6. A Study on Job Satisfaction among College Teachers in Mumbai Region

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Abstract

College teachers are a crucial part of the development of our country. Several college teachers felt unsatisfied with their professions during the COVID 19 Epidemic. College teachers can be more productive when satisfied with their job. Each society's success depends on the role that teachers play in it and creates a number of characters in the society such as doctors, lawyers, Entrepreneurs etc. Therefore, the job satisfaction level of college teachers is a matter for Concern. This paper will find out the level of job satisfaction among college teachers and the factors impact the job satisfaction level in Mumbai region.

Keywords: College Teachers, Job Satisfaction, Profession, Mumbai Region

1. Introduction

Research on college teachers has become a matter of concern especially during the Covid 19 pandemic. In recent years, there is a steady increase in teacher job dissatisfaction. In disciplines like modern studies, for example, occupation fulfillment is one of the most widely studied and enthusiastically explored developments. Any organization's employees must be motivated by their jobs in order to provide effective results. Motivation is an essential and contributing factor to job satisfaction. Satisfied employees provide better work and superior outcomes, both of which boost the firm's productivity. When it comes to the effectiveness and efficiency of any organisation. Job satisfaction is crucial. College teachers are a crucial part of the development of our country. Several college teachers felt unsatisfied with their professions during the COVID 19 Epidemic. College teachers can be more productive when satisfied with their job. Each society's success depends on the role that teachers play in it and creates a number of characters in the society such as doctors, lawyers, Entrepreneurs etc. Therefore, the job satisfaction level of college teachers is a matter for Concern.

- Al Farsi, H., Al Hinai, M., Al Zadjali, A., Aulia, S., & Varshney, S. (2017). A study on job satisfaction among the employees of oriental ready mix Company Sultanate of Oman. International Journal of Research in Humanities and Social Studies, 4, 40-44.
- Agarwal, N. (2018). A Study On Job Satisfaction Among Female Teachers.
- Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). A National Study of Work-Family Balance and Job Satisfaction among Agriculture Teachers. Journal of Agricultural Education, 57(4), 146-159.
- Mehta, S. (2012). Job satisfaction among teachers. IUP Journal of Organizational Behavior, 11(2), 54.
- Usop, A. M., Askandar, K., Langguyuan-Kadtong, M., & Usop, D. A. S. O. (2013). Work performance and job satisfaction among teachers. International journal of humanities and social science, 3(5), 245-252.
- https://www.businessmanagementideas.com/human-resource-management-2/job-satisfaction/job-satisfaction-meaning-definition-importance-factors-effects-and-theories/19709

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"A Descriptive Study of Indian Railways as a Campaigner of Environment Sustainability"

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Abstract:
The Indian Railway (IR) has set an ambitious goal of transforming itself as a Green Railways by the year 2030. It plans to achieve the status of " Zero Carbon emitter " in the near future. Indian Railways has started efforts towards creating an environment-friendly atmosphere through their constructive works in the various fields. The current study is about the evaluation of environment enrichment activities undertaken by IR in past three years i.e. 2017-18, 2018-19 and 2019-20. The areas covered are solar energy, wind energy, electrification, afforestation, Waste management, Bio- fuel, and water conservation. The role of environmental enrichment is recognized in the form of consecutive annual awards conferred by the National Energy Conservation Awards (NECA) and Greenco certificates granted to railway stations.

Keywords: Indian Railways, environment sustainability, green railways

Introduction:

Dashadashaksamo putraha
dashaputrasamo drumaha

Having a son is equal to having a life of a century, having a tree is like having 10 sons. Indian culture is based upon nature's wellbeing for human's wellbeing. Under any circumstances, there should be no environmental loss. Even in exceptional circumstances, the demolition of trees should be indemnified. As per the beliefs in Indian tradition, the woods used for cremation should be replenished by planting the same number of saplings by the deceased family to maintain environmental balance. These rules are not only applicable for individuals but also for corporates. How can the Indian Railway be an exception? Indian Railway is the biggest transporter in the country. Indian Railways (IR) is one of the world's largest rail networks, spread over 67,415 route Km. IR is the lifeline of the country carrying nearly 23 million passengers every day making it the largest passenger carrying system in the world. It is also the 4th largest freight transporter in the world moving 1,225 million tonnes of freight annually.It traverses the length and breadth of the country. The railway transport is far more energy efficient as compared to road transport. Railways are 6 times more energy efficient as compared to road, 4 times more economical in land use, and 6 times more cost effective vis-à-vis road in construction costs for comparable levels of traffic. As the country's lifeline, the national transporter, in January 2015, set up the Environment Directorate in the Railway Board, to coordinate all environment management initiatives across the Indian Railways[1].The significant symbol of tracks on the country's map is very easy to read and understand the importance and existence of Indian Railway. It can't be exaggerated if it is compared with the blood veins in the human body. An Indian railway is a way of public transportation whether rich or poor. Efforts are steadily being made to make railway operation environment-friendly.

