

HEALTH, SAFETY AND WELFARE STANDARDS OF EMPLOYEES IN THE SRI LANKAN CONSTRUCTION INDUSTRY

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ABSTRACT

Construction industry could be identified as one of the major employment opportunity providing sectors in the world wide. Due to larger operational time and use of large force of labour and machineries, risk is predominant in the construction industry. Many fatal accidents have been occurred during the project. Construction accidents are common in the Sri Lankan construction industry. Most prevailing reason in Sri Lanka when considering about the health, safety and welfare of the construction industry, could be identified as the improper safety culture. Furthermore, current Sri Lankan law do not comply with the present needs and they have become outdated.

Aim of this research is to uplift the health, safety and welfare (HS&W) standards of employees and make recommendations for effective development of construction industry. Current situation of HS&W of construction industry of Sri Lanka is identified using of expert survey research approach under quantitative research approach.

Factors contributing for the HS&W issues are examined and factors are properly ranked during the research. Then recommendations have been provided to mitigate factors. Furthermore, loopholes of current Sri Lankan Laws are identified. Overall expectation from the properly established health, safety and welfare culture is to uplift the working standards of the employer in a safe working environment. The extent of contribution from the government to achieve this expectation is well addressed through the research findings. Here amendments to be made for the out dated Sri Lankan legislation are elaborated through the findings. Contributions from the organizations to succeed the targets are also depicted.

Keywords: Construction Industry; Employees; Health, Safety and Welfare; Sri Lanka; Viability.

1. INTRODUCTION

Wadick (2010) demonstrated Construction industry is combined with high risk and it has recorded the fourth highest incidence of employment injuries including deaths, injuries and diseases. The higher number of work related fatalities and poor safety records show the risk in the construction sector. So it is necessary to provide attention on health, safety and welfare of employees. Wadick (2010) further demonstrated that main contractor play a central role in providing a safer work place and throughout the construction process he has the responsibility of providing matters on safety, health and welfare.

Enshassi *et al.* (2015) elaborate that construction employees mainly focus on project and they ignore their own safety and health. Usage of inappropriate equipment will increase the threat to accidents. Further inadequate safety work training is a major factor for the exposure for accidents during construction. According to Arditi *et al.*, (2006) construction operations in the night time is risky and unsafe due of the vision problems at night. Hetherington (1995) demonstrated that all the surveyors, engineers and architects involved in the construction project have a responsibility on safety towards employees and public and it cannot be ignored. Musonda (2012) depicts that health and safety tenets such as health and safety audits, health and safety meetings are not practiced by the most of the contractors. Further Yu *et al.* (2010) states that today there are many forms of intra-organizational injustice in order to obtain profits rather than thinking of the employees welfare.

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In several countries they are providing socio economic security to poor workers (John, 2004). Welfare is providing to the employees as insurance covering, family allowances, provident Funds, pensions and gratuity schemes, and widows' and survivors' allowances (Ismail *et al.*, 2012). Carby-Hall (1989) employers are bound by common law to provide reasonable care for the safety of employees. So during any circumstance employee can take actions against the employer for breach of the employer's duty of care. So he can sue against the employer for the negligence of providing safety. Further, Carby-Hall (1989) demonstrated that employer is responsible for the health and safety of every person employed or working on the premises.

When compared to the other industries the occurrence of accident is mostly higher in construction industry. The most of those accidents lead to tragedies such as injury or death to persons, damage to property and the environment and associated direct and indirect costs and effort. Therefore arrangement of guideline framework is most important to minimize the negligence about safety in Construction industry to protect values of lives as well as minimizing of economic losses as well. In currently some of legislations in Sri Lanka provide that frame work up to some extent.

The Sri Lankan construction industry focuses mainly on productivity and obtaining profits. Poor health, safety and welfare facilities prevailing in the current construction industry leading for the disappointment of employees and it inversely affect to the productivity. So this research will be an attempt to limit the gap of health, safety and welfare standards of employees in the construction industry. To achieve this, first this paper identifies and reviews the existing legislation regarding the health, safety and welfare law. It then goes on to explore the current situation of health, safety, welfare of employees in the construction industry and to review the problematic areas of providing health, safety and welfare for the employees in the construction industry. Finally, procedures are recommended to uplift the health, safety and welfare standards of employees in the construction industry.

