TEST Engineering & Management

January -February2020
ISSN: 0193-4120 Page No. 12906 - 12913

Can Behavior based Safety Program be a Key Factor for Protruding Employee Involvement among the Employees of Construction Industry: Empirical Study with Special Reference to Mysuru City

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Article Info
Volume 82
Page Number: 12906 - 12913
Publication Issue:
January-February 2020

Article History
Article Received*: 18 May 2019*
Revised*: 14 July 2019*
Accepted*: 22 December 2019*
Publication*: 24 February 2020*

Abstract:
It is a first of its kind research on behavioral safety in Mysore City that indicates which thousands of at-risk behaviors in the construction industry are exciting. In every company, a behavior-based security plan must be implemented to create a safe work environment and encourage employees to take these safety measures that result for accident prevention and facilitate safe conduct for the development of injury-free culture in the construction industry. The study was conducted on the quantitative research methodology. The sample size was minimum 100 employees of the construction industry. Structured questionnaire on behavior based safety program as well as the direct interview has been conducted to measure the degree of employee involvement. Descriptive statistics and correlation used for selecting statistical techniques. The study has come up with a result showing that by implementing the behavior based safety program in construction industry motivates the employees to work safely inside the organization and also have changed the negative behavior of the employees to positive one for the welfare of the company as well as the employees and their family

Keywords:*Construction Industry, Behavior Based Safety Program, Employee Involvement.*

I. INTRODUCTION

Every business organization will be formed by carrying some of its specific objectives that have to be achieved in order to gain profit or with an intention to survive in the market for a long period of time and to remain competitive. Those construction industries having a view of profitisation will only focus on the operations of the business activities where as they fail to seek attention on safety of the workers who are working under them. When considering the industry as a whole, we could conclude that the construction industry is one of the most risky. Since it involves activities such as working at height, using equipment, various types of machinery that can result in injury to human life employed in such industry, the causes behind these incidents have received broad attention in the construction industries in order to promote workplace safety with a variety of security programs. This safety program is a creative and effective idea that is presently being used to encourage safety for the workplace. Through incorporating these safety security programs in the company of the construction industry, workers can be directly involved in preventing harmfulness and giving them the incentive that they take better care of their health. The paper would discuss the reasons behind hazardous behavioral-based protection as an effective approach to raising the level of workplace conduct and health and how to reduce dangerous incidents and downs the various injuries that may occur in the construction industry. The important leading safety measure is the participation of staff in the safety program, such as how employees respond to their security rules and policies, and it also

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involves upward interaction flow between the various individuals, groups and decision-making processes within the company. In order for the employees to have different opinions about the security programs and it is also important for the company to accept the recommendations of the employees to review the safety programs, particularly when the new techniques and technologies are put into practice. Employee engagement is the core element of behavior-based security that helps the company achieves its goals and priorities smoothly.

II. LITERATURE REVIEW

1) Rethy, Arathy (2018)conducted a study on "can knowledge management be obverse to performance management in construction industries with special reference to Mysore city" .this study describes the purpose of this paper us to know the level of knowledge and performance management among employees of construction industry with special reference to Mysore city .the sample size is 75 .the tool used to collecting the data are questionnaire on knowledge management and questionnaire on performance management .The method of the study is survey and simple random sampling technique the statistical techniques used are descriptive statistic and correlation .The result of study have reveled that there is high level of correlation among the knowledge and performance management

2) Chakrabarty (2018). Conducted a study on "behavior based safety (BBS) study of an oil and gas industry in India". He conducted a study to analyze safety performance of oil and gas industry in general behavioral factory found to be the major contributor of lost time incidents of late petroleum sector on the whole saw a surges of BBS activities with the aims of act least reducing the numbers of preventable occurences.thus a training cum field observation module was prepared and a customized behavioral observation checklist derived based on a 10 point safety rules field observation and feed backs both on safety and at risk behavior's showed a noticeable improvement in the way BBS concept has been implemented.

3) Suman Mohan (2017) conducted a study on " behavior based safety approach in shipyard his main aim of these study was assessing the effectiveness of behavior based safety intervention in shipyard in implementing BBS" he conducted the study to identify the critical behavior's leading to accidents and evaluate the stimulus leading to these behavior's and provides feed back to workers individually and public ally and then measure step by step improvement in workers during the study, to conduct these study he formed a design team and participants and used stastical analysis primary data was collected the result of these study showed that the group participated in this study has shown improvement of at least 2 times the safety based behavior.

