Designing A Conceptual Model For Employee Safety And Work Place Hazards In Relation To Performance - With Reference To Jewellery Manufacturing Firms

***Dr. N. Panchanatham **V. Jayalakshmi**

ABSTRACT

Organisations are gratified to provide with a safe and healthful environment. The main purpose of health and safety polices is the safe interaction of people and the work environment. Poor working conditions affect employee performance badly. Their health may suffer. Accidents and injuries may multiply causing enormous financial loss to the company. Absence and turnover ratio may grow. Many deaths, injuries and illness occur because of safety violations, poor equipment design or gross negligence. The overall quality of work may suffer. Thus, the research study focuses on protecting employees from workplace hazards particularly among Jewellery manufacturing industries for increasing work performance.

A questionnaire of 55 questions is designed to assess employee safety, workplace hazard and performance of employees in Jewellery manufacturing industries. First, workplace hazard assessment include 36 questions; second, employee safety assessment contain 9 questions; and third, performance assessment included 10 questions. In this study among Jewellery industries we have considered six departments namely; wax, filing, buffing, stone setting, steam bath and colouring, which affects employees health and leads to workplace hazards. It is revealed that effective health and safety practices led to high profitability and high productivity. The HR department should have to monitor health and safety of employees daily, coach them to be safety conscious, investigate accidents, observe health and safety behavior of employees, monitor workplace for security problems, communicate with employees to identify potentially difficult employees, and follow safety provisions and security procedures and recommend changes as needed. So, for increasing performance and organisational growth, HR managers should focus on primary health and safety responsibilities towards employee's health.

Introduction

Industrial health is essential to promote and maintain the highest degree of physical, social and mental well being of workers; improve productivity and quality of work; reduce accidents, injuries, absenteeism and labour turnover; and protect workers against any health hazard arising out of work or conditions in which it is carried on. The Union Carbide accident in Bhopal, for example, which killed over 4,000 people in 1984, is considered by most experts to be the result of equipment design

* Registrar, Annamalai University, Chidambaram

* PhD Scholar (Part Time), Bharathiar University, Coimbatore

flaws which could have been avoided. Union labour ministry's records place companies in Maharashtra and Gujarat as the dangerous places to work, with over 25,000 and 13,000 accidents respectively. The biggest offenders are generally from jute mills, lead battery manufacturers, chemical units, textile mills, match and fireworks industry especially in Sivakasi, automobile industry, sugar crushing units, mining, heavy construction, flour mills, etc.

According to the International Labour Organization and World Health Organisation (1950s) occupational health and safety is protecting and maintaining the highest level of physical, mental and social well-being of workers in all occupations. It involves preventing ill-health caused by working conditions; protecting workers in their employment from risks resulting from factors adverse to their health; placing and maintaining workers in an occupational environment adapted to their physiological and psychological capabilities (Flin et al., 2000). In adapting employee's physiological and psychological capabilities to their works, Miller (1996) added that employee health and safety is the effect of work on employees and the effect of employees on their work. This places greater responsibility on organisations to help employees adapt to their work effectively in order to avoid risk of hazards, sickness and diseases at the workplace. Industrial work honestly poses a lot of health and safety challenges to employees, and employees depend on management for protection. Bad working conditions can affect the performance of a company by increasing the expenses and lowering the profitability. But, on the other hand, good working conditions can boost the productivity and decrease company expenses.

Organisations are obliged to provide with a safe and healthful environment. Health is a general state of physical, mental and emotional well-being. Safety is protection of a person's physical health. The main purpose of health and safety polices is the safe interaction of people and the work environment. Poor working conditions affect employee performance badly. Employees may find it difficult to concentrate on work. It would be too taxing for them to work for longer hours. Their health may suffer. Accidents and injuries may multiply causing enormous financial loss to the company. Absence and turnover ratio may grow. A company with a poor safety record may find it difficult to hire and retain skilled labour force. The overall quality of work may suffer. Many deaths, injuries and illness occur because of safety violations, poor equipment design or gross negligence. Thus, the research study focuses on protecting employees from workplace hazards particularly among Jewellery manufacturing industries for increasing work performance.

Review of Literature

The review of literature is categorised under three variables Employee Safety, Workplace Hazards and Performance.

Review on Workplace Hazard

In the last decades several researchers identified and studied a wide range of occupational hazards (physical, chemical, biological, psycho-social and physiological) that may lead to accidents (Hollmann et al., 2001; Saari, 1990; Salminen et al., 1993). Accidents often result in occupational injuries,

which can harm the reputation of a company, decrease productivity and result in large costs (Sheu et al., 2000). Injured employees may suffer not only pain and discomfort, but also more serious problems - either a temporary or permanent disability, or even death.

