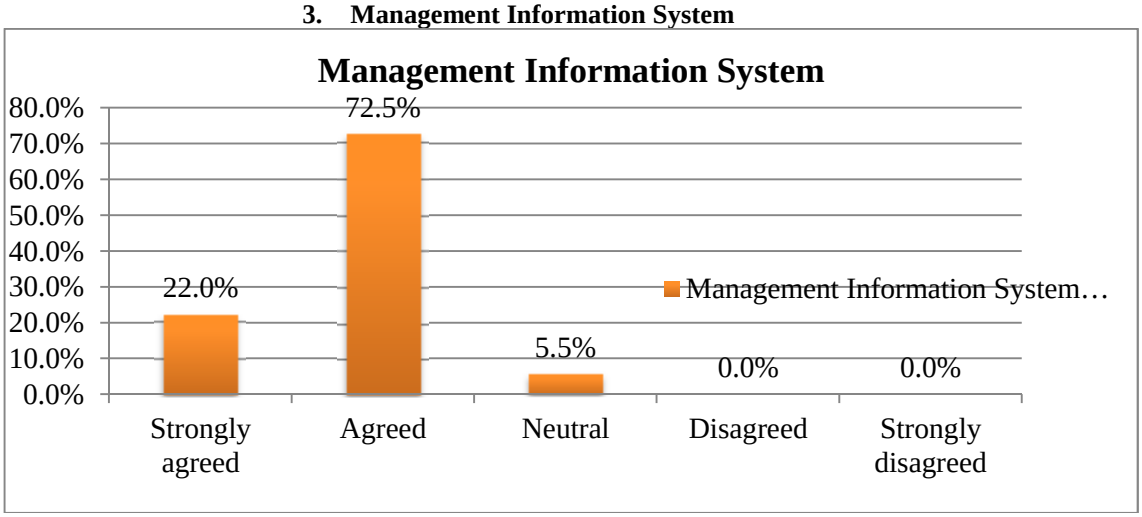

Figure 3 shows the percentage of respondents about the impact of management information system on performance of the company. It also indicates that that the 44 respondents strongly agreed and remaining 145 respondents out of 200 are agreed with statement that "Availability and quality of communication and management information system impact the company's performance". 11 respondents replied neutral. On

discussion with the respondents who responded as neutral they told that we don't know the effect of information system on the performance of the power company.

Daily logs and report writing is day to day activity in the power generating companies. Power generating companies use the communication through email, log books, computerized log sheets, daily reports, monthly reports, mid night plant performance reports, safety reports and estimated forecasting of fuel. Faxes and formal letter are being used for the legal communication with client WAPDA and PSO.

Electronic communication system like the reliable independent email system is being used the privately managed power companies for the internal communication of employees at all level. Blackberry phones are being used most of the power companies by the key personnel for the quick and timely communication. And managers advising their crew and instruct them for day to day activities when decisions of plant load reducing, partial de-ration of the plants or emergency shutdown of the plants for the unavoidable circumstances of the plant shutdown.

4. Education, Skills, & experience

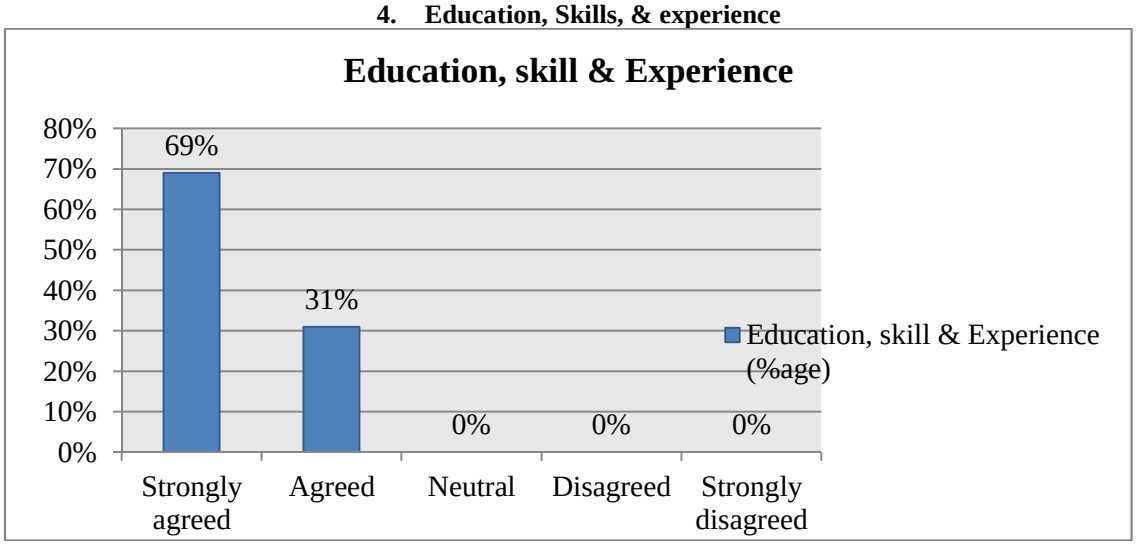

Figure 4 shows percentage of respondents about the impact of "Education, Skills & experience of employees" on performance of the company.

