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An Identification of Working Environmental Conditions that Impact on the Satisfaction of Workers – A Case Study

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ABSTRACT

Although the performance of a production floor worker is normally measured using the actual output that he/she has produced, it also can relate to his/her job satisfaction. The objective of the present study is to identify the working environmental conditions of the production plants that can generate favourable impacts on the satisfaction of production floor workers. A ceramic manufacturing plant which is located in the central province of Sri Lanka has been selected purposively for the study. This plant has been awarded by the ISO 14001 environmental management system and this industrial sector can generate more employment opportunities under 'craft and related trade' which has been ranked as the third largest employment generation sector in Sri Lankan labor market. The survey method was used to collect data during a cross section of the production plant's time horizon. The cluster sampling technique was used to determine the participants for the survey. Finally, the responses of 100 no. of production floor workers have been selected for the final analysis. The results reveal that the factors of noise, temperature, lighting, space, and ventilation are the working environmental conditions that have impacts on the satisfaction of production floor workers. Finally, the study suggests some managerial implications and future research directions to improve the working environmental conditions in manufacturing plants in Sri Lanka.

KEYWORDS: Production Floor Workers, Satisfaction, Working Environmental Conditions

1 INTRODUCTION

The environmental conditions of any workplace are mainly influenced by the external factors such as climate and meteorological conditions, temperature, humidity, drafts, lighting level, noise and interference, gases, radiation, dust, smoke, and other harmful chemical effects (Ajala, 2012). If such conditions have not been properly managed within the firm, the workers who are working especially in the production floors are highly vulnerable to health and safety hazards. Moreover, if any employee has negative perceptions about his/her working environmental conditions, it will adversely impact on his/her job satisfaction.

In Sri Lankan industrial context, there is a high demand for obtaining different certification by the manufacturers in order to prove the quality of their products and the production process. As a result, ISO certifications such as 9000, 14000 and 22000 have been designed to award such manufacturers who could comply with requirements of those standards. Amongst ISO 14001 environmental management system (EMS) is the family of standards which provides practical tools for managing a firm's environmental responsibilities towards its production floor and the natural environment (Kaur, 2011).

The ceramic manufacturing industrial sector in Sri Lanka can play a major role in the economy as it has the possibility to create more employment opportunities for the people. This industry requires skilled labours and experienced craftsmen. According to the labor market statistics, the employment under the 'craft and related trades' has been ranked as the third among the industrial sector employment occupations (Annual report of labor force survey, 2014, p. 18). Moreover, the effective maintenance of the working environmental

conditions of the production plants of this sector has been paid high attention as the majority of job positions have been created for working in the production floor. Hence, the objective of the present study has been established as to identify the working environmental conditions of the production plants that can generate favorable impacts on the satisfaction of workers.

2 LITERATURE REVIEW

The literature reveals that high employee satisfaction and the decreased labor turnover as the major contributors to sustain the shareholder wealth (Mokaya, Musau, Wagoki & Karanja, 2013). The productivity of an employee depends on the "amount of time an individual is physically present at a job and the degree to which he or she is mentally present or efficiently functioning while physically presenting at the job" (Ajala, 2012). Hence, the firms must address the issue of how to enhance the employee satisfaction to maintain high worker productivity and this can be done adopting some strategies that are focused on employee satisfaction, health, and morale (Chandrasekar, 2011).

Every organization has its unique spatial arrangements, lighting and heating arrangements, different levels of noise, ventilation, and safety facilities which are called as the working environmental conditions. Some prior studies have found that there is an impact of such conditions on enhancing the employee morale, productivity, and engagement (Bakotić & Fiskovića, 2013). However, many firms have failed to ensure the employee health and safety perfectly due to poorly designed workstations, unsuitable furniture, lack of ventilation, inappropriate lighting, excessive noise, insufficient safety measures in fire emergencies, lack of personal protective equipment, etc. (Chandrasekar, 2011). Mokaya et al. (2013) have studied the effects of working environmental conditions on employee job satisfaction in the hotel industry in Kenya and have found that regular review on working environmental conditions by the management is one of strategies to improve the employee job satisfaction. Kaur (2011) has found that for successful implementation of ISO 14001 EMS needs to maximize employee satisfaction towards the working environmental conditions that are required by the standard.

