10.31384/jisrmsse/2019.17.2.1

Safety Preparedness in the Textile Sector of Pakistan

*Rameez Khalid[1]**
Zulfiquar Ali Shaikh[1]
Nasir Afghan[1]

ABSTRACT

The need for effective safety systems, in preventing accidents on workplaces, has long been recognized as a necessary part of doing business. This study is aimed to investigate the occupational health and safety (OHS) status and emergency preparedness of textile industries in the Korangi Industrial Area (KIA) of Karachi, Pakistan. The study has used a self-designed and self-administered close-end quantitative questionnaire as a data collection instrument. The study has gathered primary data of a total of 51 responses from 17 textile and garment firms of KIA. Data was collected from three tiers of the organization, including top management, middle management, and lower management employees. The study has used descriptive statistics and specific inferential statistical techniques for data analysis. The findings showed that there were apparent differences between top management, middle management, and lower management viewpoints about their organization's preparedness status against emergency situations and OHS parameters. Top management considered themselves satisfied with the current status, whereas middle and lower management staff found themselves at higher risks of occupational injuries and hazards. Therefore, it has been comprehensively concluded by the study that textile firms have to consider effective approaches and OHS policies to ensure appropriate implementation and improved status of emergency preparedness and OHS status.

JEL Classification: *J0, J2, J28*

Keywords: *Occupational Health and Safety, Emergency Preparedness, HSE, Textile Industry, Pakistan.*

INTRODUCTION

The need for effective safety systems in preventing accidents has long been recognized as a necessary part of doing business. The positive relationship between safety programs and profits has already been accepted (Cox & Cox, 1996; Gunningham & Johnstone, 1999). The primary objective of any organization is to stay in business, and without having safety culture at workplace, it is strenuous for it to be competitive in the market (Clarke, Probst, Guldenmund, & Passmore, 2015; Kelloway, Nielsen, & Dimoff, 2017; Morrow, Koves, & Barnes, 2014; Öz, Özkan, & Lajunen, 2013; Reinhold & Tint, 2007). Ironically, according to International Labor Organization (ILO), approx. 2.34 million workers die at the workplace, and 317 million develop workplace injuries every year globally. However, the European Agency for Safety and Health at Work (EU-OSHA) emphasized that with proper OHS policy implementation, businesses can grow faster with satisfied employees (Ramos, Arezes & Afonso 2014).

For managing the interface between system and people, an effective and efficient safety management system is essential (Casey, Griffin, Flatau Harrison, & Neal, 2017). Herbert.

1- Department of Management, Institute of Business Administration (IBA), Karachi. Pakistan.
* Corresponding author email: rameezkhalid@iba.edu.pk

Heinrich, a pioneer in OHS, indicated: 88% of industrial accidents occur because of human factors (Heinrich, 1941; Heinrich & Granniss, 1959). Therefore, a greater focus is on examining the behavioral causes of technological failures, widely called "human error." Beliefs and attitudes of people significantly affect workplace safety. Safety culture has its roots in the aftermath of the Chernobyl nuclear accident in the then Soviet Union in 1986. Resultantly, there was a greater focus on the human and organizational elements that contribute to unsafe operations of technological systems (De Roo, 1991; Morino, Ohara, & Nishizawa, 2011; Tronko et al., 1999). Hence, many researchers now recognize the importance of building an influential safety culture at the workplace (Antonsen, Nilsen, & Almklov, 2017; Catino & Patriotta, 2013; Clarke et al., 2015; Fang & Wu, 2013; Ghaferi & Dimick, 2015; Kelloway et al., 2017; Morrow et al., 2014; Niu, Leicht, & Rowlinson, 2016; Nordlöf, Wiitavaara, Winblad, Wijk, & Westerling, 2015; Nyarugwe, Linnemann, Hofstede, Fogliano, & Luning, 2016; Öz et al., 2013; Petitta, Probst, Barbaranelli, & Ghezzi, 2017; Williamsen, 2013).

The preceding discussion underscores the sectorial significance of safety procedures and practices; thus, answering what should be exercised in a particular industrial sector considering the unique hazards. This study pertains to the textile sector of a developing country. The textile industry uses a variety of chemicals such as bleaching agents, toxic and flammable solvents, acids, and alkalis (Kant, 2012; Pala & Tokat, 2002; Pinheiro, Touraud, & Thomas, 2004). Chemicals used in the textile sector of developing countries include those that are already abandoned or are used under strict controls in the developed world. For example, azo dyes are used in the textile industry of Pakistan that are useful synthetic dyes used for coloring a variety of consumer goods. The primary health risk associated with the exposure of azo dyes is cancer (Chun & Yizhong, 1999; Chung, Stevens, & Cerniglia, 1992; De Long, Prochaska, & Talalay, 1986; Gottlieb, Shaw, Smith, Wheatley, & Forsythe, 2003; Kant, 2012). For Pakistan, the incidence of occupational injuries /diseases is overall 4% of the economy, with Sindh Province having the highest number of incidents while Balochistan Province having the lowest. The agriculture sector has the highest share of incidents, i.e., 47.95% (Unit, 2016).

Besides exposure to unsafe chemicals, textile sector contains various other hazards ranging from noise exposure to manual handling, and from dangerous substances to working with moving machine parts. Processing stages – manufacturing, finishing, and coloring, etc. – have the potential to cause injury. There also exists the risks of fire and explosions, for example from boilers used for vapor generation (Biswas, Bhattacharya, & Bhattacharya, 2016; Kumar, Mugundhan, & Visagavel, 2014; Reinhold & Tint, 2007; Shah et al., 2015; Upadhyay & Pandey, 2016). Furthermore, this sector has hazards of awkward postures and repetitive movements that severely causes muscle pains and disorders; exposure to dust and fibers, and ultimately, massive psychological stress, as cited by Islam, Mahmud, Faruk, and Billah (2011); Mageid, Hammadi, Hamdi, and Malek (2011); Ramos et al. (2014).