Thr current study is all about the evaluation of environment enrichment activities in past three years i.e. 2017-18, 2018-19 and 2019-

[1] Indian Railways Environmental Sustainability Annual Report 2019-20

20. The basic aim is to do sustainable environment enrichment activities. Some of the steps taken in that direction have been highlighted in this article.

Auxiliary Power Unit (APU) –

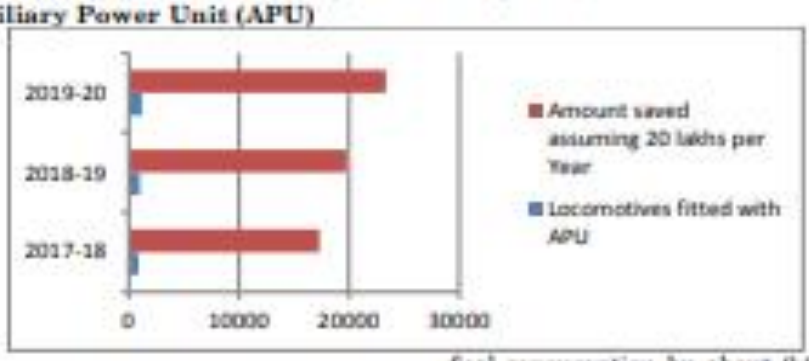
APU is a self–contained system which can substitute the main engine when it is in rest mode of more than 10 minutes. The main engine is started only when the locomotive is

Table 1: Auxiliary Power Unit (APU)

Year	Locomotives fitted with APU	Amount saved assuming 20 lakhs per Year per engine
2019-20	1167	23340 lakhs
2018-19	986	19720 lakhs
2017-18	865	17300 lakhs

(Source: Compiled from Indian Railways Annual reports)

Graph: 1 Auxiliary Power Unit (APU)



development with the actually required for movement or traction. The Indian railways have started using the APUs and have reduced diesel consumption from 25 litres to 3 litres per engine. There is an expected savings of Rs 20 lakhs per year on account of a reduction in fuel consumption.

(Source: Compiled from Indian Railways Annual reports)

1) **Conversion of Diesel Locomotives into Electric Locomotives:**

The IR is planning to convert its 200 diesel locomotive into electric locomotives as per its 2018-19 report. The cost of conversion is Rs 2 crores per locomotive. The conversion move is part of the Railways plan of a total shift to electric traction, thereby reducing its fossil fuel consumption by about 2.83 billion litres per annum.

2) **Electrification of IR:**

Indian Railways has electrified 45,881 Route kilometers (RKM) which is about 71% of the total Broad-Gauge network of Indian Railways (64,689 RKM, including Konkan Railway) by March 31, 2021. It is planned to electrify all routes of Indian Railways by 2024. The coverage of electrification of rail tracks has risen from 1,176 kilometers in 2014-15 to 4,378 kilometers in 2019-20. Indian Railways has fixed a target of electrification of 7,000 RKM for the year 2020-21.

Among the modes of rail transport, electric traction is the most energy efficient; every 100 route kilometers electrified section results in saving of annual consumption of more than four million liters of diesel oil, which saves Rs. 2500 Crores worth foreign exchange annually[2].

3) **Common Rail Electronic Direct Injection (CREDI) :**
Research Development Standard Organisation (RDSO), the research wing of Indian Railways has developed a Common Rail Electronic Direct Fuel Injection (CReDI) system for its fleet of diesel locomotives. It will lead to fuel savings to the tune of 3 to 4 percent and reduces emissions by 20-30%. The CREDI system will lead to a savings of Rs. 500-600 crore annually. The railways have fitted this technology in 80 out of 180 units diesel locomotives.

4) **BIO - Diesel –**
IR has built bio-diesel plants at Raipur and Chennai. Each plant is estimated to cost around Rs 30 crore, producing 30 tons bio-diesel per day, which means more than 9,000 tons a year. It is produced from waste oil, fatty acid, and non-edible vegetable oil. Bio-diesel is blended with High-Speed Diesel (HSD) oil for running locomotives. 76 locations on all Zonal Railways have started using the blended oil. The use of bio-diesel results in a reduction of Greenhouse Gases emissions, earning of carbon credits & saving of foreign exchange. Bio-diesel is also expected to be 5-10 % cheaper than High-Speed Diesel.

