



Motivational factors for Energy Conservation in the workplace: A Focus from Employees Perspective

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ABSTRACT

In the current scenario, energy conservation in the workplace has been the area of much research attention. This led to the growth of various plans and strategies to solve energy-related issues. There are many factors that influence the implementation of these strategic procedures in organizations. Lots of complexities were also faced while implementing these procedures due to improper utilization of energy-conserving mechanisms. Even though there are energy-efficient buildings, equipment, and formalized procedures already in place, there is a disparity between energy-saving measures and their actual usage in various organizations. This study mainly focuses on identifying the motivational factors that encourage employees to reduce energy consumption. A total of 82 employees working in electrical manufacturing organizations were taken and the tools used for the study comprised of Correlation analysis. Findings reveal that reputation building and environmental concern are the most influencing factors to motivate employees. We highlight the need for behavioral modification of employees in the workplace to save energy which should be considered crucial in the organization.

1. INTRODUCTION

Energy conservation has become a recently emerging social issue. It is the effort made to reduce energy consumption by using less energy service and more effective equipment handling. Various research on energy and its usage resulted in the development of several policies and procedures to rectify energy-related issues [1]-[4]. Energy management includes planning and operation of energy production and energy consumption units.

It is connected closely to production management, environment management, and other established business functions. Energy management is proactive and organized procurement and conversion of energy and its distribution and usage to meet the requirement, considering environmental and economic objectives.

Among many social issues relating to energy conservation, the usage of energy in buildings rather than a technological one is the most influential. [5]. There are strategies to motivate societies to use, or conserve energy in the workplace that has been a topic addressed periodically by social scientists for more than a century. From this point of view, creating a habit of saving energy use in buildings requires wide awareness programs for society.

Whilst earth pollution is increasing, the availability of raw materials such as oil, natural gas, minerals ores, and water is decreasing for the industrialized society.

The consumption-oriented behavioural pattern in developing countries like India requires a massive increase in the gross national product throughout the world. It is also important that a significant reduction in carbon dioxide emissions will result in climate change. There is a growing body of literature showing various energy conservation strategies in the workplace. Most of the research studies are direct on optimizing formalized production processes and implementing energy-efficient equipment. For effective conservation of energy, we must focus on changing energy conservation behaviour on the part of the employees than on technology [6].

Conservation of energy means saving in energy consumption without sacrificing quantity & quality of production. It can be done by substituting time, convenience, labour and capital for effective optimization of costs. Energy has become a crucial factor in industrial production, agriculture, employment, and economic growth. Despite the development of energy-efficient buildings, it has been seen that there is a big gap between energy-saving activities and actual usage [7]. This gap is moderately due to many reasons. Some of the reasons are a poor response from the building administrators to designers, improper modelling tools, and the behavior of the occupants that are hindering the process of smart building or real estate management or poor facility management [8]. If the

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behaviour of employees is positively reinforced towards energy conservation, substantial changes in energy conservation can be achieved. [9].

Managers should understand that employees can be motivated by both financial and non-financial techniques. Employee productivity in the workplace can be directly influenced by various motivational techniques. They can also be inspired by training them to achieve personal and professional objectives. An organization is a socio-technical system that is the comprising of a workplace, infrastructure and culture that can be transformed through various organizational development interventions. Innovative technologies and interventions improve the efficiency and energy conservation in the organization. In recent years, various research is carried to identify different intervention techniques in organizations [10-11] but it still remains unanswered to find out the effective intervention practices in the workplace [12].

In this study, we are attempting to identify the motivational factors to encourage individual workers to modify their own energy use behaviour to decrease emissions. The motivational factors incorporated in the workplace influence energy-saving employee behavior [13]. Studies show that motivational factors positively influence the energy-saving behaviour of employees in organizations [14]. One of the most important motivational effects of energy conservation among the employees and groups is set as a goal for reduced consumption by permitting them to monitor and control their workplace activities [15]. Goal setting encourages employees' performance by directing activities and efforts for the achievement of goals. This can be done by promoting persistence in work behaviours towards the goal and through the discovery of renewed information and strategies for goal attainment [16].

Conserving energy at the workplace for environmental reasons is considered an altruistic act that helps to reduce the energy cost of the company [17]. Altruism is the unselfish act that is performed to increase someone else benefits without any personal gain [18]. This act will help the employees to create a good public image. To analyse the motivational factors of employees that contribute to energy-saving behaviour in the workplace, a scale of 28 items were recognized [19]. The factors like environmental concern, warm glow, and reputation building at work, reluctant altruism, organization finances and organizational image were regarded as the significant motivations to conserve the energy in the organizations [20]. Without considering the personal benefits, when the individual acts for the betterment of others, is considered Altruism [21]. Warm glow can be considered when employees feel satisfied for doing the right thing in some situations [22]. Energy-saving at the workplace has various functions. We should set goals for each employee in the organization. The goal should include energy-saving behaviours and actions that should be followed in the organization. This energy-saving behaviour

will help [23] the organization to attain its goal, feel good among employees, and gain a reputation as a good person. We focus on different potential motivators to save energy in the workplace and their relevance in conserving energy. Various studies show that at the individual level cost saving are often less in the workplace than in domestic use [24].