4) Rethy Menon (2017) conducted a study on "recent trends in industry in adopting crowed souring and problem solving for employee productivity with special reference to IT industry". the purpose of this study of this study is find out how the industry uses the new technology based method which is known as crowed souring in solving the problems of the employees in IT sector. The sample size of this study is 100 employees from urban and semi urban area. The tools used for data collection include a liker type questionnaire and accesses the perception level of crowd sourcing and problem-solving ability scale. The statistical tool used is descriptive statistic T-test and correlation. The find of this study proved that there is a positive relationship between crowd sourcing and problem-solving ability of employees working in IT Company.

5) A Mansur (2016) conducted a study on "identification of BBS by using traffic light analysis to reduce accidents". This study describes an important area within the field

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production (BBS) the company set a rigorous BBS and its intervention program that implemented and deployed continually. Appraisal of traffic light analysis (TLA) as a on tool of risk assessment used to determine the estimated score of BBS questionnaire's. the standardization of TLA appraisal in this study are based on regulation of minister of labor and occupational safety and health. The result of the study shows that there are some points under 84% which categorized in yellow category had shown corrected immediately by the company to prevent existing bad behavior of workers. The application of BBS expected to increase the safety performance at work time – by – time and effective in reducing accidents.

6) Murali (2015) conducted a study on " behavior based safety approach to advance injury free culture" the main objectives of the study was to analyze the problems faced by employees is wearing the personal protective equipment's and create awareness among the employees to different categories' was utilized in many areas which is monitored frequently the behavior is one of the key factor in safety performance, field observation method was conducted to collect primary data the result of BBS experimental analyses carried out in cement industry there was a significant improvement developed in safety activities among the workers and management.it created good relation between them.

7) Nehal Anwar Siddiqui (2015) conducted a study on behavior based safety in refinery and the main objective of this study was to determine the extent at which accident rate reeducation in dependent on the implementation of behavior based safety program in the construction/maintance project. The study came up with a result indicating that the implementation of BBS program in the construction project to large extent reduced workers at risk behavior and accidents rate these studies conclude that the reduction in workers at risk behavior and accidents rate is dependent on the implementation of behavior based safety programs in the construction project.

8) Rafiq Choudhry (2014) conducted a study upon behavior based safety on construction sites.in this study researcher tried to develop and introduced a suitable method of measuring safety performance to help the company to improve construction site safety and also find a way for improving construction safety for the subcontract actors conducting work on the firm's construction site and to use method to ass's safety management based upon proven techniques for changing work behavior. Here the researcher used both quantitative and qualitative method in analyzing the data the findings of the study reveal that the role of project management team was important for the goal setting sessions it was not easy for the safety managers to arrange a goal setting session with out the support of the project management team. Finally, the result proved that the BBS management techniques can be applied to any country's culture, showing that the it would be a good approach for improving the safety of front line workers and that it has industry wide application for an ongoing construction project.

9) Kaila (2014) conducted a study on "a case of behavior based safety (BBS)implementation at a multinational organization "this study was conducted in order to gain knowledge for organization considering to implementing BBS towards achieving zero unsafe behavior targeting zero injurie at workplace he conducted these study by visiting plants for observation an d correction of at risk behavior and creating of roads maps the outcome of these study was number of unsafe conditions and unsafe behavior's has drastically gone down's implementation has been recommended to other location of the company with an introduction of BBB in one location safety has become a real line function due to BBS approach.

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10) Oostakhan (2012) conducted a study on "behavior based safety approach at a large construction site in Iran "the main objective of the study is to describe the prevention of accidents, injuries and losses in the work places. This study examines behavior based safety program in a massive construction site, for this study experiment and control groups were selected and performance feed back of workers about unsafe and critical behavior has been received, these studies came up with a result shows that among the critical behaviors using ladder correctly among the workers has good feedback but there is still a problem in concreate pouring behavior.