Risk assessment acts as a fundamental key factor in the safety management process of choosing the measures for prevention and protection (risk management) in order to guarantee the safety and well-being of workers (Degan et al., 2003). The safety management process can be summarized as follows:

1. Hazard identification and hazard evaluation (dangerous event forecasting)
2. Identification of involved people
3. Numerical estimation of damage risk (damage can be classified in two categories: the accident and the occupational illness caused by the activity)

Workplace risk assessment can be defined as a systematic procedure for analysing workplace components to identify and evaluate hazards and safety characteristics (Harms-Ringdahl, 2001). It is crucial to be able to identify the main hazards present in a work environment at a source and evaluate their magnitude, nature and characteristics. This way, a safe workplace can be provided (Reinhold and Tint, 2009).

Review on Employee Safety

Several studies have shown that, there is little or no attention to employee health and safety. These research findings suggest that millions of employees are victims of industrial accidents, hazards and diseases (Adebiyi and Owaba, 2009). Statistical findings indicate that, in the United State of America, there are about 6,500 fatalities and 9 million disabling injuries per a year (Roland and Moriarty, 1990). In the United Kingdom, 1.6 million injury accidents and 27 million non-injury accidents are recorded annually (Phelps, 1999). In Australia, the 2002 and 2004 figures suggest that fatalities were 2.6 per 100,000 employees, while the injury rate was 2.7 per 1,000 employees (NOHSC, 2004). In India, overall injury rate was 1.25 per 1,000 workers per year (Mohan et al., 2004), and 37 per cent of all reported accidents in Lebanon are industrial or work-related (Fayad et al., 2003). In the Latin America and Caribbean region, the number is as high as 13.5 per 100,000 workers. Also, it is 34 per 100,000 workers in the Republic of Korea and 140 per 1,000 of reported accidents in Iran (Roudsari and Ghodsi, 2005). In Finland, 20,016 hospitalizations for work-related injuries were recorded between 1990 and 1999 (Mattila et al., 2006). In France, 862,500 occupational accidents including 1,597 fatalities were recorded in the year 2000 (Fadier and Garza, 2006). The above statistics indicate that employees in both developed and developing countries are exposed to diverse and considerable risk of industrial accidents, hazards, diseases, and death. Indeed, it appears that many employers do not realize that protecting employee's health and safety is their corporate social responsibility (Montero et al., 2009).

Employee's disengagement in work is due to their lack of commitment and motivation is often associated with apathy and detachment from ones work (Simon, 2013). An engaged employee carry

out what is expected of him, having his focus and goal clear and brings success to the organization. It is important that the organisation's purpose of making profit should consider the social welfare of employees and the society as a whole, management of organizations must focus on issues where there is a direct link to business needs (Grayson and Hodges, 2001). Therefore, being socially responsible includes making profit. Obviously, healthy employees can make huge profits; that is, by this theory, invest additional money in important constituency and that investment means greater financial returns to the organisation. So, there is a direct relationship or link between a firm's profitability, survival and growth and the management of its employee's health and safety (Quartey and Puplampu, 2012).

Review on Performance

Performance orientation factors are standards for employee behavior at work. Employees are rated based on their work performance compared with a set of factors determined by the employer. These performance orientation factors refer to loyalty, workaholism, goal-orientation, manager's attitude, organizational culture, financial rewards, work engagement, training, mentoring, leadership style, motivation and environment. Of these factors loyalty and workaholism of an employee defines how an employee does the work, which has a closer relationship with employee's performance and organizational growth (Vaidehi Priyal, 2017).

Employee loyalty includes employees work dedication, strong bonding, devotion and willing to work long in an organization. An employee possessing high loyalty contribute for increased productivity, greater efficiency, and a customer loyalty (Hart & Thompson, 2007), and corporate profitability (Reichheld 1996). Employee loyalty is defined as a psychological commitment to the organization, which is due to increased satisfaction (Reichheld 2001). Job satisfaction is achieved when an employee exceeds a process of internal evaluation which develops an employee loyalty into an emotional attitude towards the organization. In general, highly satisfied employee is committed towards working environment and organization.