The data given in the Figure 4 show that the (69%) 138 respondents strongly agreed and remaining (31%) 62 respondents are agreed. It means that 100% respondents are agreed or strongly agreed with statement that "Education, Skills & experience of employees related to the job at all levels impact the company's performance." This data revealed that the 100% respondents having thoughts that the education, skills, and experience positively affect the performance of the power company and the relation of this variable was positive relation with performance of the company. Intelligence and education level are positively and significantly correlated with the performance of the company. Individuals who have high intelligence are more likely to get into power generating companies and stay.

5. Competency of employees:

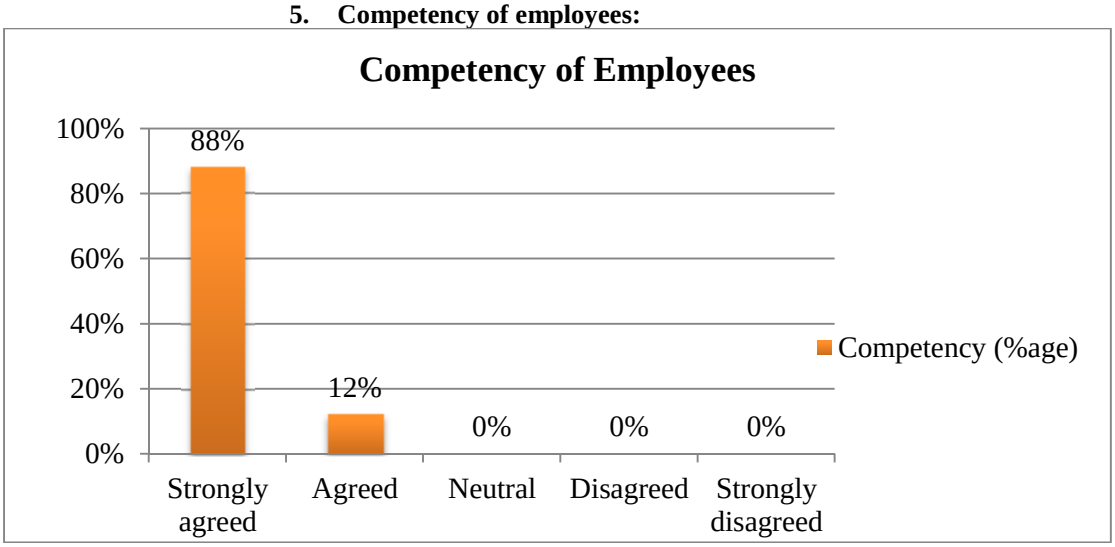

Figure 5 shows percentage of respondents about the impact of "Competency of employees" on performance of the company. It also reveals that the (88%) 176 respondents strongly agreed and (12%) 24 respondents are agreed with statement that "Competency of employees at all levels impact the performance of company". This data revealed that the 100% respondents are agreed or strongly agreed and having thoughts that competency of employees at all levels affect positively the performance of the power company and the relation of this variable is positive relation with performance of the company. Competence designates adequacy of job related knowledge and skills that allow employees of the company to act in wide variety of situations because each level of responsibility has its own job requirements in the company. Competence can occur in any period of a life of an employee or at any stage of his or her career. A competency is the capability to apply or use a set of his or her job related skills, knowledge, and abilities required to successfully perform critical work and its related functions. Competence is a state of being a qualification to perform in the company. Competencies define the applied skills and knowledge that enable people to successfully accomplish their work.