2. LITERATURE REVIEW

A comprehensive literature review was carried out to identify the current situation of Health, Safety and Welfare of employees in the construction industry. The problematic areas and issues, extent of legislation addressing on those points are well elaborated. The construction industry could be defined as an important foundation for economic structure of a country in worldwide. It was estimated that construction industries contribute for more than 10 percent of the national gross domestic product (Havensid *et al.*, 2016). Havensid *et al.* (2016) further illuminated that the construction industry's economic impact on society is very huge and this may focus a significant importance when forming relevant industrial and economic policies. Sawhney *et al.*, (2014) states that today most economies are emerged through construction sector. India is a best example for that, on the other prospective it contributes for the development of the nation. Major stimulation factor for the Indian social and economic growth of the nation is the construction industry. Further Sawhney *et al.* (2014) defined Indian construction industry as one of the main key for Indian economy.

Construction companies represented 14% of total Italian enterprises and 1.9 million people were employing there. That is 10.5% of the total workforce employing in Italian construction sector Bigliardi *et al.*, (2014). Wang (2014) stated considerable amount of money is invested on infrastructure and public services by the Chinese government during the beginning of economic reform in 1980. The construction industry has been contributed to uplift the living conditions of general public in china, especially in the urban area is predominant. The average housing floor area per capita in urban China has been increased in a steady way, from 6.7 to 23 m² between 1978 and 2008.

The quality people must be used in the construction industry. This aspect is very important, because in recent days there is a growing shortage of qualified workers in the construction industry. They are experienced managers and skilled workforce. Specific engineering skills such as civil engineers, geotechnical engineers, structural engineers and transport engineers are considered as long term skill shortage list in New Zealand (Chang-Richards *et al.*, 2017). Nejati and Ghasemi (2012) stated corporate social responsibility (CSR) concept has been predominant among companies and there is a significantly increased number of companies that are engage in social behaviors and activities. (Ulutas Duman *et al.*, 2016) defined Corporate social responsibility as a fast growing concept that influences organizations to account for any negative effect they have on the society and natural environment. In recent years many companies had focus on the CSR and there is a growth in companies entering in to CSR.

Professionals are bound by common ethical behaviors including obligations, duties and responsibilities that are being bound on ordinary people (Vee, 2013). Employees are usually bounded by set of principles, attitudes. (Vee, 2013) further reported the unethical behavior of Architects and they have been warned several times. Vee (2013) indicated, consideration of ethics and social responsibility is one of the major responsibility of a project manager. Vee (2013) described incalculable value of human life of building and design professionals must be considered by the management by mitigating the risk involved with them. Vee (2013) described that there were criticisms made regarding the ethical conditions such as asbestos poisoning scandal that affected many workers during 1960.

In the National Institute of Occupational Safety and Health Act, No. 38 of 2009 of Sri Lanka, it is mentioned that the Institute will advise the government on the measures required to prevent accidents and injuries relating to occupations at work places, undertake and assist in investigations and study programs, surveys and research in the field of occupational safety and health. Moreover, that there are some legislations and their amendments which lead the guideline regarding occupational health and safety such as;

- Factories Ordinance No.45 of 1942 as amended by Acts No. 54 of 1961 & No. 12 of 1976
- The Workmen's Compensation Ordinance of 1935
- The Shop and Office Employees Act No.15 Of 1954

The Factories ordinance provides guideline to ensure safety, health and welfare of workers at their work place. It's mainly convey its rules and regulations, quality of the premises; cleanliness; overcrowding; maintain reasonable temperature; ventilation; lighting; drainage of floors and sanitary facilities. Further its asked to, the safety of the worker must be ensured by installing and maintaining the machinery, mechanisms, transmission apparatus, tools, equipment and machines in best possible safety conditions. As well as tools, equipment, machines, or products used must be organized properly guaranteeing the safety of workers. And specific conditions for the usage of internal combustions engines are verbalized such as the need to conduct the exhaust of gases from the engine into the open air; and to partition the rooms so that any harmful fumes from are not shifted to other persons. This Ordinance necessitates that no young worker (under the age of 18 years) is allowed to work on a machine unless he has been fully instructed about the dangers involved in operating the machine, has received sufficient training in that regard and is working under supervision of an experienced and knowledgeable worker.