Workaholism refers to an employee who loves working and happy for his achievement. Workaholics always balance his work and personal life for achieving the goal (Friedman & Lobel 2003) and organizational standards (Scott et al. 1997; McMillan & O'Driscoll, 2006). The term workaholic was coined by Oates (1971), which defines to hard working people that result in danger to their health, personal happiness, interpersonal relationship and social functioning. Though the concept of workaholism was attracted by many organizations (Machlowitz 1980; Garfield 1987; Fassel 1990; Waddell 1993; Koonce 1998), meager research studies have been undertaken for further understanding of this phenomenon (Doerfler & Kammer 1986; Spence & Robbins, 1992; Robinson & Post 1995, 1997; Porter 2001). According to Mosier (1983), workaholics simply refer to the people who work at least 50 hours a week.

Theoretical Framework

Based on the previous researches, it is assumed that providing employee safety from workplace hazards increases performance in Jewellery manufacturing industries, and the same is depicted below (Fig 1).

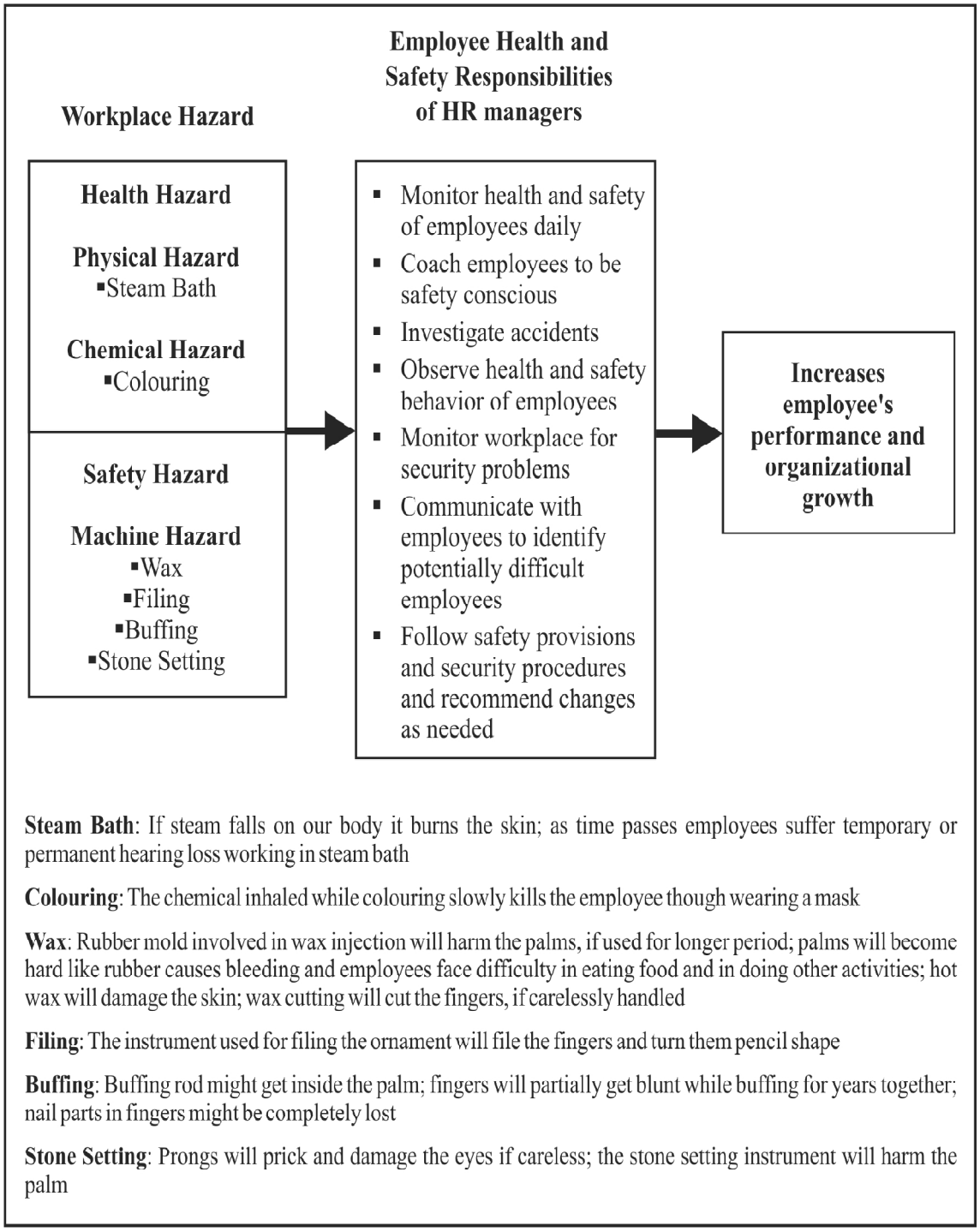

Fig 1. Theoretical Model Linking Employee's Safety from Workplace Hazards and Performance

1. Health Hazard

Physical hazards

Physical hazards are forms of energy that can harm the body if exposed. Examples include: noise, vibration, temperature extremes (hot or cold), and radiation. The effects of exposure can respectively include: temporary or permanent hearing loss; damage to the small blood vessels and nerves; heat cramps, exhaustion and stroke; frostbite and hypothermia; cancer and eye damage.

