Training Prospects in Power Sector in India

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Abstract

Skill development, increasing the employability, placement etc had become the important areas of research and of prime importance for the Govt. of India to escape from the unemployment disaster that might happen due to more number of unskilled youth. Power, electricity as a prime source for any industry to run has more responsibility for smooth flow with knew tech-how and environment friendly. So the kind and quantity of workforce required in Power sector is of prime importance. This paper focus on the need of manpower required and the kind of training programs undergoing through various organisations. An attempt is made to study the various programs available, Gap in the industry and views of the professionals regarding the kind of programs more required in the industry.

1. Introduction

Performance of an employee is highly depended on his attitude, skill and knowledge which are somewhere related with the clear understanding of know-how, techniques and practice imparted through training process to the employee. This training process can improve performance at individual, collegial and organisational level. To improve the competitiveness of the employee it's essential that people should be formally trained not only at the fresher level but also at the senior level to tap the current and future need.

Power sector with lots of innovation and changing technology demands high for its employees or manpower to be updated and trained with the changed technology. From non-renewable torenewable form of energy production the whole know-how will be different, for efficient and effective production with minimum AT& C losses many new technologies had been developed. There are training to work on maintenance of live working lines, metering methods had changed, distribution techniques are different etc, so power sector is the area where every people from top management to lower management even to the supervisory and lineman level the technological changes had changed the methodology of work ultimately forced to provide refer training, new updation training, and change in the kind of curriculum taught in various ITI's, diploma, and degree colleges.

2. Literature Review

2.1 According to the Michel Armstrong [7], "Training is systematic development of the knowledge, skills and attitudes required by an individual to perform adequately a given task or job". (Source: A Handbook of Human Resource Management Practice, Kogan Page, 8th Ed.,2001)

2.2 Suresh Vishwakarma* and RuchiTyagi, [2] "The study studied on the training required by the front line managers of DISCOM for enhancing the competency skills in the area of technical, managerial, and commercial.

2.3 Rayes et al [3] had discussed about the training initiative for developing training technologies for generation, transmission and Distribution taken by IIE of mexico. The training and tutoring learning technologies focused on different learning style, student effective state and enabling multi functionality.

2.4 According to Lester B. Lave, Michael Ashworth and Clark Gellings, [4] "The aging work force is a challenge requiring immediate action if companies are to keep the lights on as workers. Workers will be called upon to implement and operate new technologies to provide more reliable, higher quality power to more varied customers. They will be required to learn more jobs and keep up with constant changes in their jobs."

2.5 According to Raja Abdul Ghafoor Khan, Furqan Ahmed Khan, Dr. Muhammad AslamKha, [1] proved through his findings that on the job training, delivery style , training design, and training and development acticities have a significant effect on the organisation performance.

2.6 As per the report of Feedback Evaluation Report of Training on Power Sector Integrated Model (Powersim) by USAID, Feedback on the structure of the training program was generally positive and the participants found the trainers' knowledge very useful. Principal suggestions for improving the training program were as follows:

2.6.1 Increase in duration of hands-on training duration for more in-depth analysis of PowerSIM.

2.6.2Longer training period to address the material of the training manuals.

2.6.3 Focus on implementation and customization of the model to the organization requirements.

2.6.4 Need for a refresher session for previously trained participants.

2.6.5Holding of training sessions on weekends in view of heavy workloads during weekdays.

2.7Sanjay S. Kaptan (2014) [6]"Skill Development and Capacity Building-Role of education Institution" the study discussed about the importance, role, and need of skill development and capacity building programme as the principal purpose of education. Paper discussed about the suitability of education to meet the requirement of industry and labour market, improving the quality and competency of labour through skill development programme as conventional education system lack synergy between industries and institutions. Paper finally concluded that there is a strong need of capacity building & skill development programmes and there should be strong active participation of educational institution to accomplish the mission.

2.8 SeemaPandey (2016) [5] "Improvising Skill Development & Employability Potential through Higher Education, Research & Innovations in India" the objective of the paper is to study policies framed for skill development and identifying the gap between the government and private programmes. The paper discuss on the

current scenario on skill development programme, vocational education and women, private and public sources of skill development, initiatives under ministry of skill development and entrepreneurship. It discuss about the role of bringing the higher education system under the umbrella of NSDC, UGC and Make in India. Paper recommends the shift in the skill development sector, in favour of innovations, improvements and high quality training.

3. Objective of the Study

This paper aims at finding out the various training activities going on in the power sector. It also focuses on the kind and level of trainings provided, kind of organisation involved in imparting such kind of trainings and the duration of the training.