6. Training Program:

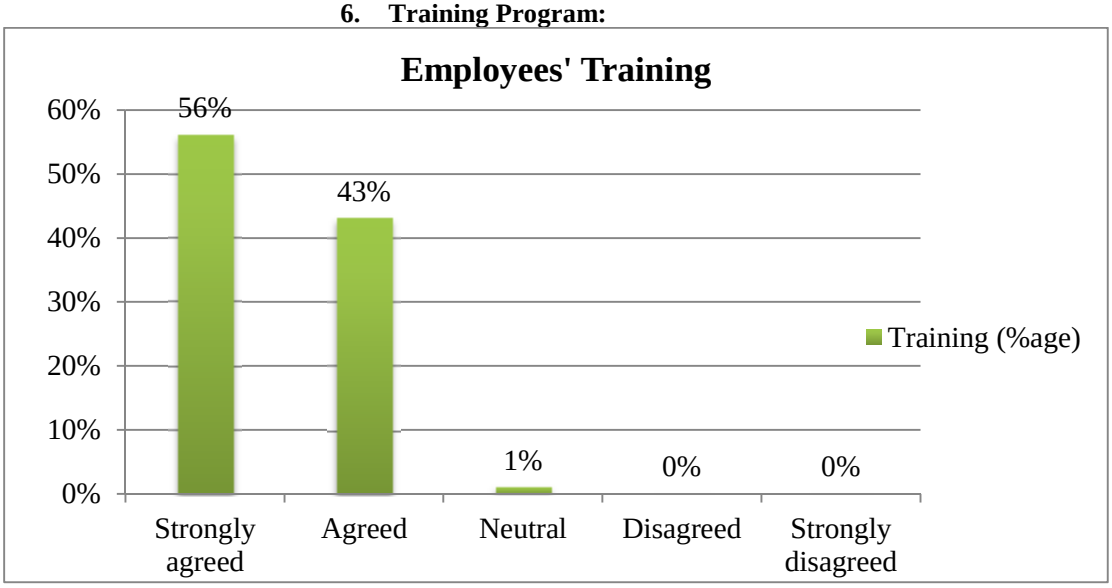

Figure 6: Bar shows percentage of respondents about the impact of "Trainings of employees" on performance of the company.The above results show that the 112 respondents strongly agreed and 86 respondents are agreed with statement of "Employees training and skills enhancement program of the company at all levels impact the company's performance". Only 2 respondents replied neutral and they have thoughts that we don't know the effect of employees training and skill enhancement program of the company impact the performance of the company.

The employees having more and specific training and experience require the less direct supervision to perform their work. The company could make the training and related experience compulsory for employees to attend a greater number of training and refresher courses. Literature says on training that trainings at the effort are usually duty or work familiarized. Establishments which arrange training must been recognized to achieve refined job performance. Training empowers the employees to meet refined abilities for performing qualified assistances such as the workers struggle to increase greater attractions with greater advantage. Training indicates to the amazing performance, well-thought-of headship, and unending commitment in employees.

7. Motivation of employees

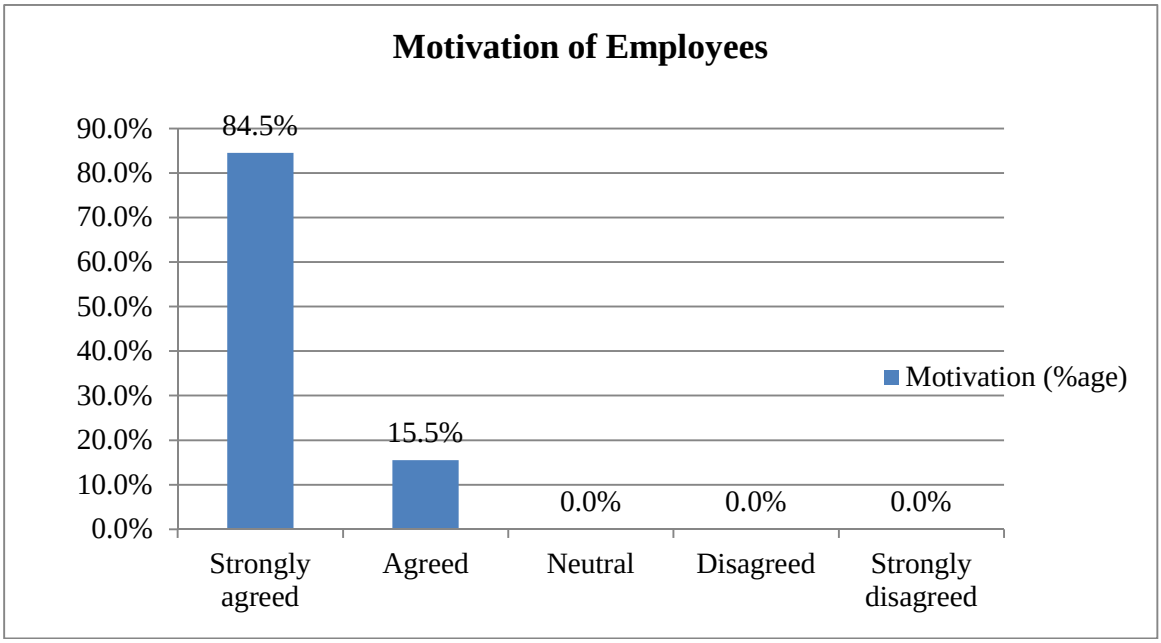

Figure 7 shows percentage of respondents about the impact of "Motivation of employees" on performance of the company. It also show in Figure 7 that the 169 respondents strongly agreed and remaining 31 respondents are agreed with statement that "Motivation of employees at all levels improve the company's performance". This data revealed that the 100% respondents having thoughts that Motivation of employees at all levels positively affect the performance of the power company and the relation of this variable is positive relation with performance of the company.

Motivation is the guiding rule that enables people to stay attentive on the road to success irrespective of the challenges that may be come across. This includes personal as well as professional objectives, goals and targets (Baumeister & Voh, (2004) and Awan, (2015). Motivation is the willingness to exert high levels of effort to reach organizational goals, conditioned by the effort's ability to satisfy some individual need. A motivated person tries hard. People with a high need for achievement are striving for personal achievement rather than for the rewards of success. They have a desire to do something better than it's been done before. They prefer jobs that offer personal responsibility for finding solutions to problems. They also prefer to receive quick and definite feedback in order to tell whether they are improving. High achievers dislike succeeding by chance. They are motivated by test of working at a problem and accepting the personal responsibility for success or failure.