The payment of compensation to workers who are injured in the course of their employment by an accident arising out of the and during the course of their work is illustrated in the Workmen's Compensation Ordinance of 1935 and subsequent Amendments. occupational disease as described in Schedule III, such as Anthrax infection, poisoning by lead, nitrous fumes etc. The Ordinance also provides for compensation to be paid to the dependents of the worker, in the event of his/her demise as a result of a work related accident or occupational disease.

The Shop and Office Employees Act No.15 Of 1954 provides for the regulation of employment, hours of work and remuneration of persons in shop and offices, and for matters connected there with or incidental thereto. Therefore, it is the main document about employees working hours and their entitlement to other facilities with the work. As example, according to the act working hours on any one day shall not exceed 8 hours, and in any one week shall not exceed 45 hours. This rule is not applicable to any person who holds an executive or managerial position in a public institution.

2.1. HOW CONSTRUCTION COMPANIES ENSURE HEALTH, SAFETY & WELFARE STANDARDS?

More than 30 people on average are admitted daily to the Colombo National Hospital due to the rising number of workplace accidents. Last year, more than 12,000 out of a total of 121,032 people admitted to the hospital had been injured in accidents at work, the National Coordinator (Training) of the Accident and Orthopedic Service. Therefore, it is more important to strengthen the current laws and regulation to protect our valuable human resources as well as minimize the economics losses. At the moment before said regulation are giving high power to minimize negligence of management and workers, related to occupational health and safety in Sri Lankan construction industry. Therefore, it was help to maintain occurrence of accident in this booming construction industry. Moreover, that most of construction companies of Sri Lanka now maintaining international occupational health, safety and welfare regulation to maintain and promoted their goodwill within the industry such as;

- ISO 9001 is the international standard that specifies requirements for a quality management system (QMS)
- ISO 14001:2004 specifies requirements for an environmental management system
- OHSAS 18001, Occupational Health and Safety Assessment Series

2.1.1. HEALTH AND SAFETY ISSUES OF EMPLOYEES

According to De Silva and Wimalaratne (2012), magnitudes of construction industry based accidents remain at a higher level in Sri Lanka when compared with other countries such as USA, UK, Hong Kong and Singapore although the construction output is less in Sri Lanka when compared with developed countries. The authors revealed a recent tragic accident caused by a falling beam from a temporally constructed roof on to the head of a medical student when she was passing near the construction site. She was disabled. Further, the author identify that working environment of the construction industry could be as more hazardous when comparing with the other industries. Labour intensive work prevailing in the Sri Lankan construction industry and comprised of skilled and unskilled workforce. They are with different educational backgrounds and this would be a cause for higher potential of personnel injuries (De Silva and Wimalaratne 2012). Degree of health hazards and risk exposure varies from worker to worker according to the job they are engaged in. De Silva and Wimalaratne (2012) reported masons, carpenters, roofers, plumbers, electricians, workers engaged with finishing and painting, welders, tillers, and unskilled labours could be identified as most vulnerable employees for the site hazards. Recent findings have been revealed several causes for most of the site accidents. Unsafe electrical connections and poorly maintained electrical equipment, falling of improperly secured boards, planks and decking are some of the causes.