4. Scope of the study

The study will cover public and private players involved in imparting training in power sector. It will also cover the entire dimension like renewable and no renewable source of energy and generating power. It will also cover training conducted in each area from generation, distribution to transmission.

5. Analysis

Training programs under Ministry of Power

5.1 CBIP (Central Board of Irrigation & Power)-Training Programs Under Power Sector

To cover the area of electrical/ mechanical/Thermal/ hydro long term training programs from 7-52 weeks are being conducted by CBIP, these programs will help to meet the massive requirement in the power sector and also focus on the placement in power utilities & companies. Some of the training programs are listed below:

5.1.1 26 Week Post Graduate Diploma Course in O&M of Transmission & Distribution System

5.1.2 52 Weeks Post Graduate Diploma Course in Thermal Power Plant Engineering

5.1.3 Weeks Post Diploma Course in Thermal Power Plant Engineering

5.2 OPTCL POWER TRAINING CENTRE

In the premises of 220KV Grid Sub-Station at chandaka, Bhubneshware OJT training are delivered to trainers of distribution companies having the core area of the Distribution Lineman training covers Line and Sub-station planning, construction and maintenance of Line and sub-stations (up to 33KV) by OPTCL.

The focus of training is also towards the engineers & technicians, vocational training and a specialized Training Programmes on sophisticated EHT Equipment, PLCC the SCADA System is also proposed.

Various Behavioural Training Programmes for various levels of Executives are conducted at the management training centre. Apart from power sector oriented training they also conduct training for HR for Non HR Executive, ERP, Finance for Non Finance Executive, and Yoga for Working Women.

5.3 PMI-NTPC

To impart training not only from power sector but from organisation beyond the sector to middle and senior level NTPC has set up a Power Management Institute was set up by NTPC. PMI conducts short term and long term training in developing functional skills, level wise planned interventions, enhancing technical expertise in power plants, information technology programmes, programmes through video conferencing, and programme through web conferencing,

5.4 BHEL

To promote thegraduate apprenticeship, diploma apprenticeship, vocational training, industrial training, and non-statutory training BHEL provides training opportunities to Non BHEl individuals in like. Welding's skills are developed of the School dropout and around 1100 are successfully placed all over the globe

5.5 POWER GRID CORPORATION OF INDIA LIMITED

To impart livelihood oriented training to the unemployed youth of India Power Grid had signed MOU with NSDF and NSDC covering almost 33 states across India. Various training programme provided by them are:

5.5.1 CNC Turning & Milling, condensed course in tool & Die making, Fitter Trade and certificate course in welding Technology

5.5.2 short-term vocational Skill Development Training programme for under privileged/ unemployed youth in association with CIPET

5.5.3 placement linked programme in SRTS-II through ITOCT

5.5.4 Capacity building programmes

5.5.5 Training on Transmission Line Tower Erection & Stringing

5.5.6 Programme on fruit and vegetable processing

5.6 REC Institute Of Power Management & Training (RECIPMT)

With the aim to provide the training in Electricity Generation, Transmission, Distribution and Renewable Energy Systems REC Institute of Power Management & Training was established Under the Rural Electrification limited to train and educate the aspire engineers and managers in power sector. In last three decades successful training had been organised for Technical, Management, Finance & Accounts, Information Technology aspects of Power Sector. RECIPMT have international and national training programmes.

Internationally they provide nine training programmes from 4 to 12 weeks on topics like rural electrification, solar, EHV substations, power project appraisal, management of power distribution, power utilities, etc.

Nationally there training programmes are divided into eight categories. They have 20 technical national regular programmes ranging from 4-5 days. Areas covered are solar , electrical installation, transformers, distribution, cables, metering Gas insulated substation, performance of thermal plants, transmission lines, smart grids, etc. There are 10 non-technical national regular programmeranging from 4-5 days covering areas of power trading, tariff, regulatory, labour law, power purchase agreement, GST, bidding, finance for non-finance, green energy, energy management and auditing, etc. There are around 10 national collaborative 4-5 days programmes on IndAs Adoption, modern techniques of transmission, leadership skiils, HRM in power sector, corporate governance, civil engineering, material management, etc. to cater the training needs of REC employees there are 10 three days in house training programmes.