Chemical hazards

Chemical hazards can take the form of solids, liquids, vapours, gases, dusts, fumes or mists. They can be inhaled, ingested or absorbed into the body. Examples include: paints, solvents, cleaners, degreasers, acids, and cutting oils. Exposure to chemical hazards can cause irritation, allergic reactions, depression of the nervous system, asphyxia, lung disease and cancer. Some chemicals can also have harmful effects on the reproductive system.

2. Safety Hazard

Machine hazards

Any machine can be a hazard, especially those with moving parts that can get tangled in a worker's clothes or come into contact with a worker's body. Here are some examples:

workers may be crushed if they get caught in rotating shafts, belts or pulleys

body parts may be injured or severed by presses, blades and saws

workers may be struck by flying projectiles from machines

3. Methodology

A questionnaire is designed to assess workplace hazard, employee safety and performance of employees in Jewellery manufacturing industries. First, **workplace hazard assessment** form considers the consequences of exposure to or contact with the hazard. Could it result in a minor injury or a permanent disability? Could it cause minor equipment damage or extensive damage to the premises? There are two types of hazards in workplace, they are: health and safety hazards. Health hazards can lead to illnesses or disorders such as inflamed or irritated joints (e.g., tendonitis, epicondylitis), skin diseases (such as dermatitis), carpal tunnel syndrome, hernias and various cancers. Some health hazards can also have harmful reproductive effects. Safety hazards can lead to traumatic types of injuries such as sprains, bruises, fractures and cuts. In this study among Jewellery industries we have considered six departments namely; wax, filing, buffing, stone setting, steam bath and colouring, which affects employees health based on the severity, frequency, probability and significance of workplace hazards. Second, the **employee safety assessment** included 9

questions on the measures taken against hazards by company, supervisor and managers in improving the performance of individual and organization. Third, the **performance assessment** consisted of 5 questions each from performance orientation factors, workaholism and loyalty. This questionnaire is used to evaluate how company's employee safety measures motivate employees in performance and productivity. The respondents have to mark their response in a 5 point Likert scale varying from strongly disagree to strongly agree.

Table 1: Description of Questionnaire

Components	**No. of Questions**
Workplace Hazard	
Severity	6
Frequency	6
Probability	6
Significance	6
Hazard Measurement	6
Hazard Controls	6
Employee Safety	
Company	2
My Work	2
My Supervisor	1
Managers	2
Is Safe	2
Performance Orientation	
Workaholism	5
Loyalty	5
Total	**55**

Conclusion

Based on the review, it is revealed that effective health and safety practices led to high profitability and high productivity. For this, the HR department should have to monitor health and safety of employees daily, coach them to be safety conscious, investigate accidents, observe health and safety behavior of employees, monitor workplace for security problems, communicate with employees to identify potentially difficult employees, and follow safety provisions and security procedures and recommend changes as needed. So, for increase in performance and organisational growth, HR managers should focus on primary health and safety responsibilities towards employee's health.

References

Adebiyi, K. A., & Charles-Owaba, O. E. (2009). Towards setting a sustainable manufacturing safety programme in Nigeria. *Journal of Disease Prevention and Management, 18, 4,* 388-396.

Boles, M., Pelletier, B., & Lynch, W. (2004). The relationship between health risks and work productivity. *Journal of Occupational Environmental Medicine, 46, 7,* 737-745.

Brandt-Rauf, P., Burton, W. N., & McCunney, R. (2001). Health, productivity & medicine. *Journal of Environmental Medicine, 43, 1,* 1-2.

Bunn, W. B., Pikelny, D. B., Slavin, T. J., & Paralkar, S. (2001). Health, safety, and productivity in a manufacturing environment. *Journal of Occupational Environmental Medicine, 43, 1,* 47-55.

De Greef, M., & Van den Broek, K. (2004). *Quality of the Working Environment and Productivity: Research Findings and Case Studies.* European agency for safety and health at work, Belgium.