Motivating and rewarding employees are one of the most important and one of the most inspiring actions that companies perform. Successful managers understand that what motivates their employees and personally it may have little or no effect on others. Just because you are motivated by being part of a consistent work team. If you are motivated by challenging work it does not mean that everyone is also motivated. Effective managers who want their employees to put forth maximum effort diagnose that they need to know how and why employees are motivated and to modify their motivational practices to satisfy the needs and wants of those employees. Motivation is the energy that catalyzes behavior.

8. Effective planning

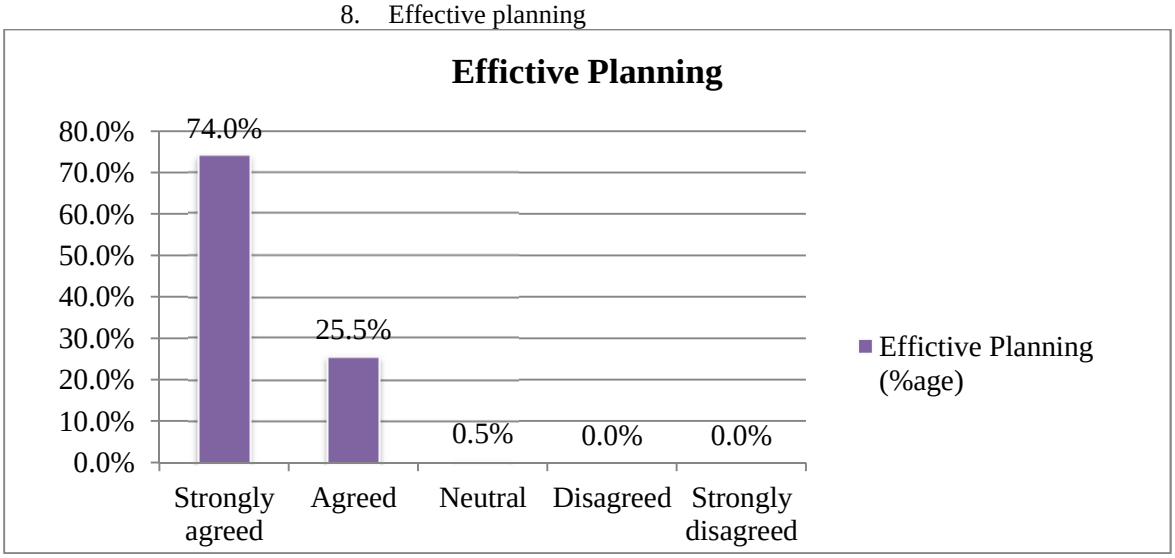

Figure 8 shows percentage of respondents about the impact of "Effective Planning" on performance of the company. Results in the above Figure show that the 148 respondents strongly agreed and 51 respondents are agreed with statement that "Effective planning affect positively on company's performance". Result data reveals that 99.5% respondents are agreed or strongly agreed with that effective planning of the company impart the performance of the company. Only one respondent replied as a neutral and having reason that I don't know the effect of information system on the performance of the power company. The planning function involves the process of defining goals, establishing strategies for achieving those goals, and developing plans to contribute and coordinate the activities. Planning gives direction, minimizes waste and sets the standards used in controlling. Planning also reduces uncertainty by forcing managers to look ahead, do in advance, consider the impact and develop appropriate responses. Without planning, there would be no way to control the productivity of the organization. There is very strong relationship between planning and performance and good planning increase the performance. Formal planning is associated with higher profits, higher return on assets, and other positive financial results. The quality of the planning process and the appropriate implementation of the plans probably contribute more towards high performance than does the extent of planning.

9.Computerized Maintenance Management System:

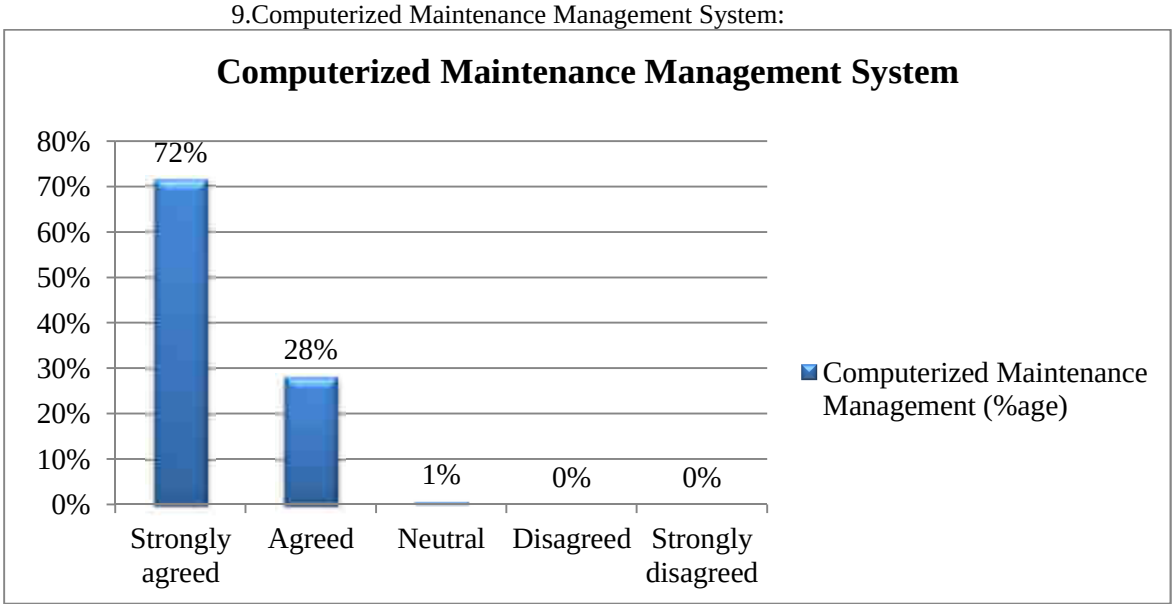

Figure 9 shows percentage of respondents about the impact of "Computerized Maintenance Management System" on performance of the company. The results state that the 143 respondents strongly agreed and 56 respondents are agreed with statement that "Effective computerized maintenance management system and operation strategy including standard operating procedures impact the company's performance". Only one respondent replied neutral with the thoughts that he doesn't know the impact of effective computerized maintenance management system on the performance of the power company.

The Maintenance Management System is a computerized database designed to enhance the management of maintenance and capital improvement activities by using standardized procedures. Power companies use this system for the effective maintenance and spare parts inventory management. It is a management tool is being used for planning and budgeting maintenance, capital improvement, equipment repair and replacement in most of the power generating companies. The database allows generating of reports that review data in a variety of ways such as by maintenance codes, by capability and equipment group, by priorities, and by project expenses. The objectives of the computerized maintenance management system are to optimize the use of available resources, personnel, facilities, and equipment through effective maintenance management methods. It provides correct data for maintenance and building program decision making. It determines the unfunded maintenance accumulation and establishes power plant and related equipment maintenance and project priorities.
The efficiency of electricity power generating plants decreases with time as the components, machines and control systems degrade due to lack of maintenance. Good operation and maintenance practices can increase the availability and hence the performance of the company.