To bridge the gap between the academic learning and skills required in filed training programme for Electrical Engineering Graduates to make them ready for employment in the power sector is also introduced. There are nine 4-12 days international training programme sponsored by ministry of external affairs, govt. Of india for itec/scaap countries. There are also five programmes for 3 days to integrated power development scheme (ipds) programmes for A&B category of employees, sponsored by mop/co-ordinated by PFC and 5 training programmes of 3 days to integrated power development scheme (ipds) programmes for C&D category of employees, sponsored by mop/co-ordinated by PFC

5.7 Indian Electrical & Electronics Manufacturers' Association (IEEMA)

Established in 1948 by eight Indian companies to create a platform for promotion of Indian Electrical Manufacturers' Association. They provide training programme on

5.7.1 Introduction to Medium Voltage Switchgear
5.7.2 MASTERCLASS on Energy Storage Technology
5.7.3 Applications & Manufacturing Process
5.7.4 Workshop on Switchgear Basics
5.7.5 Application and new Technology
5.7.6 Workshop on "Goods & Services Tax"
5.7.7 "Emerging Technologies in Electrical Rotating Machines and Drives"
5.7.8 Workshop on "Sustainable growth through SME emPOWERment"

5.8 National Power Training Institute.

NPTI is a national apex body for training in power sector established vide the gazette of India on 3rd July, 1993. NPTI runs various academic and training programmes.

Academic courses run under NPTI are:

5.8.1 Two-Year MBA in Power Management approved by AICTE
5.8.2 Four-Year B.Tech./B.E. Degree in Power Engineering approved by AICTE
5.8.3 One Year Post Graduate Diploma Course in Thermal Power Plant Engineering
5.8.4 One Year Post Diploma Course in Thermal Power Plant Engineering
5.8.5 Three Months Post Graduate Certificate Course in GIS and Remote Sensing (RS)
5.8.6 Nine Months Post Graduate Diploma Course in Hydro Power Plant Engg.

5.8.7 Six Months O&M of Transmission and Distribution System for Engineers

They also run 16 weeks long term course or Engineers/Operators/Technicians, 4-15 weeks Medium-Term Courses on live line maintenance, hot stick method, etc. There are almost 130 short term course of four weeks. They also provide MDPs, load despatcher, transmission and distribution and simulator based training.

5.9 Ministry of New and Renewable Energy

The need for developing the curriculum for inclusion in ITI's, diploma and degree course was identified. Government has increased the number fellowship from 50 to 400, identified 20 institution with 15 seats per institution will be selected based on open advertisement methodology. For rest of the fellowships, the selection will be made through open advertisement and evaluation of the received applications by a committee of experts.

The 400 fellowships will be distributed as follows:

Course	Duration	Intake every year	Fellowship 1st Year	2nd Year	3rd Year (stabilized no. for subsequent years)
M.Tech	2 year	200	200	400	400
M.Sc	2 year	100	100	200	200
JRF	2 year	40	40	80	280*
SRF	3 year	40	40	80	120
RA/PDF	3 year	20	20	40	60
TOTAL		400	400	800	960

*This includes 200 integrated M.Sc students joining JRF.

Table 1

(Source: http://mnre.gov.in/human-resource-development)

5.10 National Skill development Council

NSDC was developed to impart training in various sector through public private partnership. To cater the training demand in power sector currently 54 training partners all over India are connected to provide training on five areas having the total target of 20944

Job role name	**Targets**
Assistant Electricity Meter Reader, Billing & Cash Collector	60
Assistant Technician - Street Lighting Solutions (Installation & Maintenance)	260
Consumer Energy Meter Technician	7080
Distribution Lineman	12524
Technician – Distribution Transformer Repair	1020
Grand Total	**20944**

Table 2

6 Interpretation

List of Kind Training Programs conducted by various Organisations

Sl No	Name of the organisation	Type of training program	Duration
1	CBIP	Post graduate course	Long term
2	OPTCL	Vocational and behavioural training	Short term
3	PMI-NTPC	Functional and Technical expertise	Short and long term
4	BHEL	Graduate, diploma, vocational, and ITI training	Long and short term
5	Power Grid	Certificate and vocational course	Short term
6	RECIPMT	International training programme	4-12 weeks
		National Training Programme	4-5 days
7	IEEMA	Workshops kind of programme	Short term
8	NPTI	Post Graduate, Graduate, Certificate and work shop course	Long term and short term courses
9	MNRE	Fellowship programmes	Long term
10	NSDC	Diploma and certificate course	Short term

Table 3

Trainings conducted in the power sector ranges from very short duration to long term covering almost all kind of levels from lineman to the fellowship. Majority of the programs conducted are of short duration and in the workshop mode. With the ever increasing demand due to changing technology there is more demand for conducting placement oriented graduates and post graduate course.