De Silva and Wimalaratne (2012) stated 60 percent from fatalities are due to head injuries caused by fall. Falling objects, exposure to harmful gases are some of the causes for injuries and fatalities in the local industry. De Silva and Wimalaratne (2012) identified reasons for week OSH performance in the construction industry such as improper safety management systems, regulations, resources, policies and commitment. They identified reasons for week OSH performance in the construction industry such as improper safety management systems, regulations, resources, policies and commitment. Further main causes for the unfortunate situations in the site works are lack of usage of safety gears. According to the survey (De Silva & Wimalaratne, 2012) found that heavy sweating under tropical conditions, hair losses, and falling of the helmet during working, are the main rejection factors of the workers on personal protective equipment. De Silva and Wimalaratne (2012) exhibited that Dengue could be identified as a reasonable threat for the construction workers.

Accordingly De Silva and Wimalaratne (2012) to calculate the injury and health hazard rates, there is no any internationally accepted methodology. Furthermore there is no approved system to define the injury type or pre-defined weightages for the different percentages of risks. Commonly accepted criteria are the ILO classification for injuries and health hazards. Hare et al. (2006) viewed the idea of effective planning would have been reduce the accidents and ill health of site personnel and prevent most of them. (Hare et al., 2006) stated that main contractor has a responsibility of managing the health and safety risk of the workers and supervising the site activities.

2.1.2. WELFARE ISSUES RELATED TO THE CONSTRUCTION EMPLOYEES

Loosemore and Lim (2016) formative theory of justice illustrated that the concept of justice is embedded with the two principles of liberty and equality. The liberty principle depicts that every person has a range basic rights and freedom to enjoy and the equality principle viewed that employment should be open to any person disregard of background, ethnicity or gender. There is a high rate of fed-up employees among construction workers, who are with the belief that they must work long hard hours in the course of their daily work. Loosemore and Lim (2016) stated that many intra-organizational injustices prevail in the current construction industry. Workforce causality rate becoming high, under representation of women and other minority groups, racial discrimination, corruption and poor safety are some of them. Today most of the enterprises are being survived only for the profits rather than their individual and collective welfare.

Loosemore and Lim (2016) thoroughly stated According to the report and various other studies, construction industry and relevant projects are the main hub for corrupted business practices namely bribery, intimidation, threats, collusion and frauds. Discrimination and racism would also continue to prevail on workplaces at higher

levels more than in the general population and construction workers' safety and well-being have also proven to be predominant problems, despite many years of initiatives and reforms in various parts of the world.

Loosemore and Lim (2016) various reports revealed that construction industry migrant workers have suffered much with the injustice, they have to face a lower plight when working with Australia, UK, Middle East, China, Brunei and Singapore and many other countries. The illegal construction in Australia have deprived the basic human rights including fair pay, safe working conditions, pensions, insurance and other forms of protection such as sick leave, annual leave and redundancy payments. The illegal construction in Australia have deprived the basic human rights including fair pay, safe working conditions, pensions, insurance and other forms of protection such as sick leave, annual leave and redundancy payments.

2.1.3. CURRENT STEPS TAKEN TO MAINTAIN STANDARDIZE WELFARE FOR CONSTRUCTION EMPLOYEES

Managers are advised to make use of a system that identifies and reward Workers who serve in a perfect way. This will encourage the worker participation. Here workers are provided with financial bonuses for identifying ways to improve the quality of their company's operations. The money is a powerful motivator and productivity of labours could be increased through a well-design reward system. Also employee efforts must be extra paid. The construction employees must be provided with proper recognition. It is believed that apart from financial incentives, recognition is also considered as a proper means to inspire enthusiasm among employees.

Schuler and MacMilan (1984) forwarded the idea of employee participation in the management of pension schemes. Here pension schemes become a remuneration package for the workers. Schuler and MacMilan (1984) highlighted the development of private medical schemes is a recently taken initiative. Furthermore they stated that internal promotions will polarize the labours and workforce. Employees are transferred in to a relatively senior ranking, benefit from a capital sum in the form of a golden handshake, hence this will enrich the employee welfare.