9. Continuous improvement projects

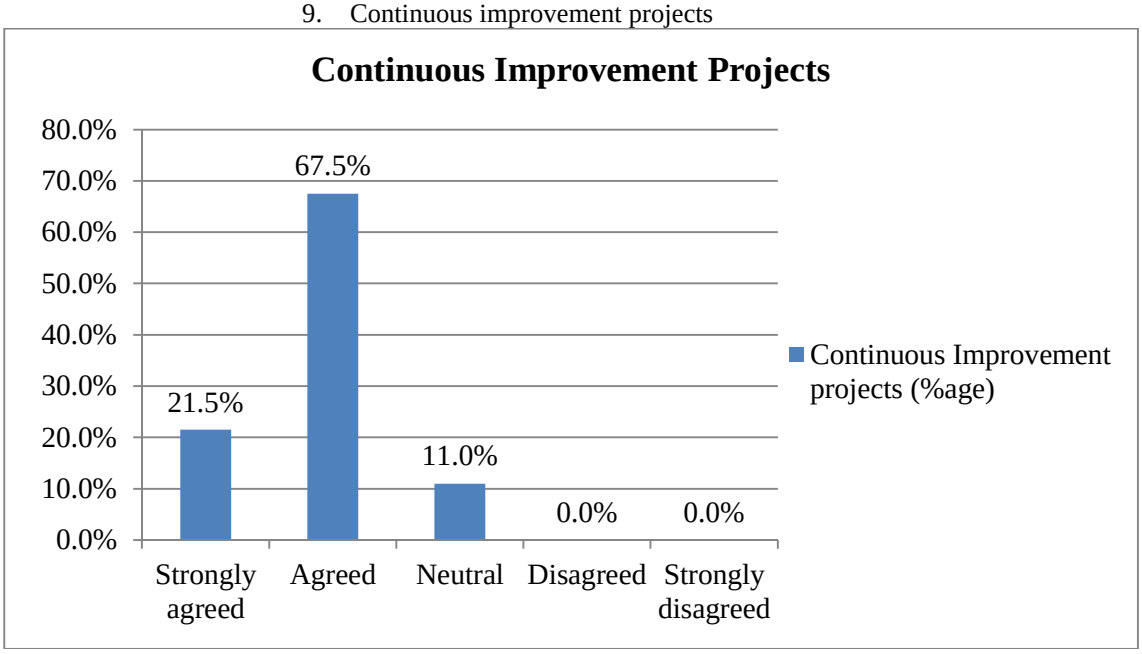

Figure 10: Bar graph showing results in percentage of respondents about the impact of "Continuous Improvement Projects" on performance of the power company. Above response results in Figure 10 show that the 43 respondents strongly agreed and 135 respondents are agreed with statement that "Continuous improvement projects, Replacement of the old machines and control equipment with high efficiency machines and latest modern control equipment impact the company's performance". 22 respondents replied neutral with the reasons that they don't know the effect of information system on the performance of the power company.
Plants efficiencies improve with expected improvements mainly come from the up gradation of plants with modern machines and plants that have better efficiencies. Power plant efficiency focuses on the heat rate and heat rate is define as Btu per kWh for thermal power plants. This is an ideal measure of efficiency since it defines the ratio of the input as fuel (Btu) to output as power (kWh). Control system and instrumentation improvements can reduce total fuel consumption due to faster and more matched startups with accurate information to central control room of the power station and provide better control of fuel and air during normal operation. The main impacts of improved controls systems are improved operating efficiency due to better and correct control of excess air and steam pressure and temperature, as well as faster load changes in response to the generating system requirements. In addition, boiler and turbine stresses are reduced because startup and load changing is coordinated to reduce temperature and pressure variations on the boiler and turbine in steam turbine power stations.

10. Performance appraisal:

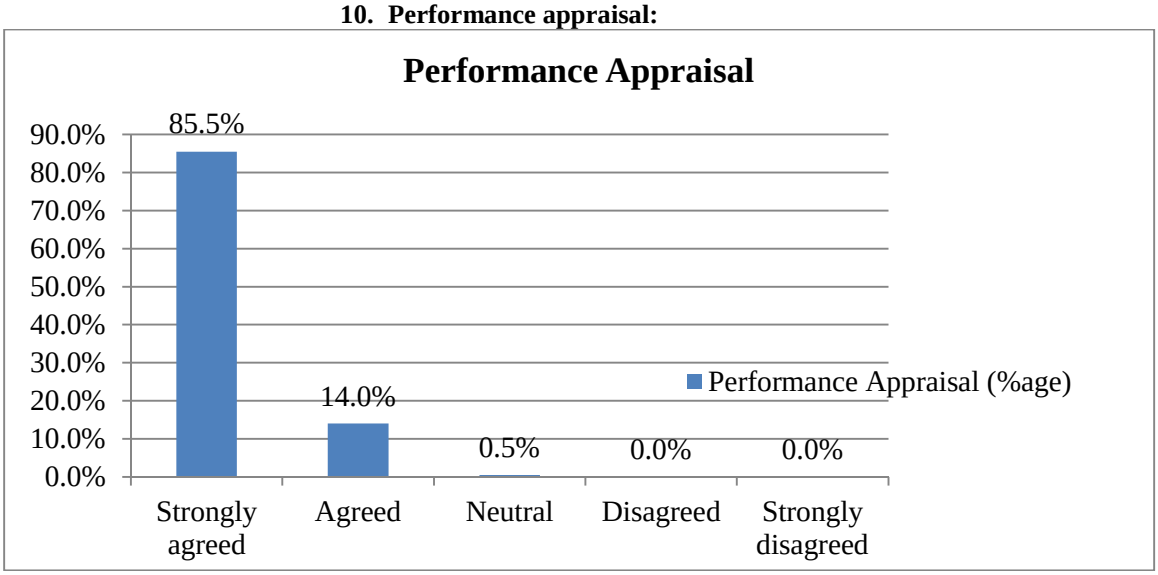

Figure 11: Bar graph of percentage of respondents about the impact of "Performance Appraisal" on performance of the company. These Results show that the 171 respondents strongly agreed and 28 respondents are agreed with statement that "Performance appraisal & Employees reward system including excellence and achievement awards scheme impact the company's performance". Only one respondent replied neutral with thoughts that how performance appraisal can impact the performance of power company. A performance appraisal is a proper official system of review and evaluation of individual as well as team performance. The performance appraisal is a periodic event to assess past performance with the intent to identify strengths and weaknesses of an employee and to identify developmental goals.

Effective performance appraisal system requires ongoing communication between supervisors and related staff of the organization. The valuation and review part of the appraisal process provides the opportunity for documentation and official statement. Review of performance appraisal is the time for the supervisor and the employee to set developmental objectives and goals that strengthen the strategic plan of the company and hence performance. If there are areas of improvement of performance then action plans for improvement are required to be set. There should be discussion of the employee's career progress and plans made for training and long-term career growth. Power companies see the appraisal process as a motivation tool to improve employee performance.

Power generating companies links the performance appraisal to compensation and the employees who performed well, according to the expectation of the organization, receives a raise as a result of a positive review. Though supervisors generally conduct the review, they may not have the amount of compensation awarded in publicly managed power companies because compensation is normally determined by organizational policy. This can be particularly problematic for supervisors who want to motivate employees through the appraisal process but find the organization's compensation to be a de-motivator when increases are not as much as employees would perform.