A hazardous activity, if not properly monitored, can produce losses involving people, property, and profit. Measuring such risks, developing their mitigation strategy, and educating the workforce has always been a challenge for senior management. Previously, most measurement techniques were reactive i.e., gauging "lagging indicators." There is no doubt that these measurements will continue to be used; however, the need for preventive, proactive,

predictive, or "leading" indicators was identified, and this notion is continuously growing. The data around the state of health and safety culture are frequently unavailable in developing countries, and accidents occur quite frequently. A similar situation is for Pakistan and, most importantly, for the industries in its port city of Karachi in Sindh Province. This study aims to explore a homogenous population of textile industries located in the Korangi Industrial Area (KIA), Karachi, Pakistan. The primary focus is to gauge the emergency preparedness of these textile firms. It also examines the perceptions of their senior, middle, and lower management, regarding various parameters of safety culture that are pivotal for their business sustainability. Specifically, the objectives of this study are: (1) to assess the current status of Occupational Health and Safety (OHS) measures in regards to emergency preparedness; (2) to assess the level of emergency preparedness; (3) to explore the involvement of senior management in OHS policy implementation, and; (4) to examine the coherence in opinion among top, middle and lower management regarding OHS policy implementation and emergency preparedness.

OHS has numerous dimensions including hazard identification; response development (around avoidance, mitigation, transfer and acceptance); operational manuals; training and development; personal protective equipment (PPE); process audits; risk /crisis /disaster management; safety management system; certifications and standards; rules, regulations and governmental legislations, and; business continuity exercises etc. However, to gain adequate understanding, this study is focused on the emergency preparedness of textile industries in a developing country. Comprehensive findings have been revealed by narrowing the study's scope.

The next section discusses the relevant literature reviewed. It is followed by the research methodology section. Results and discussion are then presented. The article finishes with drawing conclusions and suggesting areas for future research.

LITERATURE REVIEW

This section will present a review of the relevant literature. It starts with basic definitions and then after discussing some relevant standards, it finishes with various facts and figures related to the overall status of health and safety in Pakistan.

At the first session of Joint ILO/WHO Committee on Occupational Health in 1950, Occupational Health and Safety (OHS) was defined as: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the protection of workers from occupational hazards, and; the adaptation of work to man and of each man to his job (Benjamin, 2001). However, emergency preparedness is the ability to reduce morbidity and mortality arising from hazards and vulnerabilities and the unpredictability of stresses or overwhelming routine. This involves proactive efforts to prevent, detect, and mitigate threats using plans and resources to meet emerging needs (Nelson, Lurie, Wasserman, & Zakowski, 2007).

The relationship between safety and productivity cannot be ignored. Researchers frequently put in the effort to depict a positive relationship between safety intervention and productivity employing long-term longitudinal studies. For example, a study of the UK health and safety executives found that losses in productivity were higher with safety-related violations (Hare, Cameron, & Roy Duff, 2006). However, the question that stands is: does investment in

occupational safety practices contribute to operating performance (Epstein & Roy, 2003) and, eventually, financial performance. Moreover, operational risks to human safety must be identified; thus, the hazard analysis phase remains central to OHS. It is the stepping stone to an effective safety assessment system (Edwards & Westcott, 2012).

Additionally, the safety culture of an organization determines workplace safety. Based on Bandura's theory of reciprocal determinism, it has been claimed that safety culture includes behavioral, situational, and psychological elements; therefore, encompassing various aspects of the work environment. For example, "work safety climate," i.e., farm worker's perceptions of employer's preference of safety overproduction were found to have adverse health outcomes, including musculoskeletal discomfort and working while injured or ill (Arcury, Kearney, Rodriguez, Arcury, & Quandt, 2015). In this context, accident prevention increases morale and reduces costs – it should instead be considered as an investment. Employers admitted, for example, that care for the physical, intellectual, and moral welfare of employees had a direct return in increased output and better work. There is a substantial investment in employees, and that must be preserved (Silvestre, 2010). However, few preventive measures and OHS codes of conduct defined by the Occupational Safety and Health Administration (OSHA) are as follows.

1. Adequate circulation, ventilation, and temperature control at the workplace.
2. Marked emergency exit routes.
3. Clear aisles, exits, and staircases for the evacuation of workers.
4. Highly accessible and unlocked emergency doors /exits.
5. Regularly maintained fire extinguishers of appropriate type displaying last inspection date.
6. Visible and accessible fire extinguishers.
7. Fire alarms on each floor with emergency lights above exits and staircases.
8. At least annual evacuation drills.
9. Machines equipped with guards and safety devices with regular inspections.
10. Appropriate personal protective equipment (PPE) - such as masks, gloves, goggles, earplugs, and rubber boots.
11. Potable water and clean toilet areas.
12. At least one well-stocked first-aid kit on every floor with regular inspection.
13. Trained specific staff in basic first aid.
14. Intact procedures for dealing with serious injuries requiring treatment outside the workplace.
15. Storage of hazardous and combustible materials in secure and ventilated areas and dispose them in a safe and legal manner (Gill & Murad, 2016; Taneja, Ray, & Pande, 2017).