3. RESEARCH METHODOLOGY

This research provides number issues related to health, safety and welfare of employees in the construction industry of Sri Lanka. Massive number of information available relation with the research topic. But for the convenience, sample includes skilled employees, unskilled employees in the western province of Sri Lanka. The third limitation is the significantly small sample size. A larger sample could produce different results by addressing different class sections and multiple cases. Future studies should focus on a specific category (small, medium-sized construction organizations) to achieve more detailed information. The generalization of the research findings can also be considered as a limitation of this research. After capturing the research problem, a comprehensive literature review was conducted to explore the Health, Safety and welfare standards of employees in the construction industry and its influence on the construction sector. Journal articles, electronic sources, books and unpublished dissertations became the supportive sources when conducting the literature review.

Quantitative research approach based survey approach was used to collect data for this research (Mix method approach). It consists of semi structured interviews from industry experts followed by detailed questionnaire survey from construction professionals. Viability of data gathered from the expert interviews are checked and ranked during the analysis of questionnaires of construction professionals. The questionnaire survey findings were analyzed using Relative Importance Index. Three degree, four degree and five degree relative important index (RII) formulae have been used to analyze collected data.

4. DATA ANALYSIS AND RESEARCH FINDINGS

All the respondents revealed that currently good safety culture is not established in the construction industry of Sri Lanka. All the respondents have revealed that there is not even supervision safety culture in Sri Lanka. One of the respondent revealed that after the supervision also labours are trying to adjust to the previous situation. They are using safety helmets and other PPE when safety officers are there in the site and when the officers are not there, they behave without PPE. Also current safety procedures in Sri Lankan construction industry is very much poor.

4.1. HEALTH AND SAFETY ENHANCEMENT PROCEDURES FOLLOWED BY ORGANIZATIONS

Here company x owns OSHA'S 18001, ISO 14001, ISO 9001 for the HSW. It can be called as one of the best safety established company in Sri Lanka. The company x is going far beyond Sri Lankan law and regulations, hence they follow foreign standards to provide best health, safety and welfare provisions for the employees in Sri Lanka. All the other local companies are always below the standards provided by the company x, as they follow only laws and regulations.

- Use of personnel protective equipment (PPE)
- Induction programmes - If a new employer / staff member come in to the company, he must undergo with an induction programme.
- Conducting Pep talk - Work related employees are participated for the event. It is conducted when starting a new work by the site in charge officer. He investigates the unsafe acts and unsafe conditions embedded in a work and provide reasonable solutions to those issues. Here worker have to tick for the relevant work that he is carried out. Next he has to identify the hazard relevant to that work, from the list of hazards. In the right side there are relevant precautions and can be easily identified by the workers.

| Work | | Hazard | | | Relavent Precausions |
|------|---|--------|---|---|----------------------|
| w1 | √ | H1 | √ | → | P1 |
| | | H2 | | | P2 |
| | | H3 | √ | → | P3 |
| W2 | √ | H1 | | | P1 |
| | | H2 | √ | → | P4 |
| W3 | | | | | |
| W4 | | | | | |

Figure 1: Format of a Safe work Start Chart

- Conducting Tool box talk
- Conducting special training programmes and special safety meetings
- Risk Assessment

4.2. WELFARE ENHANCEMENT PROCEDURES FOLLOWED BY PRESENT ORGANIZATIONS

Respondent A commented that they are providing Rs. 5,000.00 package for one worker who is newly entering in to the site. This package is provided in the form of safety shoes, safety helmets, Safety belts, nets, beds and mattresses. In addition to that all the organizations are providing accommodations, medical facilities, water and sanitary facilities at different levels.

4.3. FACTORS CONTRIBUTING TO HS&W ISSUES

- Low management commitment and poor budget allocation

According to the common ideas of respondents, top level management do not understand the hidden benefit of enhancing HSW in the construction site. Management runs only on profit. They pay lees time, money, and attention on HSW of the site. According to the expert responses during the interview, they expressed that management is negative minded and they are thinking that HSW is an extra cost and extra burden for the company. Hence they issue limited money and poor budget allocations on HSW.