5) **Compressed Natural Gas (CNG) and Liquid Natural Gas (LNG):**
CNG and LNG is not only cheaper but also environment-friendly, Indian Railways began the use of CNG as a fuel in Diesel Electric Multiple Units (DEMU) in September 2014 Indian Railways, through its Indian Railway Organisation for Alternate Fuels (IROAF), has planned for conversion of 100 Diesel Power Cars (DPCs) to run on Compressed Natural Gas (CNG). The annual energy bill of IR is around Rs 30,000 crore. The use of CNG and LNG will save Rs 41,000 crore in energy bills over the next 10 years. The use of CNG has lead to a saving cost of 6% of the fuel cost for the railways.

6) **LED (Light Emitting Diode):**
The Indian Railways has become a major Railway across the world to have 100% LED lighting at all its stations. All railway installations including offices, maintenance depots, etc. have also been provided with 100% LED luminaries and all Residential quarters have also been provided with 100% LED lights. Now coaches from Production Units are manufactured with LED light fittings.

Railway Infrastructure installed with LED	Units of Electricity Saved p.a.	Annual Savings in Rs.
All railway installations including offices, maintenance depots etc.	240 Million Units of electricity per annum	Rs. 180 crores reduction in annual electricity bill of IR.
Rail Bhawan	7.5 lakhs units in terms of Kilo watt hours (KWH) 0of electricity per year	Anticipated saving of Rs. 63 lakhs annually.

Table 2: Savings through LED installation
(Source Compiled from Indian Railway's Annual reports)

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https://com.indianrailways.gov.in/view_section.jsp?lang=0&id=0,294,302,538

7) BIO Toilet:

As a part of Green train corridors, Indian Railways has started replacing traditional toilets with bio-toilets in all its coaches. It is done to prevent open discharge of human waste on Railway Tracks from trains. Twenty six sections on Indian Railways have been declared as Green Train Corridors, as all trains passing to those Sections are fitted with 100% Bio toilets. The data for the last three years have been provided.

Table 3: Green Initiatives through Bio-Toilet data

Year	No. of Bio Toilets	No. of Coaches
2017-18	1,28,700	34,800
2018-19	2,00,000	55,000
2019-20	2,44,000	69,000

(Source Compiled from Indian Railway's Annual reports)

8) Water Body Conservation and Afforestation:

The IR has revived and restored 54 Water bodies and 44 no. of nonfunctional water bodies have been rejuvenated. At present, 1,591 water bodies are functional on Indian Railways.

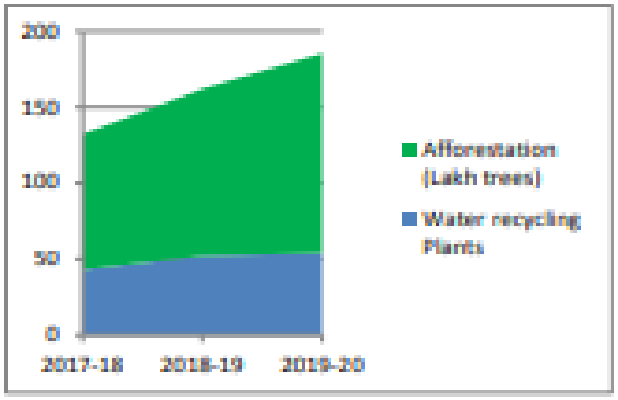
At present, an area of 41,417 hectares of Railway land is under afforestation. The Ministry of Railways has finalized a model agreement with the Ministry of Environment, Forests and Climate Change in January 2016 for the plantation of trees on Railway land along with the railway track and station yards. Railways are also eliminating the use of wooden sleepers and replacing it with steel channel sleepers and composite Sleepers made of a polymer matrix. Railways are making all efforts to convert the land available with them into green land by planting more and more trees. The IR land is also licensed to railway employees belonging to Group 'C' and 'D' categories under the 'Grow More Food' scheme, for growing vegetables, crops, etc. The cumulative data for Water recycling Plants and Afforestation of the last three years have been provided.