Globally, there have been numerous Health, Safety, and Environment (HSE) related standards and certifications developed by the International Organization for Standardization (ISO), Institute of Occupational Safety and Health (IOSH) and National Examination Board in Occupational Safety and Health (NEBOSH), etc. Among these, ISO 9001 is widely considered as general and fundamental for process standardization and reliability by developing a quality management system, (Badreddine, Romdhane & Amor, 2009; Jamian, Ab Rahman, Deros & Ismail, 2012; Kale, Gujrathi & Kale, 2013; Michalak, 2002). Whereas, ISO 14000 family specifically emphasizes sustainability & practical implications for

environmental protection within the organization (Badreddine et al., 2009; Jamian et al., 2012; Kale et al., 2013; Michalak, 2002). Occupational Health and Safety Assessment Series (OHSAS) 18001 emphasizes avoiding hazardous operations through improved practices, processes & knowledge dissemination tools to reduce incidents (Abad, Lafuente & Vilajosana, 2013). Another essential aspect of OHSAS is its compatibility with ISO 9001 and ISO 14001 (Abad et al., 2013; Badreddine et al., 2009; Jamian et al., 2012; Kale et al., 2013; Michalak, 2002). Similarly, IOSH is a UK-based not-for-profit organization that stresses on improving OHS relevant practices, processes, and occupational regulations. It has two essential domains, including regulation of code of conduct for health and safety measures, and the training courses related to OHS practices.

An effective safety management program ameliorates the safety performance of the workplace. It also does so while reducing costs, avoiding delays, and improving the company's goodwill (Chen & Jin, 2012). Various techniques have been used over the years to measure safety. However, novel and more specific measurement and identification techniques are highly advantageous to managers and supervisors (Samuel & Munagala, 2016). Usually, preventive measures for OHS are considered as lagging indicators reflecting a reactive mindset. However, numerous authors have emphasized on employing preventive measures reflecting a proactive mindset (Pirzadeh, Lingard, Blismas, Mills & Kleiner 2015). Lagging indicators get hold of the occurrence of harm after a preventive approach (Arezes & Sérgio Miguel, 2003; Lofquist, 2010). While leading indicators refer to the utilization of information for avoiding harmful situations. It emphasizes "could-have" or "should-have" approaches highlighting organizational deficiencies that could lead to accidents Pirzadeh et al, (2015). It has pronounced explicitly by Pirzadeh et al, (2015) that the presence of harm highlights the absence of OHS practices and procedures. One of the famous measures of OHS is "near-misses" that have been categorized as lagging indicator (Gnoni & Saleh, 2017; Pirzadeh et al., 2015; Vastveit, Orszak, Njå & Kraslawski, 2017), whereas, Mutwale-Ziko, Lushinga, and Akakandelwa (2017) suggested “near-misses” as a proactive measure for OHS effectiveness. Despite this difference in opinion, Hale (2009) emphasized categorically that validity, reliability, and sensitivity should have importance for indicator definitions.

In terms of OHS principles’ and systems’ implementation, previous studies documents various pieces of evidence. Jilcha and Kitaw (2016) conducted a literature review, where they concluded that in developing countries, the risk of injuries is higher, the coverage of OHS relevant laws is lower, and the application of data and technology in OHS decision making is lower than the developed countries. To further emphasize, Ncube and Kanda (2018) reviewed OSH relevant laws in ten developing countries and found these laws lacking, especially in the agricultural sector, that employs the highest percentage.

Moyo, Zungu, Kgalamono, and Mwila (2015) found the lack of specialized training in OHS as the most significant deficiency in three African countries. Similarly, the situation of OHS in developing countries, especially those in Asia, remains alarming (Tasnim, Rahman, Rahman, & Islam, 2016). According to a survey, the agriculture sector faced the most occupational injuries /diseases i.e., 62.96% in Sindh Province of Pakistan. It is followed by the construction sector with 16.65% and the manufacturing sector with 9.6%. Overall, male employees suffered more than female employees, i.e., 90%. Moreover, 20% of injuries belonged to the urban population of Pakistan (Unit, 2016).

However, sectoral studies exploring the safety preparedness in developing countries remain few and far between; and a lagging indicator such as "no. of injuries" is relied upon to define the situation. The scarcity of data remains one of the biggest challenges in emerging economies. Globally, this study gauges the status of safety culture in the textile sector of a developing country. Specifically, it aims to highlight the discrepancies and deficiencies related to OHS in terms of emergency preparedness in the textile sector of Pakistan. With this context, the textile industry of Pakistan is vulnerable to several of these challenges. It is the backbone of Pakistan's economy, witnessing a growth of 1.44% in 2013-14. It contributed 8.5% to Pakistan's GDP and is employing more than one million direct jobs and 3 million indirect jobs in the manufacturing workforce (Zulfiqar, Hamid, & Khurram, 2017). Establishing and maintaining safety culture involves capital expenditure that does not directly translate into monetary benefits; therefore, the factory owners and senior management are often reluctant to invest in this area (Gong, Baron, Stock, & Ayala, 2009). This challenging situation becomes more complicated, with rapid urbanization in Pakistan at an annual rate of 3% – the fastest in South Asia (Irfan & Shaw, 2017). Moreover, Karachi, the largest city and business capital of Pakistan, is considered as one of the rapid growth in terms of population by offering green pastures to migrants (Fawcett, Khoo, & Smith, 1984; Fields, 1975). These facts make the scenario for the textile sector of Karachi as the one heavily in need of research studies.