- Poor knowledge of workers on health, safety and welfare

Workers have poor knowledge regarding HSW and especially they do not wear the chin guard of the safety helmet. So they are quiet close to the hazards. Furthermore, workers bear a negative attitude; safety is an extra burden for them. Especially workers do not know what their rights are, what are the facilities they can get from the management and people are unaware about the ways of getting those benefits.

- Senior officers are not concerning on health, safety and welfare

Executive officers must be an example to their subordinates and they must wear full body kit when entering in to the site. So workers have a trend to follow safety procedures by following the executive officers. But in the practical life executive staff is reluctant to be an example for the workers and run on construction targets.

- Low labour attendance for the Safety programmes

Labour attendance is very low for the Tool box talk and morning awareness programmes. The reason behind may be, these meetings are conducting early in the morning and people feel lazy after working a whole day.

- Lack of qualified officers on HS&W

There is a shortage of qualified officers in the field of health, safety and welfare. Actually other professionals have a little knowledge on HSW.

4.4. LOOPHOLES OF CURRENT SRI LANKAN LAWS AND REGULATIONS

In Sri Lanka most of the construction accidents has been occurred due to work at height. However factories Ordinance (1942) does not address the relevant precautions for the accidents caused by work at height. In Sri Lanka Ordinances came before the independence (1948) and Acts came after the independence. Respondent D reveal that Factories Ordinance and all the legislation are outdated now. They did not discuss on current issues such as construction hazards. According to the Respondent E, in Sri Lanka maximum compensation for a fatal accident is Rs. 515,000.00. This is not reasonable and this amount should be increased.

At present construction companies must handle a health and safety team according to the CIDA grading. Also these team members must be working before six months in the relevant organization and cannot recruit professionals when the project proceedings began. Now NIOSH is conducting NIOSH diploma programme. This is to produce well qualified and trained professionals for the health, safety and welfare sector.

4.5. HEALTH AND SAFETY ENHANCEMENT PROCEDURES FOLLOWED BY PRESENT ORGANIZATIONS

All the sites (100%) are providing PPE for the workers. Also, all the organizations (100%) using HSW notices to communicate information to the work force and other employees. All the other safety procedures are practiced at a satisfactory level in the contracting organizations but least number of organizations (16.67%) is rewarding their workers for the safe behavior. Also limited number of organizations (43.33%) is asking the ideas of employees on health, safety and welfare problems. This is quiet bad situation as employee ideas are more valuable in uplifting the HSW of the site.

4.6. FACTORS CONTRIBUTING TO HS&W ISSUES

Respondents have been identified inadequate facilities for health, safety and welfare officers and supervisors as a major contributing factor for HSW issues. They have marked 82.00 RII percentages and ranked as 1. Poor budget allocations on health, safety and welfare are directly contributing for the poor adherence to the HSW laws and regulations. They have marked 74.67 RII percentage value and ranked as second contributing factor.

Respondents have been identified workers reluctance to follow health, safety and welfare rules as the last contributing factor for the poor adherence to the HSW laws and regulations. They have marked 60.00 RII percentage value. The main hidden reason behind the negative responses is workers can be forced to follow health, safety and welfare rules through proper supervision.

Also respondents have been identified attitude and habit of the workers and employees is a minimum contributing factor. They have marked 61.33 RII percentages because Workers attitudes and habits can be easily changed though proper training.

4.7. WELFARE FACILITIES PROVIDED AT THE CONSTRUCTION SITES

Respondents have identified toilets and sanitary facilities is satisfactorily providing by least no of companies. They have marked 48.89 RII percentage and ranked as 11, low level providing facility. Furthermore respondents have identified extra allowance for workers at risk are not satisfactorily providing by the construction organizations. They have marked 51.11 RII percentage, ranking it as 10.

Other welfare facilities such as proper lighting and good working climate, proper drinking facility, security, medical facility and canteen and cooking facility are satisfactorily providing by most of the construction organizations.