Manpower Projection for 12th Plan

(In Thousands)

S No	Area	Capacity Addition (MW)	New Recruitment			Total Manpower			Total Capacity (MW)
			Tech	Non-Tech	Total	Tech	Non-Tech	Total	
1	Thermal	82211*	42.18	13.06	55.24	151.97	51.05	203.02	238744
2	Hydro	9204	12.20	3.44	15.64	59.19	21.94	81.13	52095
3	Nuclear	2800	3.07	1.31	4.38	13.03	5.84	18.87	10080
4	Power System								
	Transmission		5.98	2.09	8.07	30.83	9.95	40.78	
	Distribution		249.49	74.85	324.34	828.86	253.13	1081.98	
	Total	**94215**	**312.92**	**94.75**	**407.67**	**1083.88**	**341.91**	**1425.79**	**300919**

**Includes Capacity addition of 18,500 MW from Renewable Energy*

Source: Report of Working Group power for 12th plan

Capacity & Manpower at the end of 12th Plan

Capacity in MW and Manpower in Thousand

Sector	12th Plan					
	Capacity at the beginning of 12th Plan	Manpower at the beginning of 12th Plan	Reduced Manpower due to Retirement etc.	Capacity addition during 12th Plan	Additional Manpower rqmt during 12th Plan	Manpower at the end of 12th Plan
	C 1	C 2	C 3 = 87.5%* C 2	C 4	C 5	C 6 = C 3 + C 5
Thermal	156533	168.90	147.79	82211	55.24	203.02
Hydro	42891	74.84	65.49	9204	15.64	81.13
Nuclear	7280	16.56	14.49	2800	4.38	18.87
Sub-total	**206704**	**260.30**	**227.76**	**94215**	**75.26**	**303.02**
Transmission	-	37.38	32.71	-	8.07	40.78
Distribution	-	865.88	757.65	-	324.34	1081.98
Grand Total	**206704**	**1163.56**	**1018.12**	**94215**	**407.67**	**1425.79**

Source: Report of Working Group power for 12th plan

As per the manpower requirement for the 12th plan the total requirement is 1425.79 among which the huge manpower requirement is in the distribution sector (1081.98), if observed Thermal, Hydro and ulcer sector in whole manpower requirement is 303.02. In the scenario when there is more emphasis on hydro power still the manpower requirement for hydro is 81.13 whereas in thermal requirement is 203.02.

Manpower Availability vs. Requirement

Colleges	Total Colleges	Annual Intake in lakhs	Total for 5 years (lakhs)	Manpower Requirement for 12th Plan (lakhs)
Engineering	3617	11.30	56.50	0.58
Management	4058	4.15	20.75	-
Polytechnics	540	0.93	4.65	0.56
ITI	8039	11.15	55.75	1.99
Total	**16254**	**27.53**	**137.65**	**3.13**

Source: Report of Working Group power for 12th plan

According to the manpower availability vs. requirement table the requirement of people on management post is nil whereas the total manpower requirement is 3.13 lakhs which include people from ITI, Polytechnics and Engineering. This clearly indicates that there is more training requirement at the lower and technical level, more number of diploma, short term, graduate technical and post graduate technical course is required.

Opinions from the working professional and trainers were also collected through the personal interviews. The preference related to effectiveness of training programs, which programs are more required, the employability of the programs, level of trainees to be trained, etc. According to these professional training program is required at each and every level. Although the no of workforce

required is high at the lower level still they recognized the gap of power managers at the top level. According to them training programs are going to fill the manpower gap by raising employability ratio and will play an important role in skill development. It was felt that training programs are required for enhancement of employees at every level through short term long term, workshop mode, graduate course etc. the preference for post graduate course was also observed for the upper level position which according to manpower gap analysis is nil. The new avenue of training like power trading, financing and refinancing of power projects, regulatory, renewable energy was also identified

7 Conclusion

Training programs in power sector are conducted for each level through various modes like short term, long term, workshop, graduate and PG programs. With the growing capacity of the sector the need for manpower requirement is already traced out and power sector skill council is working for imparting skills and increasing the employability ratio available for the direct consumption of people to the industry with new techniques and know-how. Efforts are been taken to re skill the existing workforce and updating them with the new avenues available and approaching into the sector. Still there is a gap between the manpower required and the manpower available. Power Sector Skill Council along with NSDC has come up with new programs, developed the QP' and NOS to maintain the standards, involved the private players in imparting skills to the youth of India.

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