RESEARCH METHODOLOGY

The current research study emphasized on quantitative approach and correlational study design. Snowball sampling has been intently used as the sampling technique to enhance the sample size as much as possible. In regards to the target population, a total of 190 textile firms are the members of the Korangi Association of Trade and Industry (KATI). However, the majority are not directly manufacturing textile products; instead, they deal with chemicals, accessories, and auxiliaries pertaining to the textile processes and equipment. Cumulatively, all the textile firms in Korangi Industrial Area (KIA) contribute 7% of the total exports of Pakistan (KATI). Only 96 member factories indulge in manufacturing textile products. However, only 42 textile firms were identified in KIA and accessed via telephone calls for an initial appointment setting. First, only six companies agreed to participate in the study, whereas final sample companies reached 17 on a referral basis. The inclusion criteria were imposed, i.e., participants qualified to fill the questionnaire must be: the employee of a respective organization, posted at factory premises, and; exposed to operational activities. This qualification ensured that participants are fully aware of the questionnaire and discussion that is going to take place. Three respondents from different cadres – top, middle, and lower management – were selected from each firm, i.e., 17 respondents from each cadre. It was challenging to get a larger sample size for this study than 17 companies, as many potential respondents declined to become part of it. However, fortunately, the sample size came close to what is suggested by Cohen (1992) for comparing the means of three groups or cadres (top, middle, and lower management in our case). Taking the effect size (ES) as large with $\alpha = 0.05$ and power = 0.8, the required sample size for each group is 21 (Cohen, 1992).

Moreover, the study also considered research ethics, including participants' liberty to participate in the study and their confidentiality, along with privacy. Table 1 provides the profiling of the companies that participated in the data collection process. The data collection instrument was comprised of 15 questions, and the survey was self-administered. The

questionnaire was divided into two sections: Section-I included the profile of the respondent, and; Section-II contained dichotomous and five-point' Likert scale questions. Subsequently, descriptive statistics and specific inferential statistical techniques were used for data analysis, including descriptive, cross-tabulation, and ANOVA.

RESEARCH METHODOLOGY

Based on the collected data, the results highlighted various dimensions. These include the current status of preparedness and the ability to handle issues of OHS in the sampled organizations. Table 1 showed that 71 percent of respondents belonged to exporting firms, whereas, garment firms were insignificant proportion comprising 59 percent of the total sample responses. In regards to firm size, the majority of the companies belonged to medium and large organizations i.e., cumulatively 53 percent having more than 2000 employees.

Table 1:
Profile of Respondent Companies

		Frequency	Percent
Category	Export	12	71
	Non-Export	5	29
Types	Textile	7	41
	Garments	10	59
Firm Size (employees)	Less than 500	3	18
	500-1000	2	12
	1001-2000	3	18
	2001-3000	4	24
	More than 3000	5	29

Furthermore, tabulations in the following section show different dimensions and viewpoints of the top, middle, and lower management of textile and garment firms that are either engaged in export or distribution to the local market only. Table 2 shows that a clear majority of the top management, whether belonging to textile or garments, shared that OHS policy has been implemented in their organization. Whereas, the middle and lower management of these firms have a somewhat different viewpoint.

In regards to Health, Safety, and Environment (HSE) certifications, the majority of the firms have either ISO 9001 or ISO 14001 certification. In contrast, none OHSAS 18001 and IOSH certified companies were found in the sample responses. Table 3 shows that top, middle, and lower management differ on the awareness regarding the award of HSE certifications to their firms. Moreover, it can be seen that more companies are ISO 9001 certified than certified on any other standard. This is in line with the finding of Shafiq (2012), who found that 88% of the sampled textile companies in the province of Punjab, Pakistan, had ISO 9001, while only 14% had ISO 14001. Kureshi, Mann, Khan, and Qureshi (2009) concluded by their empirical research that awareness of the Quality Management System (or ISO 9001) is at a high level in Pakistan.

Table 2:
Cross-tabulation between Management Position and OHS Policy Implementation

		OHS	Management Level		
		Policy	Top	Middle	Lower
Textile	Export	Yes	4	2	1
		No	0	2	3
	Non-Export	Yes	2	1	0
		No	1	2	2
Garments	Export	Yes	8	5	2
		No	0	3	6
	Non-Export	Yes	2	2	1
		No	0	0	1

Table 3:
Cross-tabulation between Management Position and HSE Certification

		Certification	Management Level		
			Top	Mid	Low
Textile	Export	ISO 14001	1	1	1
		ISO 9001	3	1	0
		No Certification	0	2	3
	Non-Export	ISO 9001	1	1	1
		No Certification	2	2	0
		Others	0	0	1
Garments	Export	ISO 14001	2	0	0
		ISO 9001	4	5	1
		No Certification	2	2	7
		Others	0	1	0
	Non-Export	ISO 14001	1	1	0
		ISO 9001	1	1	1
		No Certification	0	0	1

Table 4:
Cross-tabulation between Management Position and Regular Fire Drill Preparedness

		Preparedness of	Management Level		
		Regular Fire Drills	Top	Mid	Lower
Textile	Export	Yes	4	1	1
		No	0	3	3
	Non-Export	Yes	1	0	0
		No	2	3	2
Garments	Export	Yes	8	5	2
		No	0	3	6
	Non-Export	Yes	2	1	1
		No	0	1	1

In table 4, it has been shown clearly that in regards to regular fire drill preparedness among the textile and garment firms of KIA, considerable difference of opinion exists among the top, middle, and lower management staff members. This difference is either due to lack of information sharing among organizational tiers, or it could be the difference of understanding about the preparedness for fire incidents. In any case, this difference is raising the alarm, as the majority of managers belonging to middle and lower management are testifying to no regular fire drills.

Another important aspect is shown in table 5, where differences of viewpoint between top, middle, and lower management have been found. Top management members were found considerably satisfied with the current status of maintenance of fire safety equipment. Whereas, middle and especially, lower management staff have a contradictory viewpoint, as they are considerably dissatisfied with the status of fire safety equipment maintenance in their firms. If we cumulatively analyze tables 4 and 5, then we need to give weightage to the responses of middle and lower management staff, as they are more directly involved in fire drills and usage of maintained safety equipment – daily – as compared to the managers in top management.