Based on the theoritical and practical backgrounds that have been reviewed from the exisiting literature, the present study problem has been conceptualized as Fig. 1 and is hypothesized as "there is an impact of working environmental conditions of noise, temeprature, light, space, ventilation, and safety facilities on the satisfaction of workers".

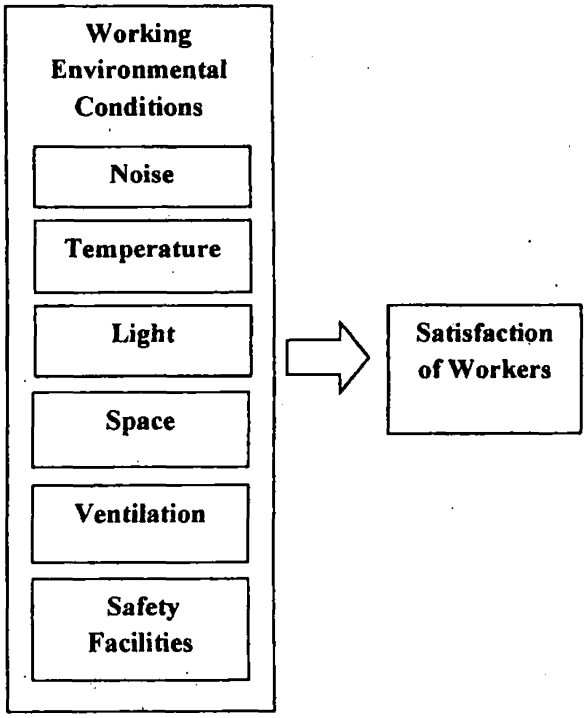

Figure 1: Conceptual Framework

3 METHODOLOGY

The present study was aimed at identifying the working environmental conditions that impact on the satisfaction of workers. Hence, the production floor workers are the population of this study as they are the employees whose job functions are highly depended on the environmental conditions that have been listed in the Fig.1. The ceramic manufacturing industrial sector was selected purposively due to the practical

significance of studying the related issues of that sector. Moreover, there is only one ISO 14001 EMS implemented ceramic manufacturing plant in Sri Lankan context. Hence, that plant which was located in the central province of Sri Lanka was selected as the study setting. Then, the cluster sampling technique was used to determine the sample size from the production floor workers of the selected manufacturing plant. Accordingly, the cluster of workers who were directly involved in the ceramic production were selected as the participants for the survey.

The data were collected using a questionnaire and it was consisted of the questions items that were established to get the opinions about the satisfactory level of each working environmental conditions as shown in the Fig. 1. Accordingly, noise, temperature, light, space, ventilation, and safety facilities were considered as independent variables. All question items under each variable were measured in a 5-point Likert scale.

The survey was carried out at a cross-section of the plant's production time horizon. The quantitative methods were used to analyze the data. Accordingly, SPSS version 20.0 was used to perform the required statistical testing.

Based on Fig. 1, six hypotheses were established to test the impacts of each independent variable (noise, temperature, light, space, ventilation, and safety facilities) on the satisfaction of production floor workers.

4 DATA COLLECTION AND ANALYSIS

After excluding the incomplete questionnaires, only the responses of 100 no. of workers (80 percent of the participants) were considered for the final analysis.

Table 1 shows the descriptive statistics of the sample. Accordingly, the majority of the responses were represented by the female participants. The environmental condition of 'lighting' was considered as the key environmental condition that impacted on the satisfaction of both male and female production floor workers.