11. Coercive Strategy

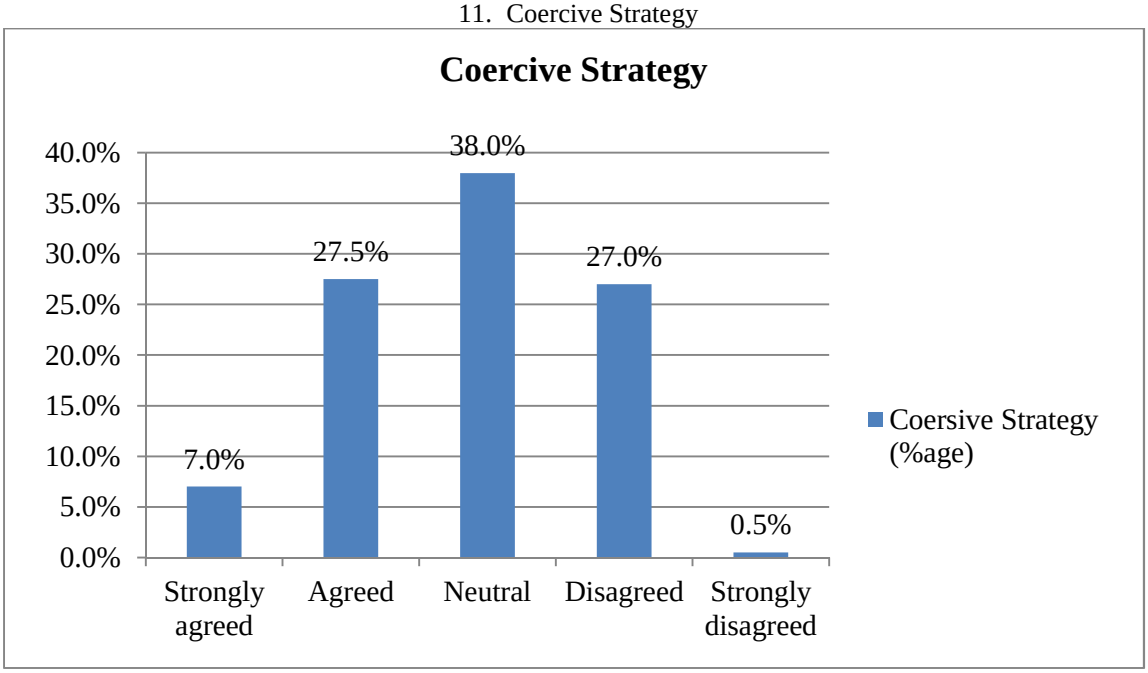

Figure 12: Bar graph of percentage of respondents about the impact of "Coercive Strategy" on performance of the company.

Above results of the research data shown in bar graphs in figure 12 above those 69 respondents strongly agreed or agreed with the statement of "Coercive Strategy for employees impacts the company's performance". 76 respondents replied as neutral and they are neither agreed nor disagreed. On discussion they told that we don't know about the requirement of coercive strategy and its link with performance of the power company. 55 respondents are disagreed or strongly disagreed with adoption of coercive strategy to improve the company performance. They replied that the coercive strategy does not always work for the employees to perform well and most of the time it works negatively and people react against the strategy. But the respondents strongly agreed and agreed commented that coercive strategy work for improvement of the performance of people but it is uncommon in the power generating companies especially in the privately managed power generating companies. Coercive strategy of management is the ability of supervisors to force employees to fulfill with an order through the threat of punishment. Coercive power typically sometime leads to short-term solution, but in the long-run yield dysfunctional behavior.

Overall Result of Survey:

The efficiency of a power plant includes the efficiency of the several components of electricity generating power plant. Minimizing heat losses is the greatest factor affecting the loss of power plant efficiency, and there are many areas of potential heat losses in a power plant. If the overhauling is not performed timely the efficiency of power plants becomes degraded over time. Increasing the efficiency of power plants include equipment refurbishment, plant upgrades, and improved operations and maintenance schedules. Four variables including Company Policy, Eduction, Skills & Experience of employees, Employees competency and Employees motivation are mostly impact the performance of the power companies in Pakistan. Coercive strategy is not always impact the companye's performance positively. Working under perssure and for short term the coercive strategy may impacte the performance of the company positively but for longterm strategy the coercive strategy having more chances to impact the performance negatively.