Table 5:
Management Positions vs. Fire Safety Equipment's Maintenance

		Fire Safety Equipment's Maintenance	Management Level		
			Top	Mid	Lower
Textile	Export	Yes	4	3	1
		No	0	1	3
	Non-Export	Yes	3	2	0
		No	0	1	2
Garments	Export	Yes	8	5	5
		No	0	2	3
	Non-Export	Yes	2	2	2
		No	0	0	0

Table 6:
Cross-tabulation between Review of OHS Program and OHS Policy

		OHS Policy	
		Yes	No
Review of OHS Program	Yes	24	2
	No	5	18

Correlation: 0.717 ($p < 0.001$); N = 49

Also, the results further revealed that companies having OHS policy have a strong correlation with its review process in case of equipment changes. There has been clear evidence that textile firms having OHS policy have their adequate OHS review programs in place as well and vice versa (see table 6). However, the data also showed that the majority of the companies (N = 36; 72%) do not conduct any "ToolBox" meetings in their firms.

The status of emergency preparedness has been evaluated on five parameters, as listed in table 7. It shows that collectively, the top management strongly feels the presence of significant

employees' training, PPE provision, staff evacuation preparedness, investigation of serious incidents, and even the involvement of senior management in OHS policy implementation. However, in the rating scale of 1 to 5, middle management of the exporting firms was ranging from mediocre to low, whereas, non-exporting firms were ranging from mediocre to high. In contrast, lower management of all the textile firms was not satisfied with the performance on any of the emergency preparedness parameter.

Regarding various emergency preparedness parameters, significant differences were again found between top, middle, and lower management, as shown in table 8. More specifically, the viewpoint of top and middle management found significantly different from lower management in regards to senior management's involvement in OHS policy implementation. Similarly, top management has a different viewpoint than middle and lower management in regards to OHS relevant training of employees, provision of PPE, staff evacuation preparedness, and; investigation of serious incidents. However, no statistically significant difference exists between the viewpoint of middle and lower management on all preparedness parameters except senior management's involvement in OHS policy implementation. Choudhry, Fang, and Rowlinson (2008) agreed based on their survey that there is a significant disconnect between top management and lower management in Pakistan. For example, they concluded that many firms in Pakistan have a safety policy; however, employees are generally unaware of its existence. Moreover, they established that training programs are non-existent with no awareness regarding the use of PPEs, especially in young employees, and finally, there is no reporting of accidents (Choudhry et al., 2008). A similar disconnect was witnessed in China by Chen and Jin (2012).

Table 7:
Mean Comparison

Position	Type	Category	Senior Management's Involvement in OHS Policy	OHS Training to Employees	Provision of Personal Protective Equipment	Staff Evacuation Prepared-ness	Investigation of Serious Incidents
Top	Export	Textile	4.50	4.00	4.25	4.00	4.25
		Garments	4.63	4.25	4.50	4.00	4.13
	Non-Export	Textile	4.33	4.33	3.33	4.00	4.00
		Garments	4.50	4.00	4.50	4.00	4.00
Middle	Export	Textile	4.25	2.50	3.75	2.75	3.25
		Garments	4.13	3.25	3.50	3.13	3.88
	Non-Export	Textile	3.33	3.33	1.67	2.67	3.00
		Garments	2.50	3.00	4.00	3.50	3.00
Lower	Export	Textile	2.75	2.50	3.25	2.50	3.25
		Garments	2.50	2.25	3.13	2.50	3.00
	Non-Export	Textile	1.50	1.50	1.50	1.50	2.00
		Garments	3.00	2.50	4.00	3.50	3.00

Table 8:
ANOVA Post-Hoc using Tukey Method

Preparedness Parameters	Mean Difference		
Senior Management's Involvement in OHS Policy	Top	Middle	0.706
		Lower	2.029*
	Middle	Lower	1.324*
OHS Training to Employees	Top	Middle	1.129*
		Lower	1.938*
	Middle	Lower	0.809
Provision of Personal Protective Equipment	Top	Middle	0.941*
		Lower	1.173*
	Middle	Lower	0.232
Staff Evacuation Preparedness	Top	Middle	1.000*
		Lower	1.500*
	Middle	Lower	0.500
Investigation of Serious Incidents	Top	Middle	0.647
		Lower	1.180*
	Middle	Lower	0.533

** The mean difference is significant at the 0.05 level.*

In response to emergency preparedness, no differences were found between the firms that are either ISO 9001 certified or not, as shown in table 9. However, ISO 14001 certified textile firms have a significant contribution to the parameters of emergency preparedness. It has also been revealed that none of the textile firms had data about lost workdays and near misses. None of the respondents had provided such information; instead, they mentioned that such information is not recorded. Such lack of attention towards recording lost workdays and near misses information is in line with the findings of Kjellén (2009).

Table 9:
Mean Comparison and ANOVA Statistics

	ISO 9001			ISO 14001		
	Yes	No	Sig.	Yes	No	Sig.
Involvement of Senior Management in OHS Policy	3.70	3.60	0.801	4.57	3.49	0.048
OHS Training to Employees	3.26	3.10	0.683	4.14	3.00	0.036
Provision of Personal Protective Equipment (PPE)	3.70	3.43	0.447	4.57	3.37	0.013
Staff Evacuation Preparedness	3.30	3.10	0.587	4.43	2.98	0.004
Investigation of Serious Incidents	3.60	3.47	0.640	4.43	3.37	0.006

CONCLUSION

The study has underlined some critical dimensions about textile firms of Korangi Industrial Area (KIA), Karachi, Pakistan. It focused on analyzing the current status of occupational health and safety (OHS). For this purpose, 17 textile firms were accessed for data collection, whereas data were collected from three management levels, including top, middle, and lower management. Quantitative research methodology (self-administered questionnaire-based survey) was used, and statistical techniques were employed for data analysis.