To reduce the use of energy at the workplace it's better to align the goals with environmental concerns [25]. Here we are analysing whether these motivational factors influence the employees in workplace electrical manufacturing units.

2. OBJECTIVES OF THE STUDY

The study is to analyse the energy-saving motivational factors in organizations. The study also focuses on the relationship between the energy conservation motivational factors and their dimensions.

3. THE HYPOTHESIS OF THE STUDY

H1: There is a significant relationship between environmental concern and Energy Saving Motivational Factors of employees of manufacturing companies

H2: There is a significant relationship between warm glow and Energy Saving Motivational Factors of employees of manufacturing companies.

H3: There is a significant relationship between reluctant altruism and Energy Saving Motivational Factors of employees of manufacturing companies.

H4: There is a significant relationship between organization finances and Energy Saving Motivational Factors of employees of manufacturing companies

H5: There is a significant relationship between organizational image and Energy Saving Motivational Factors of employees of manufacturing companies

H6: There is a significant relationship between reputation building and Energy Saving Motivational Factors of employees of manufacturing companies.

4. METHODOLOGY

Target respondents of this study are the employees of manufacturing organizations of electrical products. A sampling size of 120 questionnaires is distributed equally, out of which 82 were returned. A total of 35 responses were used in the pilot study. To reduce the survey items and to determine the reliability of the questions, we used to conduct a pilot study.

The pilot study (Table 1) shows that Cronach's alpha was above seven which is the cut-off criterion [26] which means the constructs are reliable for the study. Since we used the survey and fact-finding inquiries, the research design is descriptive. To collect data for the study we employed the purposive sampling method. The questionnaire was distributed to 82 employees working in two companies producing electrical equipment. The questionnaire was

filled in online using google form and the analysis was by using SPSS.

Table 1. Reliability Statistics

Cronbach's Alpha	N of Items
.753	28

4.1 Profile of the Respondents

The demographic profile of the surveyed respondents is shown in Table 2. The gender distribution of correspondence is 70 percent for males and 30 percent for females. The breakdown of groups is dominated by the group is between 28 to 33 years old with 39 percent. This is followed by the age group between 22 and 27 years with 23 percent. In this research, the experiences of respondents between 5 and 8 are 49 percent while less than 4 years experiences of respondents are of 37 percent. Table 2 reveals that the majority of employees are male and have experienced between 5 to 8 years. Most of the respondent's ages are between 28 and 33 years.

Table 2. Demographic Profile of the respondents

Variables		Frequency	Percentage
Gender	Male	58	62.7
	Female	24	37.3
Age	22-27 years	18	23
	28-33 years	32	39
	34-39 years	13	15
	40-45 years	17	20
	46-51 years	0	0
	52-57 years	1	1
Experience	Below 4 years	30	37
	5-8 years	40	49
	9-12 years	12	14
	Above 12 years	0	0
Source: Questionnaire			

4.2 Correlation test for Energy Saving Motivational Factors and its dimensions

Pearson's correlation analysis was used to identify the degree of association between variables, to test H1, H2, H3, H4, H5, and H6. According to the correlation coefficients (r) for dimensions of Energy Saving Motivational Factors, a similarity was generally observed. From table 3, it can be identified that the coefficients are positive, meaning that the variables vary together in the same direction, with a significant moderate correlation between Energy Saving

Motivational Factors and Organisational Image (r = .565, p <0.01). The correlation between Energy Saving Motivational Factors and Reputation Building (r = 0.753, p <0.01), V and Environmental concern (r = 0.649, p <0.01), Energy Saving Motivational Factors and Organisational finances (r = 0.494 p <0.01), Energy Saving Motivational Factors and Warm glow (r = 0.492, p <0.01), Energy Saving Motivational Factors and Reluctant Altruism (r = 0.647, p <0.01) are statistically significant at the 0.01 level.