Table 4 : Water Recycling plants and Afforestation data

Year	Water recycling Plants	Afforestation
2017-18	43	89 lakh trees
2018-19	52	110.09 lakh trees.
2019-20	54	131.41 lakh trees

(Source Compiled from Indian Railway's Annual reports)

Graph 02: Water Recycling plants and Afforestation data



(Source Compiled from Indian Railways Annual reports)

9) Solar Plants and Wind Energy:

The Indian Railways also wants to utilize solar energy for meeting its traction power requirement and become a complete 'green mode of transportation. The emphasis on IR is towards the development of solar power mainly through Public-Private Partnership (PPP) model, wherein Railway will provide its space to the developer free of cost and the developer will install the solar plants. Railway will sign a Power Purchase Agreement (PPA) with the developer identified through successful open bidding for the long term (25 years).

The following action plan has been prepared:

1. There are about 51,000 hectares of Railway land which has the potential of installing 20 gigawatt(GW) land based solar plants.
2. Two pilot projects had already been successfully commissioned. 2 Megawatt peak (MWp) Solar Plant at Diwana near Panipat in Northern Railway. Successfully commissioned in Sept, 2020. 1.7 MWp Solar Plant at Bina through BHEL, feeding solar power directly to 25kilovolt(kV) alternating current traction system. Successfully commissioned in July, 2020.
3. To further, proliferate these pilot projects on a larger scale, initially, solar power projects of 3 GW are being planned in 3 phases as under:-

a. Phase- I: 1.6 GW capacity in railway plots for Open access States under developer model.
b. Phase- II: 400 MW capacity in railway plots for nonopen access States under ownership model (captive use).
c. Phase- III: 1 GW capacity in railway plots along the tracks under developer model for open access States.

4. Grid-connected/Off- Grid solar panel to be provided at Divisional headquarters, Zonal headquarters, maintenance depots, sheds, and workshops.
5. Solar and Wind Hybrid power systems at stations, in addition to the existing power supply to harness the wind and solar energy to the fullest.
6. Solar-based water heating system at all Railway stations, Rest houses, running rooms, hospitals, base-kitchens & other Railway premises.
7. Use of solar cooker in Railways Institutes, Training Schools, Rest houses, Running Rooms, Base Kitchen and other Railway premises.
8. Indian Railway is contemplating setting up Grid- connected solar power installations of about 1000 MW by providing Solar PV modules as a part of Green Energy initiatives by 2020.
9. In a unique initiative, for the first time, one 16 KW solar platform shelter has been provided at Sahibabad Railway Station on Northern Railway. Solar platform shelters will serve the dual purpose of not only providing shelter to passengers from rain & sun heat but also provide green energy.
10. 100% Green Powered station • Indian Railways' go green and save electricity initiative has proved to be immensely beneficial. •
    a. Malwal Railway station of Northern Railway under Firozpur Division is the first Green Powered station commissioned in India (Jan.,'11).
    b. Asangaon Railway station of Central Railway under Mumbai Division has been the second 100% Green Powered station powered with windmill & solar panels (March, '18).
    c. On similar lines, Guwahati Railway station in the Northeast has become the first Railway station in the Northeast to run completely on solar power (May, '18).
11. Cumulative data of Wind energy is represented in Table 05:

Table 5 : **Wind Energy Production:**

State	WIND ENERGY Production
Tamil Nadu	10.5 MW (for non-Traction) and 10.5 MW (for Traction) capacity
Rajastha n	26 MW (for traction) capacity
Maharas htra	6 MW (for non-traction) and 50.4 MW (for traction) capacity
Tamilna du (Tirunel veli)	10.5 MW capacity wind-mill

(Source Compiled from Indian Railways Annual Reports)

Conclusions: It is a well-known fact that IR connects the nation through its rail network for mobility, economic developments and also helps in cultural exchange throughout the country. IR is also now emerging as a Green Energy Ambassador and cultivating the culture of environmental sustainability. It has received recognition for its Green

initiatives from National Energy Conservation Awards (NECA) awards and GreenCo Certificate

Table 6 : National Energy Conservation Awards (NECA)

Year	No of Awards from NECA
2020	13
2019	14
2018	17
2017	27

The participation in the GreenCo rating process has helped the Indian railways manufacturing units and workshops in achieving approximately Rs 10 crores per year of saving.52 workshops and 16 railway stations have received Confederation of Indian Industry (CII's) GreenCo Rating certificates. GreenCo Rating System facilities companies in improving their overall green performance.

IR has taken steps for environmental sustainability by streamlining its initiatives with regards to environmental management, energy efficiency, renewable and alternate sources of energy, Water Conservation, and Afforestation

References:

1. Indian railways Annual Reports 2017-18
2. Indian railways Annual Reports 2018-19
3. Indian railways Annual Reports 2019-20
4. Indian railways Environment Sustainability Annual Reports 2017-18
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