In response to the objectives, the conclusions are now presented. The results of this study showed that none of the firms was certified in OHS relevant certifications. This leads to the mediocre status of various OHS measures relevant to emergency preparedness, such as employees' training, provision of Personal Protective Equipment (PPE), staff evacuation preparedness, and; adequate investigation of serious workplace incidents. The findings proved that OHS procedures and policies were not appropriately and sufficiently implemented in textile firms of Korangi, suggesting lower levels of emergency preparedness. Moreover, the availability of OHS policy and the presence of the review process to the OHS program have a statistically significant and positive association. The results further revealed some surprising viewpoints and visible contradictions among the three tiers of management in regards to OHS. On the specific question of "senior management's involvement in OHS policy implementation," the opinion of top and middle management was found significantly different from lower management. The top management was found completely satisfied with the parameters of emergency preparedness, while lower management was found having disagreements.

In light of these findings, this study concludes that the current status of OHS and especially the emergency preparedness in textile firms of KIA is not satisfactory. This situation makes the sector vulnerable to severe fatalities, acute injuries, grave occupational diseases, and hazardous events. However, very few textile industries were found to have proper OHS policy, emergency preparedness, and timely reviewing process.

The study suggests that some further empirical research studies should be taken into consideration with a broader population and specific context. It can provide beneficial results and findings if these studies focus on the investigation of the current overall OHS status in Pakistan. Whereas, further examination of OHS standardization and certifications with regards to organizational performance, labor laws and regulations and employee satisfaction will create constructive understanding for building localized remedies. Future studies can also ensure the applicability of OHS policies and procedures in accordance with international laws. However, systematic literature reviews and studies can enhance the comprehension of adverse situations due to the OHS policy's absence in organizations.

REFERENCES

Abad, J., Lafuente, E., & Vilajosana, J. (2013). An assessment of the OHSAS 18001 certification process: Objective drivers and consequences on safety performance and labour productivity. *Safety Science*, 60, 47-56.

Antonsen, S., Nilsen, M., & Almklov, P. G. (2017). Regulating the intangible. Searching for safety culture in the Norwegian petroleum industry. *Safety Science*, 92, 232-240.

Arcury, T. A., Kearney, G. D., Rodriguez, G., Arcury, J. T., & Quandt, S. A. (2015). Work safety culture of youth farmworkers in North Carolina: a pilot study. *American journal of public health*, 105(2), 344-350.

Arezes, P. M., & Sérgio Miguel, A. (2003). The role of safety culture in safety performance measurement. *Measuring Business Excellence*, 7(4), 20-28.

Badreddine, A., Romdhane, T. B., & Amor, N. B. (2009). A new process-based approach for implementing an integrated management system: quality, security, environment. *Proceedings of International MultiConference of Engineers and Computer Scientists*, 2(2), 2-6.

Biswas, G., Bhattacharya, A., & Bhattacharya, R. (2016). A Review on the Health Status of Textile Dyeing Workers. *International Journal of Scientific Research*, 5(8), 594-596.
Casey, T., Griffin, M. A., Flatau Harrison, H., & Neal, A. (2017). Safety climate and culture: Integrating psychological and systems perspectives. *Journal of Occupational Health Psychology*, 22(3), 341.
Catino, M., & Patriotta, G. (2013). Learning from errors: Cognition, emotions, and safety culture in the Italian Air Force. *Organization Studies*, 34(4), 437-467.
Chen, Q., & Jin, R. (2012). Multilevel safety culture and climate survey for assessing new safety program. *Journal of Construction Engineering and Management*, 139(7), 805-817.
Choudhry, R. M., Fang, D., & Rowlinson, S. (2008). Challenging and enforcing safety management in developing countries: A strategy. *International Journal of Construction Management*, 8(1), 87-101.
Chun, H., & Yizhong, W. (1999). Decolorization and biodegradability of photocatalytic treated azo dyes and wool textile wastewater. *Chemosphere*, 39(12), 2107-2115.
Chung, K.-T., Stevens, S. E., & Cerniglia, C. E. (1992). The reduction of azo dyes by the intestinal microflora. *Critical reviews in microbiology*, 18(3), 175-190.
Clarke, S., Probst, T. M., Guldenmund, F. W., & Passmore, J. (2015). *The Wiley Blackwell Handbook of the Psychology of Occupational Safety and Workplace Health*: John Wiley & Sons.
Cohen, J. (1992). A power primer. *Psychological bulletin*, 112(1), 155.
Cox, S., & Cox, T. (1996). *Safety, systems, and people*: Butterworth-Heinemann.
De Long, M. J., Prochaska, H. J., & Talalay, P. (1986). Induction of NAD (P) H: quinone reductase in murine hepatoma cells by phenolic antioxidants, azo dyes, and other chemoprotectors: a model system for the study of anticarcinogens. *Proceedings of the National Academy of Sciences*, 83(3), 787-791.
De Roo, A. (1991). The use of 137Cs as a tracer in an erosion study in south Limburg (The Netherlands) and the influence of Chernobyl fallout. *Hydrological Processes*, 5(2), 215-227.
Edwards, C., & Westcott, M. (2012). Risk based safety assurance: towards a defensible and practical methodology. Proceedings of the *Australian System Safety Conference-Volume* 145, 55-68.
Epstein, M. J., & Roy, M.-J. (2003). Making the business case for sustainability. *Journal of Corporate Citizenship*, 9(1), 79-96.
Fang, D., & Wu, H. (2013). Development of a Safety Culture Interaction (SCI) model for construction projects. *Safety Science*, 57, 138-149.
Fawcett, J. T., Khoo, S., & Smith, P. C. (1984). Women in the cities of Asia: Migration and urban adaptation (Boulder. *Westview Press. 1984b. 'Urbanization, Migration and the Status of women,' in JT Fawcett*, 3-11.
Fields, G. S. (1975). Rural-urban migration, urban unemployment and underemployment, and job-search activity in LDCs. *Journal of development economics*, 2(2), 165-187.
Ghaferi, A. A., & Dimick, J. B. (2015). Understanding failure to rescue and improving safety culture. *Annals of Surgery*, 261(5), 839.
Gill, S. A., & Murad, M. (2016). Impact of People Equity on SME Performance: Evidence from Garment Sector of Pakistan. *International Journal of Management Sciences and Business Research*, 5(12), 244-250.