Degan, G. A., Lippiello, D., & Pinzari, M. (2003). Dust propagation: A method in risk analysis. *The 3-rd Safety and Reliability International Conference KONBIN'03.* Monograph Series 3. Warszawa: Air Force Institute of Technology, 45-53.

Fadier, E., & De la Garza, C. (2006). Safety design: Towards a new philosophy. *Safety Science, 44,* 55-73.

Fayad, R., Nuwayhid, I., Tamim, H., Kassak, K., & Khogali, M. (2003). Cost of work-related injuries in insured workplaces in Lebanon. *Bulletin of the World Health Organization: The International Journal of Public Health, 81, 7,* 509-516.

Flin, R., Mearns, K., O'Connor, P., & Bryden, R. (2000). Measuring safety climate: Identifying the common features. *Safety Science, 34,* 177-192.

Goetzel, R. Z., & Ozminkowski, R. J. (2000). Health and productivity management: Emerging opportunities for health promotion professionals for the 21st century. *American Journal of Health Promotion, 14, 4,* 211-214.

Grayson, D., & Hodges, A. (2001). *Everybody's Business.* Dorling Kindersley, London.

Harms-Ringdahl, L. (2001). *Safety Analysis: Principles and Practice in Occupational Safety.* Second Edition. Taylor & Francis, London, 302.

Hollmann, S., Heuer, H., & Schmidt. K. H. (2001). Control at work: A generalized resource factor for the prevention of musculoskeletal symptoms? *Work & Stress, 15,* 29-39.

Lamm, F., Massey, C., & Perry, M. (2007). Is there a link between workplace health and safety and firm performance and productivity? *New Zealand Journal of Employment Relations, 32, 1,* 72-86.

Mattila, V. M., Parkkari, J., Korpela, H., & Pihlajamaki, H. (2006). Hospitalization for injuries among Finnish conscripts in 1990 - 1999. *Accident Analysis and Prevention, 38,* 99-104.

Mohan, D., Kumar, A., Patel, R., & Varghese, M. (2004). Development of safer fodder-cutter machines: A case study from north India. *Safety Science, 42, 1,* 43-55.

Montero, M. J., Araque, R. A., & Rey, J. M. (2009). Occupational health and safety in the framework of corporate social responsibility. *Journal of Safety Science, 46,* 1-20.

National Occupational Health and Safety Commission (NOHSC) (2004). *Approved Criteria for Classifying Hazardous Substances.* Third Edition. Commonwealth of Australia.

Occupational and Environmental Health Foundation (OEHF) (2004). Establishing a research agenda in health and productivity. *Journal of Occupational Environmental Medicine, 46, 6,* 518-520.

Phelps, G. R. (1999). *Safety for Managers - A Gower Health and Safety Workbook.* Gower publishing Limited, Hampshire, UK.

Quartey, S. H., & Puplampu, B. B. (2012). Employee health and safety practices: An exploratory and comparative study of the shipping and manufacturing industries in Ghana. *International Journal of Business and Management, 7, 23,* 81-95.

Reinhold, K., & Tint, P. (2009). Hazard profile in manufacturing: Determination of risk levels towards enhancing the workplace safety. *Journal of Environmental Engineering and Landscape Management, 17, 2,* 69-80.

Roland, H. E., & Moriarty, B. (1990). *Risk Assessment in Safety, in System Safety Engineering and Management.* Second Edition. John Wiley & Sons, Inc., Hoboken, NJ, USA.

Roudsari, B. S., & Ghodsi, M. (2005). Occupational injuries in Tehran. *Injury, International Journal of Care Injured, 36,* 33-39.

Saari, J. (1990). On strategies and methods in company safety work: From informational to motivational strategies. *Journal of Occupational Accidents, 12,* 107-118.

Salminen, S., Saari, J., Saarela, K. L., & Rasanen, T. (1993). Organizational factors influencing serious occupational accidents, *Scandinavian Journal of Work, Environment and Health, 19,* 257-352.

Sheu, J. J., Hwang, J. S., & Wang, J. D. (2000). Diagnosis and momentary quantification of occupational injuries by indices related to human capital loss: Analysis of a steel company as an illustration. *Accident Analysis and Prevention, 32,* 425-443.

Simon, S. S. (2013). The essentials of employee engagement in organisations. *Journal of Contemporary Research in Management*, 6, 1. Retrieved from http://www.psgim.ac.in/journals/index.php/jcrm/article/view/133