

Workplace Design and Job Performance: A Study of Operational Level Employees in the Apparel Industry of Sri Lanka

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Abstract- Work place design is one of the major determinants of employee job performance in all organization. Matching work place design with employee necessities is very essential for obtain maximum contribution of employees towards organization objectives. There for it is need to identify the relationship and the impact of workplace design towards job performance. Hence the main focus of this study was to identify the relationship between workplace design and job performance. Operational level employees in a leading garment manufacturing organization of Sri Lanka were investigated by using a sample of 90 employees. Simple random sampling method is used to select the representative sample. A self-administrated structured questionnaire was used to collect data. Correlation analysis and multiple regression analysis were used to test the research hypotheses. Study confirmed that workplace design is significantly correlated with employee job performance. Findings of the study indicate that there is a strong positive relationship between workplace design and job performance of operational level employees.

Index Terms- Workplace design, Job performance, Operational level employee

I. INTRODUCTION

Job performance of employees is an important matter for any organization and refers to whether an employee does his/her job well or not. Job performance consists of behaviors that employees do in their jobs that are relevant to the goals of the organization (Campbell, McCloy, Oppler and Sager, 1993). Organization's overall performance is affected by the job performance of the employees. Work place design, motivation, work life balance, job satisfaction, leadership style are some factors that influence to the job performance. Among them workplace design plays a significant role in affecting to the job performance of the employees. Many organizations do not give importance to workplace design; thus this study will give them ample reasons to consider workplace design as an important factor in increasing their employees' performance.

The workplace environment impacts employee morale, productivity and engagement - both positively and negatively. Unsafe and unhealthy work place environment includes poorly designed workstations, unsuitable furniture, lack of ventilation, inappropriate lighting, excessive noise, insufficient safety measures in fire emergencies and lack of personal protective equipment. People working in such environment are prone to

occupational disease and it impacts on employee's performance. It is the quality of the employee's workplace environment; how well they engage with the organization, especially with their immediate environment that most impacts on their level of motivation and subsequent performance.

Garment industry has become Sri Lanka's largest export industry since 1986 and it is also the country's largest net foreign exchange earner since 1992 (Dheerasinghe, 2003). Employee job performance is an important concept that every manager wants to maintain within their organizations. However the available studies do not provide empirical evidence with regard to the relationship between work place design and job performance of operational level employees in apparel industry in Sri Lanka. So this study will focus on whether there is a relationship between work place design and operational level employees' job performance in the apparel industry in Sri Lanka.

II. LITERATURE REVIEW

In today's competitive business environment, corporations can no longer afford to waste the talent of their workforce. Companies are run in a marathon to achieve their own goals and objectives. Therefore high performance of their employees is a must. The literature reveals that good workplace design has a positive effect on employees' performance.

Workplace Design

Research indicates a strong relationship between indoor environment and employee performance. Improvements in the physical environment result in the increase of employee productivity. Clements- Croome (2000) suggests that employee productivity could be improved by 4 to 10% by improving the office environmental conditions. Recent studies have constantly shown that improvements in the physical environment increase office performance (Sundstrom, Town, Rice, Osborn & Brill, 1994; Fisk and Rosenfeld, 1997; Heerwagen, 2000; Leaman and Bordass, 2001; Veitch and Newsham, 1998; Wyon, 2004). The physical layout of the work place, along with efficient management processes, is playing a major role in boosting employees' productivity and improving organizational performance (Uzee, 1999; Leaman and Bordass, 1993).

A comparative Australian post-occupancy evaluation between green buildings and conventional buildings shows that there are significant associations between perceived productivity and thermal comfort (Leaman et al, 2008). Also, several post-occupancy evaluations show that the higher indoor air quality is

the better occupant satisfaction and perceived productivity could be achieved (Paevere and Brown, 2008). The natural features including daylight, external view and natural ventilation strategies, have shown measurable gains for occupant health and performance at workplace. A research suggests that the well-designed natural conditioning and mechanical and lighting system interfaces could provide energy efficiency gains of up to 5 percent of energy use in the United States as well as health and quality of life gains (Loftness et al., 2005). According to Hameed & Amjad (2009) a widely accepted assumption is that better workplace environment produces better results. A comparative Australian post-occupancy evaluation between green buildings and conventional buildings shows that there are significant associations between perceived productivity and thermal comfort (Leaman, Thomas and Vandenberg, 2008). According to Sundstrom (1994) most people spend 50% of their lives within indoor environments, which greatly influence their mental status, actions, abilities and performance. Better outcomes and increased productivity is assumed to be the result of better workplace environment. Better physical environment of office will boost the employees and ultimately improve their productivity.