Gnoni, M. G., & Saleh, J. H. (2017). Near-miss management systems and observability-in-depth: handling safety incidents and accident precursors in light of safety principles. *Safety Science*, 91, 154-167.

Gong, F., Baron, S., Stock, L., & Ayala, L. (2009). Formative research in occupational health and safety intervention for diverse, underserved worker populations: a homecare worker intervention project. *Public Health Reports*, 124(4_suppl1), 84-89.

Gottlieb, A., Shaw, C., Smith, A., Wheatley, A., & Forsythe, S. (2003). The toxicity of textile reactive azo dyes after hydrolysis and decolourisation. *Journal of Biotechnology*, 101(1), 49-56.

Gunningham, N., & Johnstone, R. (1999). *Regulating workplace safety*: systems and sanctions: Oxford University Press.

Hale, A. (2009). Why safety performance indicators? *Safety Science*, 47(4), 479-480.

Hare, B., Cameron, I., & Roy Duff, A. (2006). Exploring the integration of health and safety with pre-construction planning. *Engineering, construction and architectural management*, 13(5), 438-450.

Heinrich, H. W. (1941). Industrial Accident Prevention. A Scientific Approach. Industrial Accident Prevention. A Scientific Approach.(Second Edition).

Heinrich, H. W., & Granniss, E. R. (1959). *Industrial accident prevention*. New York: McGraw-Hill.

Irfan, M., & Shaw, K. (2017). Modeling the effects of energy consumption and urbanization on environmental pollution in South Asian countries: a nonparametric panel approach. *Quality & Quantity*, 51(1), 65-78.

Islam, M., Mahmud, K., Faruk, O., & Billah, M. (2011). Textile dyeing industries in Bangladesh for sustainable development. *International Journal of Environmental Science and Development*, 2(6), 428.

Jamian, R., Ab Rahman, M. N., Deros, B. M., & Ismail, N. Z. N. (2012). A conceptual model towards a sustainable management system based upon 5s practice for manufacturing SMEs. *Asia pacific journal of operations management*, 1(1), 11-13.

Jilcha, K., & Kitaw, D. (2016). A literature review on global occupational safety and health practice and accident severity. *International Journal for Quality Research*, 10(2), 279-310.

Kale, S. R., Gujrathi, A. M., & Kale, L. S. (2013). Review Of Occupational Health And Safety Management System (OHSMS) Of Process Industries With A Case Based Study Of A Fiber Industry. *International Journal of Engineering Research and Technology*, 2.

Kant, R. (2012). Textile dyeing industry an environmental hazard. *Natural Science*, 4(1), 22.

KATI. Retrieved April 22, 2017, from http://www.kati.pk/

Kelloway, E. K., Nielsen, K., & Dimoff, J. K. (Eds.). (2017). *Leading to Occupational Health and Safety: How Leadership Behaviours Impact Organizational Safety and Well-being*: John Wiley & Sons.

Kjellén, U. (2009). The safety measurement problem revisited. *Safety Science*, 47(4), 486-489.

Kumar, M. P., Mugundhan, K., & Visagavel, K. (2014). Occupational health & safety in textile industry. *International Journal of Research in Engineering and Technology*, 3(11), 168-172.

Kureshi, N., Mann, R., Khan, M., & Qureshi, M. (2009). Quality management practices of SME in developing countries: a survey of manufacturing SME in Pakistan. *Journal of Quality and Technology Management*, 5(2), 63-89.

Lofquist, E. A. (2010). The art of measuring nothing: The paradox of measuring safety in a changing civil aviation industry using traditional safety metrics. *Safety Science*, 48(10), 1520-1529.

Mageid, Z., Hammadi, A., Hamdi, A., & Malek, M. (2011). A Study of the Application of Ergonomics in Ready-Made Garments Factories in Egypt. *Journal of American Science*, 7(3), 738-747.

Michalak, J. (2002). Quality assessment in occupational health services: a review. *International journal of occupational medicine and environmental health*, 15(2), 165-171.

Morino, Y., Ohara, T., & Nishizawa, M. (2011). Atmospheric behavior, deposition, and budget of radioactive materials from the Fukushima Daiichi nuclear power plant in March 2011. *Geophysical research letters*, 38(7).

Morrow, S. L., Koves, G. K., & Barnes, V. E. (2014). Exploring the relationship between safety culture and safety performance in US nuclear power operations. *Safety Science*, 69, 37-47.

Moyo, D., Zungu, M., Kgalamono, S., & Mwila, C. D. (2015). Review of occupational health and safety organization in expanding economies: the case of Southern Africa. *Annals of global health*, 81(4), 495-502.