Table 1: Types of Accidents Occurred at Site

| Categorization | Type of accident | F % | S % | M % | N % |
|-----------------------|---------------------------------------|------------|------------|------------|------------|
| a | Falling from an elevation | 13.33 | 20.00 | 6.67 | 60.00 |
| b | Electrocution | 6.67 | 16.67 | 20.00 | 56.67 |
| c | Struck by equipment / vehicle | 10.00 | 13.33 | 36.67 | 40.00 |
| d | Struck by falling material | 0.00 | 23.33 | 40.00 | 36.67 |
| e | Burn or explosion | 6.67 | 10.00 | 16.67 | 66.67 |
| f | Chemicals and toxic materials | 3.33 | 6.67 | 10.00 | 80.00 |
| g | Plant and equipment related accidents | 3.33 | 20.00 | 43.33 | 33.33 |
| h | Any other | 3.33 | 13.33 | 30.00 | 53.33 |

From the above Table 1 it can be concluding that large extent of fatal accidents (13.33%) is caused due to work at height. From electrocution considerable amount of minor accident (medical leave up to 3 days) percentage is reported (20%). Second highest percentage of fatal accidents (10%) has reported due to struck by equipment / vehicle. There is no any fatal accident reported from struck by falling material, but huge percent of minor accidents have created (40%).

4.8. KNOWLEDGE OF PROFESSIONALS ON LAWS AND REGULATIONS

Respondents have been identified National Institute of Occupational Safety and Health Act 2009 as a well know act by majority of professionals in the construction industry of Sri Lanka. They have marked 78.33 RII percentage and top ranked. Respondents have been identified National Minimum Wage of Workers Act 2016 as the second well known act in the construction industry of Sri Lanka. Workmen's Compensation Act has been identified as the third well known act in the construction industry. They have marked 70.83 RII percentage. All those acts are Sri Lankan acts and definitely that should be well known by each and every construction professionals.

Respondents have been identified Factories Ordinance 1942 as the fifth known act, related to health, safety and welfare in the construction industry of Sri Lanka. They have marked 60.00 RII percentages. Actually Factories Ordinance (1942) is a major act discussing HSW in Sri Lanka. The awareness of construction professionals on Factories Ordinance (1942) is very poor and not satisfactory.

5. CONCLUSIONS

Today most of the contracting organizations have no well-established safety culture and organizations mainly run on target achievements according to the construction schedule. Organizations collectively thinking that expenditure for safety are useless and it will gain nothing on allocations to health, safety and welfare. Further organizations are with the view of, HSW should be maintained in order to satisfy the government and mainly it is limited to the documentation only. During the research main focus has been provided on identifying factors contributing to Health, Safety and Welfare issues. These factors are identified from expert interviews and the most contributing factors are selected from the analysis of questionnaires. Furthermore it is transparent that prevailing laws and regulations must be subjected to amendments to cater the present needs.

6. RECOMMENDATIONS

It is highly recommending that employees must be given a prominent place to express their ideas. It will be more beneficial when conducting Safety training programmes and induction programmes. Also proper monetary allocations should be provided on HSW of the construction site. Especially through the contract documents, proper monetary allocations must be kept on HSW enhancement. When considering about the Laws and Regulations of Sri Lanka related to HS&W, many amendments must be implicated. Compensation

during a fatal accident must be increased by law up to a reasonable amount with the mediation of Labour Department. Also government Safety department must appoint a separate inspecting officer (Consultant Officer) for each and every construction site during the period of project proceedings to monitor the health, safety and welfare. Also these government officers should be away from bribes.

Safety issues are considered only after an accident occurs at a construction site with follow up measures to improve working conditions. Construction safety on project sites is of utmost importance due to the nature of the construction industry. It is usually concern in a market-driven society where the main concern is completing projects at the required quality with minimum time and cost. Further economically it is important as it also lead to delays in the construction process. The delays and total expenses following an accident are usually much higher than the original cost of establishing and maintaining safety standards. Therefore it is understood that the safety evaluation and control save money and resources. In Sri Lankan contest, there are some laws and regulation to guide health, safety and welfare rules in construction industry. It's not cause to cover all preventions of accidents in construction industry. Accordingly Occupational health, safety and welfare matters of Sri Lankan construction industry are developing with labour laws and regulations as well as international policies.