Table 13

S#	Statement	Agreed, Neutral, Disagreed	%age of Respondents	Number of respondents
1	HSE - Health, Safety & Environment	Agreed or Strongly Agreed	99.5%	199
		Neutral	0.5%	1
		Disagreed or Strongly Disagreed	0.0%	0
2	Company Policy	Agreed or Strongly Agreed	100.0%	200
		Neutral	0.0%	0
		Disagreed or Strongly Disagreed	0.0%	0
3	MIS - Management Information System	Agreed or Strongly Agreed	94.5%	189
		Neutral	5.5%	11
		Disagreed or Strongly Disagreed	0.0%	0
4	Education, Skills & Experience	Agreed or Strongly Agreed	100.0%	200
		Neutral	0.0%	0
		Disagreed or Strongly Disagreed	0.0%	0
5	Competency of employees	Agreed or Strongly Agreed	100.0%	200
		Neutral	0.0%	0
		Disagreed or Strongly Disagreed	0.0%	0
6	Training	Agreed or Strongly Agreed	99.0%	198
		Neutral	1.0%	2
		Disagreed or Strongly Disagreed	0.0%	0
7	Employees Motivation	Agreed or Strongly Agreed	100.0%	200
		Neutral	0.0%	0
		Disagreed or Strongly Disagreed	0.0%	0
8	Effective Planning	Agreed or Strongly Agreed	99.5%	199
		Neutral	0.5%	1
		Disagreed or Strongly Disagreed	0.0%	0
9	CMMS - Computerized Maintenance Management System	Agreed or Strongly Agreed	99.5%	199
		Neutral	0.5%	1
		Disagreed or Strongly Disagreed	0.0%	0
10	CIP - Continuous Improvement Protects	Agreed or Strongly Agreed	89.0%	188
		Neutral	11.0%	22
		Disagreed or Strongly Disagreed	0.0%	0
11	Performance Appraisal	Agreed or Strongly Agreed	99.5%	199
		Neutral	0.5%	1
		Disagreed or Strongly Disagreed	0.0%	0
12	Coercive Strategy	Agreed or Strongly Agreed	34.5%	69
		Neutral	38.0%	76
		Disagreed or Strongly Disagreed	27.5%	55

Results of four variables were selected by respondents as agreed or strongly agreed by 100% respondants as shown in above table. These are company policy, Education, Skills & Experience of employees, Employees competency and Employees motivation are mostly impact the performance of the company. Minimum numbers of respondents are 69 out of 200; who are agreed about the impact of coercive strategy on compnay's performance with the thoughts of that coercive strategy is not always work to impact the performance positively. Under perssure and for short term it cans impacte the performance of the company positively and as a longterm strategy it impacts the performance negatively.

CONCLUSION:

Converts a fuel into heat energy and then heat energy into electrical energy, this is called heat rate. To measuring the efficiency of power generating plant is the one of the ways to measure the heat rate of the plant. The heat rate is the amount of energy used by an electrical generator or electricity generating power plant to generate one kilo-watt-hour (kWh) of electricity (one Kwh is normally known as one unit of electrical energy). Energy Information Administration USA expresses heat rates in British thermal units (Btu) per net kWh generated. Net generating is the amount of electricity a power plant or generator supplies to the power transmission line connected to the power plant. The cost of building a power plant is generally recovered over the depreciable life of the assets of power plant, so that operations and maintenance expenses become the major component of a power plant as a

continuing cost. A major component of operations and maintenance is the cost of fuel. This study highlights different aspects that have been impacting the efficiency of the power plants. Public power sector in Pakistan is the unnecessary delays in the decision-making process causing delay in maintenance decision and other related efficiency improvement projects of the power companies. Company Policy, Eduction, Skills & Experience of employees, Employees competency and Employees motivation are mostly impact the performance of the power company. Coercive strategy on compnay's performance is not always work to impact the performance positively. Under perssure and for short term it can impacte the performance of the company positively and as a longterm strategy it impact the performance negatively.

RECOMMENDATIONS:

1. Improvement in thermal efficiency of the thermal power plants is crucial because the fuel cost per electricity unit (Kwh) is substantially high in the both public and private sector.
2. The power plants in Pakistan require attention and investment to improve efficiency to operate at its 100% of its install capacity.
3. Government of Pakistan should do utmost to promote energy efficiency especially of publicly managed power companies along with increase in generating capacity of the country.
4. It is very important that the data should be obtained from the world most efficient power plants to improve the efficiency of our existing power plants in Pakistan.
5. Power sector in Pakistan could not use the full capacity of existing power plants. Essential maintenance schedules were ignored for the public sector power plant since long.
6. There are identifiable technical inefficiencies in electricity generating. It asks further reforms, competition and a suitable regulation for the power sector of Pakistan.
7. Construction of highly efficient plants is critical to reduce the average per unit cost of electricity.
8. It is recommended that same study can be conducted with more variables in future. These other variables can be employee satisfaction, employee retention and employee commitment etc. and can playing important role in particular field of efficient management impact on company's performance. The researchers can conduct research with the same variables in the other sectors of economy to create more considerable results.

LIMITATIONS OF STUDY:

Like the other research studies this study has also some limitations. The scope of this study is the public and private power generating companies of Pakistan. The information gathered from public and private power sector in Pakistan to assess the efficiency of power companies towards efficient management by using random sampling technique, structured questionnaires from the employees of power plants. The population for this research is the employees of all power companies in Pakistan but the questionnaire was distributed to 200 employees of private and publicly managed power companies. Moreover the new researches should be conducted with in individual organization. The reason for the selection of convenience sampling technique is the hesitation of the participants due to confidentiality of the data and lack of information to the most of employee about the research thesis reports. Especially government employees do not trust on students and they refused flatly to fill the questionnaires or give their opinions and if some agreed they fill without mentioning their names. Time constrains were also limitation and difficulty in my study as we are interested in so many facts of impacts of efficient management on the company's performance.

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