Mutwale-Ziko, J., Lushinga, N., & Akakandelwa, I. (2017). An Evaluation of the Effectiveness of Health and Safety Induction Practices in the Zambian Construction Industry. *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 11(3), 581-585.

Ncube, F., & Kanda, A. (2018). Current status and the future of occupational safety and health legislation in low-and middle-income countries. *Safety and health at work*, 9(4), 365-371.

Nelson, C., Lurie, N., Wasserman, J., & Zakowski, S. (2007). Conceptualizing and defining public health emergency preparedness. *American journal of public health*, 97(S1), 9-11.

Niu, M. M., Leicht, R. M., & Rowlinson, S. (2016). The relationship among Safety Culture Model constructs in construction. *Engineering Project Organization Conference, EPOC 2016 Proceedings*, Engineering Project Organization.

Nordlöf, H., Wiitavaara, B., Winblad, U., Wijk, K., & Westerling, R. (2015). Safety culture and reasons for risk-taking at a large steel-manufacturing company: investigating the worker perspective. *Safety Science*, 73, 126-135.

Nyarugwe, S. P., Linnemann, A., Hofstede, G. J., Fogliano, V., & Luning, P. A. (2016). Determinants for conducting food safety culture research. *Trends in Food Science & Technology*, 56, 77-87.

Öz, B., Özkan, T., & Lajunen, T. (2013). An investigation of professional drivers: Organizational safety climate, driver behaviours and performance. *Transportation research part F: traffic psychology and behavior*, 16, 81-91.

Pala, A., & Tokat, E. (2002). Color removal from cotton textile industry wastewater in an activated sludge system with various additives. *Water Research*, 36(11), 2920-2925.

Petitta, L., Probst, T. M., Barbaranelli, C., & Ghezzi, V. (2017). Disentangling the roles of safety climate and safety culture: Multi-level effects on the relationship between supervisor enforcement and safety compliance. *Accident Analysis & Prevention*, 99, 77-89.

Pinheiro, H., Touraud, E., & Thomas, O. (2004). Aromatic amines from azo dye reduction: status review with emphasis on direct UV spectrophotometric detection in textile industry wastewaters. *Dyes and pigments*, 61(2), 121-139.

Pirzadeh, P., Lingard, H., Blismas, N., Mills, T., & Kleiner, B. (2015). Proactive evaluation of occupational health and safety performance in construction projects using the hierarchy of controls concept. *Proceedings CIB W099 Belfast* 2015, 439-449.

Ramos, D. G. G., Arezes, P., & Afonso, P. (2014). Economic analysis of occupational risk prevention: A case study in a textile company. *Proceedings of the European Safety and Reliability Conference, ESREL* 2013., 1473-1478.

Reinhold, K., & Tint, P. (2007). Improvement of work environment in textile industry in Estonia. *Foundations of Control and Management Sciences*, 61.

Samuel, C., & Munagala, V. (2016). Establishing the Baseline for an Occupational Health and Safety Management System in a Construction Company. *International Journal of Earth Sciences and Engineering*, 9(3), 894-897.

Shafiq, M. (2012). Implementation of quality management systems and business excellence frameworks in Pakistani textile companies. *Journal of Quality and Technology Management*, 7(2), 11-23.

Shah, N., Abbas, F., Abbas, Y., Haider, S. A., Khan, Q., Asghar, N., . . . Ali, A. (2015). Assessment of the Workplace Conditions and Health and Safety Situation in Chemical and Textile Industries of Pakistan. *Science*, 3(6), 862-869.

Silvestre, J. (2010). Improving Workplace Safety in the Ontario Manufacturing Industry, 1914–1939. *Business History Review*, 84(03), 527-550.

Taneja, N., Ray, S., & Pande, D. (2017). Exploring the Trade in Textiles and Clothing Between *India and Pakistan India-Pakistan Trade Normalisatio*n (pp. 61-92). Singapore: Springer.

Tasnim, F., Rahman, I., Rahman, M., & Islam, R. (2016). A Review on Occupational Health & Safety in Bangladesh with Respect to Asian Continent. *International Journal of Public Health & Safety*, 1, 102.

Tronko, M. D., Bogdanova, T. I., Komissarenko, I. V., Epstein, O. V., Oliynyk, V., Kovalenko, A., . . . LiVolsi, V. A. (1999). Thyroid carcinoma in children and adolescents in Ukraine after the Chernobyl nuclear accident. *Cancer*, 86(1), 149-156.

Unit, I. L. S. (2016). *Occupational safety & health: Legal framework & statistical trend analysis* (2010-2015). Islamabad: Author Retrieved from http://ophrd.gov.pk/hrd/userfiles1/file/OSH.pdf.

Upadhyay, K. K., & Pandey, A. C. (2016). Occupational exposure and awareness of occupational safety and health among cloth dyeing workers in Jaipur India. *Iranian Journal of Health, Safety, and Environment*, 3(2), 540-546.

Vastveit, K. R., Orszak, M., Njå, O., & Kraslawski, A. (2017). Learning from incidents at a Norwegian and a Polish refinery. *Process Safety Progress*, 36(1), 102-108.

Williamsen, M. (2013). Near-miss reporting: A missing link in safety culture. *Professional Safety*, 58(05), 46-50.

Zulfiqar, M., Hamid, K., & Khurram, M. U. (2017). Sensitivity Analysis of Macroeconomic Forces and Sectoral Returns Evidence from Energy and Textile Sectors of Pakistan. *European Online Journal of Natural and Social Sciences: Proceedings*, 7(3(s)), 189-202.