According to Carmen (2013) the work place design considerations include thermal comfort which indicates the right combination of temperature, airflow and humidity. A combination of these elements is required for physical comfort in the workplace. Good indoor environmental quality starts with a well-designed lighting system, which involves more than just providing windows and incandescent lighting. Lighting has an enormous potential for influencing occupant perception of the interior space. A variety of factors contribute to the lighting experience, including the amount and color of light, glare, variations in light levels, and use of day lighting (R S Means, 2002). Leaman and Bordass (2000) present evidence that air-conditioned buildings (usually, but not always deeper than 15 meter) have a more negative effect on perceived productivity than naturally ventilated buildings (less than 15 meter across). The connection is made between increased dependencies on environmental systems, such as air conditioning, and ill-health symptoms.

Robertson and Huang (2006) had researched the effects of a workplace design and training intervention and the relationships between perceived satisfaction of office workplace design factors (layout and storage) and work performance measures (individual performance, group collaboration and effectiveness) by studying 120 office workers using a workplace environment questionnaire. Results showed a significant, positive impact of the intervention on environmental satisfaction for workstation layout. Satisfaction with workstation layout had a significant relationship with individual performance, group collaboration and effectiveness. To perform the given tasks successfully employees should also be provided with sufficient equipments. This also includes personal protective equipments. According to Haldiya, Sachdev and Mathur (2005) if the workers have good knowledge about the health problem and the protection measures, but a huge gap could be observed between the knowledge and usage of personal protective equipment mainly due to non availability of safety devices, high cost and safety devices not provided by the manufacturers.

Job performance

Job performance of employees is an important issue for any organization and refers to whether an employee does his job well or not. Job performance consists of behaviours that employees do in their jobs that are relevant to the goals of the organization (Campbell, *et al.*1993). Motowidlo (2003) define job performance is based on employee behavior and the outcome is vital for the organizational success. Muchinsky (2003) explained job performance as a combination of employee's behaviors. Further he described that it can be monitored, measured and evaluated as outcomes at employee level and linked with the organizational goals. Therefore job performance is a vital determinant for organizational success.

There are different dimensions relating to job performance. According to Blumberg and Pringle (1982), three factors affect job performance namely ability variables (the requirement that helps to achieve the job performance), motivation variables (linked with employees to determine the job performance) and opportunity variables (work environment, group and leadership characteristics of the job) jointly affect performance. The term "performance" could be used to evaluate office work of employees, which is more focused on behaviour rather than result itself, compared with productivity. According to the expectancy model by Victor Vroom, an individual's performance is determined by effort with the interaction of environment and ability (Luthan, 2002).

Factors affecting to Job performance

Al-Anzi (2009) suggests that the key factors that affect employee productivity and performance fall into two categories:

1. Management driven factors
2. Factors that arise from premises, offices or factory design

Management driven factors

Al-Anzi (2009) identifies the followings as some of the management driven factors that affect employee's productivity and performance:

- Organization plans such as the allocation of responsibilities at all levels organization, definition of job descriptions and the degree of access management and administrative support needed to complete their tasks
- Working patterns, shift-working, break times, absence or holiday cover
- Health and safety policies, including the provision of training, development working practices and the adequate supply of protective clothing and equipment

Factors that arise from premises, offices or factory design

Al-Anzi (2009) further identify the followings as the key premises or office factors that tends to affect employee productivity and performance:

- Furniture
- Workspace availability
- Light intensity

- Weather/temperature
- Ventilation/humidity
- Noise/vibration
- Premises hygiene/welfare facilities

Workplace Design and Job performance

Over the years, many companies have been trying new designs and techniques in office buildings, which can promote productivity, and attract more employees (Hameed & Amjad, 2009). Many authors have noted that, the workplace design, along with effective management processes, is playing an important role in increasing employees' productivity and boosting organizational performance (Uzee, 1999; Leaman and Bordass, 1993). Research by the architects, Gensler (2005) of 200 UK business managers showed that an improved workplace would boost employee productivity by 19 per cent and their own productivity by 17 per cent. These improvements have great implications for the economy if proven. Gensler (2006) followed up this research in a survey of 2,000 of employees in the USA which showed that 90 per cent of the respondents believed that better interior design and layout result in better general employee performance.