Table 3. Correlation between energy Conservational Motivational Factors and its dimensions

	Energy-saving motivational factors
Organizational Image	.565**
Reputation Building	.753**
Environmental Concern	.649**
Organizational Finances	.494**
Warm Glow	.492**
Reluctant Altruism	.647**

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 4. Correlation between Organisational Image and other Energy-saving motivational factors

Energy-saving motivational factors	Organizational Image
Reputation Building	.418**
Environmental Concern	.275*
Organizational Finances	.114
Warm Glow	.165
Reluctant Altruism	.135

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

From table 4, we can determine that the correlation between Organisational Image and Reputation

Building (r = 0.418, p <0.01), and Environmental concern (r = 0.275, p <0.05), are positively correlated. That means that the variables vary together in the same direction. All other energy-saving motivational factors are related to organizational image.

Table 5 shows the correlation between Reputation Building and Organizational Image, (r = 0.418, p <0.01). Environmental concern (r = 0.482, p <0.01) and Reluctant altruism (r = .300, p <0.05) are positively correlated. From this, we can analyses that reputation building is positively influenced by organizational image, environmental concern, and reluctant altruism.

Table 5. Correlation between Reputation Building and other Energy-saving motivational factors

Energy-saving motivational factors	Reputation Building
Organizational Image	.418**
Environmental Concern	.482**
Organizational Finances	.224
Warm Glow	.135
Reluctant Altruism	.300*

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 6. Correlation between Environmental Concern and other Energy-saving motivational factors

Energy-saving motivational factors	Environmental concern
Organizational Image	.275*
Reputation Building	.482**
Organizational Finances	.258*
Warm Glow	.132
Reluctant Altruism	.200

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

The above table reveals that the correlation between Environmental concern and Organisational Image ($r = 0.275, p < 0.01$), Reputation building ($r = 0.482, p < 0.01$) and Organisational finances ($r = 0.258, p < 0.05$) are positively correlated.

Table 7. Correlation between Organisational Finances and other Energy-saving motivational factors

Energy-saving motivational factors	Organizational Finances
Organizational Image	.114
Reputation Building	.224
Environmental Concern	.258*
Warm Glow	.269*
Reluctant Altruism	.234

** Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 7 shows that the correlation between Organisational Finances and Environmental concern ($r = 0.258, p < 0.01$), and Warm glow ($r = 0.269, p < 0.05$) are positively correlated. It can be determined that energy-saving motivational variables influence organizational finances.

Table 8. Correlation between Warm Glow and other Energy-saving motivational factors

Energy-saving motivational factors	Warm Glow
Organizational Image	.165
Reputation Building	.135
Environmental Concern	.132
Organizational Finances	.269*
Reluctant Altruism	.264*

*Correlation is significant at the 0.05 level (2-tailed).

From table 8, we can determine that the correlation between Warm glow and organisational finances ($r = 0.269, p < 0.05$), and Reluctant Altruism ($r = 0.264, p < 0.05$), are positively correlated.

Table 9. Correlation between Reluctant Altruism and other Energy-saving motivational factors

Energy-saving motivational factors	Reluctant Altruism
Organizational Image	.135
Reputation Building	.300*
Environmental Concern	.200
Organizational Finances	.234
Warm Glow	.264*

*Correlation is significant at the 0.05 level (2-tailed).

The above table shows that the correlation between Reluctant Altruism and Reputation Building ($r = 0.300, p < 0.05$), and Warm glow ($r = 0.264, p < 0.05$), are positively correlated.

5. RESULTS AND IMPLICATIONS

The study was to analyse the factors influencing energy-saving motivational factors of employees in manufacturing organizations. The study confirmed that the major dimensions like environmental concern, warm glow, reputation building at work, reluctant altruism, organization finances, and the organizational image are contributing to energy-saving motivational factors of employees in manufacturing organizations. To validate the H1, H2, H3, H4, H5, H6 Pearson's correlation analysis was used. The coefficients of correlation are positive, and it was found that Reputation Building was highly correlated to energy-saving motivational factors followed by Environmental concern. The correlation between various dimensions of energy-saving is also analysed. It is found that Environmental concern influences more than other factors of energy conservation. The least correlated energy-saving

motivational factor was with Organisational finances. From this study, we have integrated insights from employees in the workplace for identifying key areas that create a value for behavioural change. This research mainly focuses to create a new insight that can add value to both the manufacturing industry and society by motivating the employees to conserve energy. It also recommends practicing organizational behavioural modification training to employees which will help them to inculcate this energy-saving behaviour as a habit in the workplace. This will contribute to the organization's cultural energy conservation.

6. CONCLUSION

It found out that well-organized use of energy helps to create core competitive advantages and leads to many opportunities like reducing energy costs and minimizing costs of production and thereby reducing the overall cost of products. Moreover, it also reduces carbon emissions and pollution in the workplace. In the current scenario, every organization is trying to increase profit by decreasing the cost of production and improving sales. For effective energy management in the organization, proper strategies and policies should be formulated to motivate the employees for energy conservation on an individual basis thereby developing a climate of organizational citizenship behaviour among the employees.

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