7. REFERENCES

- Arditi, D., Ayrancioglu, M., Jingsheng, J., Arditi, D., Ayrancioglu, M., and Shi, J. J., 2006. Worker Safety Issues in Night-Time Highway Construction. *Engineering, Construction and Architectural Management*, 12(5), 487-501
- Bigliardi, B., Galati, F. and Petroni, A., 2014. How to Effectively Manage Knowledge in the Construction Industry. *Measuring Business Excellence*, 18(3), 57-72.
- Carby-Hall, J. R., 1989. Health, Safety and Welfare at Work. *Managerial Law*, 31(1/2), 2-57.
- Chang-Richards, Y., Wilkinson, S., Seville, E. and Brunson, D., 2017. Effects of a major disaster on skills shortages in the construction industry: Lessons learned from New Zealand. *Engineering, Construction and Architectural Management*, 24(1), 2-20.
- De Silva, N. and Wimalaratne, P.L.I., 2012. OSH Management Framework for Workers at Construction Sites in Sri Lanka. *Engineering, Construction and Architectural Management*, 19(4), 369-392.
- Enshassi, A., El-Rayyes, Y. and Alkilani, S., (2015). Job Stress, Job Burnout and Safety Performance in the Palestinian Construction Industry. *Journal of Financial Management of Property and Construction*, 20(2), 170-187.
- Hare, B., Cameron, I. and Roy Duff, A., 2006. Exploring the Integration of Health and Safety with Pre-Construction Planning. *Engineering, Construction And Architectural Management*, 13(5), 438-450.
- Havens, M.I., Håkansson, H. and Linné, Å., 2016. Economic deals in the construction industry: Implications for socio-material interaction and monetary processes. *IMP Journal*, 10(3), 364-389.
- Hetherington, T., 1995. Why Involve Design Professionals in Construction Safety?. *Structural Survey*, 13(1), 5-6.
- Ismail, Z., Doostdar, S., and Harun, Z., 2012. Factors Influencing the Implementation of A Safety Management System for Construction Sites. *Safety Science*, 50(3), 418-423.
- John, C.P., 2004. *Social Security and Labour Welfare with Special Reference to Construction Workers in Kerala*. Kerala Research Programme on Local Level Development, Centre for Development Studies, Thiruvananthapuram.
- Loosemore, M. and Lim, B.T.H., 2016. Intra-Organisational Injustice in the Construction Industry. *Engineering, Construction and Architectural Management*, 23(4), 428-447.
- Musonda, I., 2012. Construction health and safety (H&S) performance improvement-a client-centred model (Doctoral dissertation, University of Johannesburg).
- Nejati, M. and Ghasemi, S., 2012. Corporate social responsibility in Iran from the perspective of employees. *Social Responsibility Journal*, 8(4), 578-588.
- Sawhney, A., Agnihotri, R. and Kumar Paul, V., 2014. Grand challenges for the Indian construction industry. *Built Environment Project and Asset Management*, 4(4), 317-334.
- Schuler, R.S. and MacMillan, I.C., 1984. Gaining competitive advantage through human resource management practices. *Human Resource Management*, 23(3), 241-255.
- Ulutaş Duman, D., Giritli, H. and McDermott, P., 2016. Corporate social responsibility in construction industry: A comparative study between UK and Turkey. *Built Environment Project and Asset Management*, 6(2), 218-231.

- Vee, C., 2013. Professional Ethics in the Construction Industry. *Engineering, Construction and Architectural Management*, 10(2), 117-127.
- Wadick, P., 2010. Safety culture among subcontractors in the domestic housing construction industry. *Structural Survey*, 28(2), 108–120.
- Wang, N., 2014. The role of the construction industry in China's sustainable urban development. *Habitat International*, 44, 442-450.
- Yu, A. T. W., Shen, G. Q. P., and Chan, E. H. W., 2010. Managing employers' requirements in construction industry: Experiences and challenges. *Facilities*, 28(7/8), 371–382