The American Society of Interior Designers (ASID, 1999) carried out an independent study and revealed that the physical workplace design is one of the top three factors, which affect performance and job satisfaction. The study results showed that

31% of people were satisfied with their jobs and had pleasing workplace environments. 50% of people were seeking jobs and said that they would prefer a job in a company where the physical environment is good. Many executives are under the mistaken impression that the level of employee performance on the job is proportional to the size of the employee's compensation package. Although compensation package is one of the extrinsic motivation tools it has a limited short term effect on employees' performance (Ryan and Deci, 2000). Brill (1990) estimates that improvements in the physical design of the workplace may result in a 5-10 percent increase in employee productivity. Stallworth and Kleiner (1996) argue that increasingly an organization's physical layout is designed around employee needs in order to maximize performance and satisfaction.

Conceptual Framework

The objective of this study is to examine the relationship between work place design and job performance of the operational level employees in the apparel industry of Sri Lanka.. An analysis and review of the relevant literature have used to develop the following conceptual framework (Figure 1). The framework shows five (5) independent variables such as workplace layout, ventilation, lighting, establishment of equipments and thermal comfort to measure workplace design. Job performance of the employees is the dependent variable.

Independent Variables

Dependent Variable

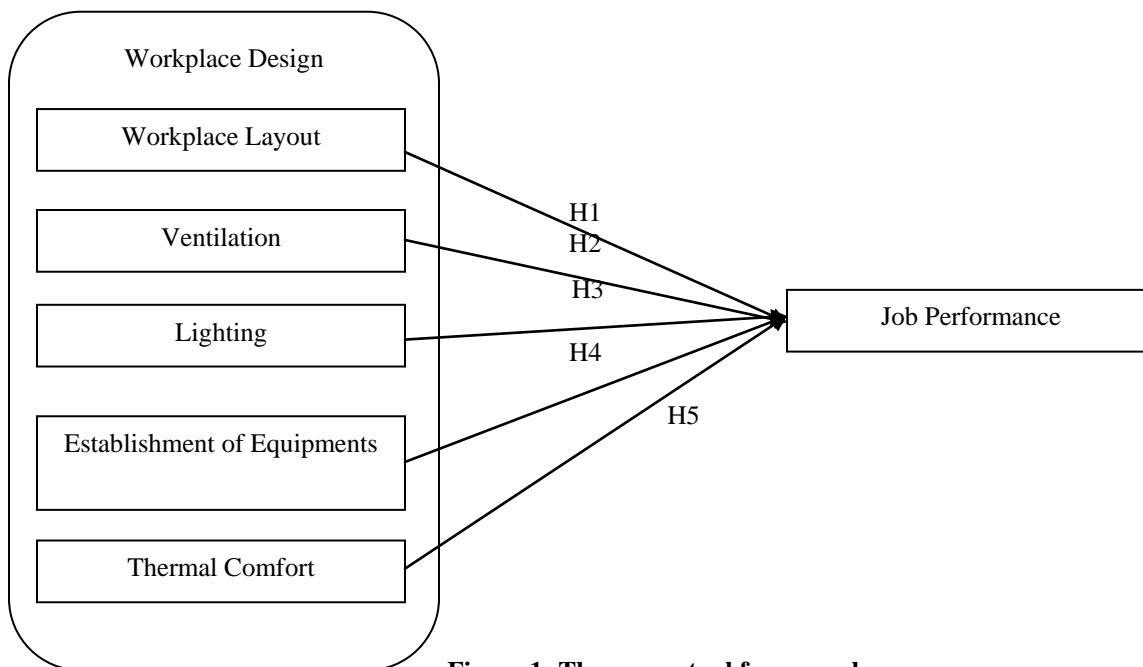


Figure 1: The conceptual framework

III. HYPOTHESES

Based on the above literature review and the conceptual model, following hypotheses (H) have been formulated for this study. H: Workplace layout, ventilation, lighting, establishment

of equipments and thermal comfort have significant relationships with job performance of employees.

IV. METHODOLOGY

The sample of this study is 90 operational level employees from a leading garment manufacturing organization in Sri Lanka. The simple random sampling technique was used to draw this sample from a population of 293 employees. Data collection was done by using self-administrated structured questionnaires.