Table 1: Descriptive Statistics

Factors	Mean (SD) Male employees (36% of the sample)	Mean (SD) Female employees (64% of the sample)
Noise	2.47 (0.65)	2.39 (0.80)
Temperature	1.91 (1.02)	1.60 (0.78)
Lighting	3.75 (0.88)	3.40(1.02)
Space	2.82 (0.69)	2.77 (0.74)
Ventilation	2.25 (0.84)	2.21 (0.80)
Safety Facility	2.94 (0.84)	2.99 (0.94)
Satisfaction	3.22	3.62

Table 2 shows the results of correlation analysis which was performed to check the relationship between the working environmental conditions and the satisfaction of the production floor workers. Accordingly, the 'safety facilities' has not significantly correlated with the satisfaction of the production floor workers.

Table 2: Results of the Correlation Analysis

Factors	Correlation Coefficient	Significance
Noise	-0.207(*)	0.039
Temperature	-0.399(**)	0.000
Light	0.732(**)	0.000
Space	0.592(**)	0.000
Ventilation	0.659(**)	0.000
Safety Facilities	0.073	0.471

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

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

Table 3 shows the results of the multiple regression analysis that was

performed to check the most significant factors among the correlated factors with the satisfaction. Accordingly, the 'space' has not shown as statistically significant in measuring its impacts on the satisfaction of the production floor workers.

5 RESULTS AND DISCUSSION

Table 4 shows the results of the hypothesis testing.

Table 4: Results of Hypothesis Testing

Hypothesis	Result
There is an impact of;	
1. noise on worker satisfaction.	Accepted
2. temperature on worker satisfaction.	Accepted
3. light on worker satisfaction.	Accepted
4. space on worker satisfaction.	Accepted
5. ventilation on worker satisfaction.	Accepted
6. safety facilities on worker satisfaction.	Rejected

Based on the results of the hypothesis testing, only the hypotheses that have related with noise, temperature, light, space, and ventilation have proved in the present study setting. Accordingly, these factors can be treated as the key working environmental conditions that have impacts on the satisfaction of the production floor workers of this ceramic manufacturing plant. Hence, the plant management has to pay high attention on improving those environmental conditions if they want to enhance the satisfaction of their production floor workers.

When the mean values are cpmpared, the satifaction of $Male_{(3.22)}$ < satisfaction of $Female_{(3.62)}$ it shows that female workers have responded favorably with respect to their satisfaction towards the existing working environmental conditions of the plant. Moreover, among the selected working enviornmental conditions, the lighting level has been paid high attention by both male and female employees.

Based on the results of regression analysis, only noise, temperature, light, and ventilations have shown as the working environmental factors that can create significant impact on the satisfaction of the production floor workers.

6 CONCLUSION

Based on the findings of the present study it can be concluded that the working environmental conditions of noise, temperature, light, and ventilations are the essential conditions which require an effective monitoring system by the management of the production plant together with the relevant requirements that have been imposed by ISO 14001 EMS.

Table 3: Results of Multiple Regression Analysis

Model	Unstandardized coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.604	0.406		3.947	0.000
Noise	-0.114	0.120	-0.063	-0.951	0.044
Temperature	-0.291	0.088	-0.223	-3.298	0.001
Light	0.620	0.143	0.619	4.335	0.000
Space	0.240	0.129	0.224	1.857	0.056
Ventilation	0.116	0.183	0.119	-0.636	0.027

Significance Level – 5%

As the managerial implications, the study recommends to maintain a proper lighting system in the production floor as it is highly required by both female and male workers. Then, introducing more cooling facilities can avoid the excessive temperature that is generated from machineries. The noise level can be controlled by arranging the work place in a proper manner while changing the layout of the production floor and by installing noise proofing facilities.

The 'safety facilities' has not found as significant in measuring the relationship with the satisfaction of the production floor workers within the present study setting. Hence, it can be reconsidered by future researchers because the reasons for such behavior are unexplainable in the present study context.

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