The questionnaire consists of 38 questions and the first section of the questionnaire designed to obtain demographic characteristics, including age, gender, the length of work experience etc. In the second section there are 17 questions

regarding workplace design factors. Finally the third section consists of 16 questions regarding job performance. Some of the questions were close ended, while others scored on a 5-point Likert scale. Point 5 for strongly agree, 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree have been given in order to analyze data.

To test the hypotheses, Pearson's product moment correlation analysis, and multivariate analysis were used. The statistical computer package SPSS version 20.0 was utilized to analyze the data.

V. FINDINGS

Testing of Hypotheses

The results of Pearson's product moment correlation analysis used to test the hypotheses are presented in the Table I.

Table I: Pearson Correlation for all selected variables and job performance

Independent variables	Dependent variable (Job performance)	Sig.
Workplace layout	0.868	0.000
Ventilation	0.784	0.000
Lighting	0.907	0.000
Establishment of equipments	0.817	0.000
Thermal comfort	0.795	0.000

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

The analysis of the results indicate a positive correlation between workplace layout and job performance ($r = 0.868$) and is significant at 0.01. This shows that when the workplace layout of the factory is not comfortable according to the needs of the employees their performance is affected. There is a positive relationship between ventilation and performance. The correlation coefficient ($r = 0.784$) is significant at 0.01. The positive relationship between lighting and performance ($r = 0.907$) at 0.01 shows that employees' performance is highly correlates to the lighting conditions in the factories. The results of establishment of equipments reveal its significant correlation

with performance ($r = 0.817$) at $p = 0.01$. Thermal comfort is the right combination of temperature, airflow and humidity in factory design; when the correlation was calculated in SPSS it gave a positive relation with performance ($r = 0.795$) where $p = 0.01$.

Multivariate analysis evaluates the simultaneous effects of all the independent variables on dependent variable. The results of regressing the five independent variables against the dependent variable occupational health and safety problems are shown in the Table II.

Table II: Aggregate impact of the workplace design factors on job performance

R	R ²	Adjusted R ²	Std. error of the estimate	F	Sig. F
0.929	0.864	0.862	0.40529	499.957	0.000

The adjusted square of the multiple R is 0.862 indicating that the 86.2% of variance in workplace design is explained by the five independent variables jointly. There is statistical evidence to

claim that five independent variables have significantly explained the 86.2% of the variance in workplace design in the selected domain.

VI. DISCUSSION

As hypothesized it was found that there are significant relationships between workplace layout, ventilation, lighting, establishment of equipments and thermal comfort and job performance of employees. The overall relationships of different elements of workplace design showed that lighting has the strongest positive relationship with job performance. Analysis of the collected data revealed that work place design has a significant impact on the employees' performance.

The sample indicated that majority of the operational level employees are female (74.1%). And the ages of 44.4% of operational level employees are in the range of 20 -29 years and 44.4% of the operational level employees have 1- 4 years experience. 58.0% of the operational level employees are General Certificate in Education (Ordinary Level) qualified. There is 35.8% of grade 10 pass out workers and 6.2% of General Certificate in Education(Advanced Level) qualified among operational level employees considered for the study.

VII. CONCLUSION

In line with this research, it is found that workplace design might affect to arising job performance The research findings give evidence that good workplace layout, ventilation, lighting, establishment of equipments and thermal comfort leads to increase job performance of operational level employees. Therefore there is a direct relationship between workplace design and job performance. A strong correlation exists between elements of workplace design and job performance of employees. The regression analysis of the data shows that the coefficient of determination adjusted R. square = 0.862, so, it can be concluded that 86.2% of the variability in employees' job performance is accounted for by the variables in this model. Most of the organizations do not give importance to workplace design; this study will give them ample reasons to consider workplace design as an important factor in increasing their employees' performance.

VIII. RECOMMENDATION

Lighting was found to be the major factor, which has strongest positive relationship with the job performance of employees in the apparel industry of Sri Lanka. Therefore, it is recommended to have proper and adequate artificial as well as natural light to improve the workplace design for better performance. In order to establish a greater understanding of these relationships, research which combines human resource management, workplace design and performance needs to be developed. Within the indoor environment, lighting and workplace layout have the strongest relationship with employees' performance. Therefore it is recommended to develop, a validated human model in which at least the workplace layout in combination with the lighting conditions can be evaluated.

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