11) Dagdeviver (2008) conducted a study on " developing a fuzzy analytic hierarchy process (AHP)model for behavior based safety management" the main objective of these study was to analyze the work safety issue through analytical hierarchy process.in the study researcher tried to analyze the safety management system with AHP approach to determine the level of factory behavior rise. Which has been adopted in real manufacturing company; this study shows the result of evolution of FBR level of work system

12) Mettert (2006) led an examination on the " effectiveness of the behavior based safety program at Jacobs Sverdrup's NASA Langley Rome contract" the issue of this investigation was to decide whether the usage of the conduct based security program at the Rome contract nasal Longley inquire about focus brought down the measure of security incidents.H1 speculations was set up to guide these issues by the analyst factual investigation like mean middle modes chi square t-test were utilized the investigation concocted an end that H1 there was a backhanded connection between's the quantity of conduct's based wellbeing perception performed and security occurrences pace of the worker under the Rome contract.

III. OBJECTIVES

- To know the employee's readiness level for behavior based safety program.
- To evaluate how much employees involve in their day to day work in construction industry
- To find out relationship between employee's attitude and employee involvement among the employees of construction industry.
- To analyze whether there exists significant difference in employee's attitude in safety training program and employee involvement based on gender, locality.

IV. HYPOTHESIS

- The employees are having high level of readiness level towards behavior based safety program.
- The employee involvement is high in construction industry.
- It clearly states that there exists a very high positive correlation between attitude of the employees towards behavior based safety programme and employee involvement
- There exists significant difference on attitude of the employees towards behavior based safety programme and employee involvement based on gender and locality.

V. RESEARCH METHODOLOGY

A survey study has been conducted in order to find out behavior based safety program and employment involvement in construction industry with special reference to Mysuru city. Primary data has been used for data collection. The sample size of the study is 100 employees with consist of two variables that is behavior based safety program and employee involvement. Simple random sampling technique is used as sampling technique.

VI. TOOLS USED

- Scale on behavior based safety program – 30 Questionnaires with factors consist of Recruiting, Training, Accidents,

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Performance, Policies, Safety program.

- Employee involvement scale – 20 Questionnaires with factors consist of Productivity, Job level, Success of the firm, Performance test, Skill.

VII. STATISTICAL TECHNIQUES USED

- Descriptive statistics, Mean, median,
- t-test, correlation.

VIII. ANALYSIS AND INTERPRETATION

Descriptives

- To find out the level of behavior based safety programs that the organization undertakes and the employee involvement. If the mean score ranges between (1-50) rated as low level, (51-100) rated as moderate level and (101-150) rated as high level

Table 1.0 Behavior Based Safety Program -Descriptive Statistics

Descriptives statistics	Behavior based safety program
Mean	101.65
Standard deviation	8.043

The mean value in table 1 shows 101.65 with a standard deviation of 8. 043. Based on that there exists a majorly high behavior based safety program conducted in the construction industry with special reference to Mysore city

Table 1.1 To Find Out The Level Of Employee Involvement- Descriptive Statistic

Descriptives statistics	Employee involvement
Mean	67.39
Standard deviation	6.043

Table two shows a mean value of 67.39 with standard deviation of 6.043.based on that there exists a large portion of employee involvement among the construction industry towards behavior based safety program

Table 1.2 comparison of behavior based safety programs based on gender

Gender	Number	Mean	Standard deviation	T	Sig value (2 tailed)
Male	73	101.53	7.971	.236	.814
Female	27	101.96	8.383		

Table three indicates that the data relating to gender wise analysis on behavior based safety program the p value shows .814 then there is no significant difference exists in the behavior based safety program among male and female employees in the construction industry with special reference to Mysore city

Table 1.3 Comparison of Employee Involvemen0.T Based On Gender

Gender	Number	Mean	Standard deviation	T	Sig value (2 tailed)
Male	73	67.71	5.775	.875	.383
Female	27	66.52	6.767		

Table four indicates that the data relating to gender wise analysis on employee involvement. The p value shows .875 then there is no significant difference exists in the employee involvement among the male and female employees in the construction industry with special reference to Mysore city

Table 1.4 Comparison of Behavior Based Safety Program Based on Location

Location	Number	Mean	Standard deviation	T	Sig value (2 tailed)
Urban	63	106.40	4.874	12.100	.000
Rural	37	93.57	5.515		

Based on the locality wise analysis on behavior based safety program. The table five reports that P value is .000 which shows that there exists a

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significant difference in the behavior based safety program among employees in rural and urban areas of construction industry with special reference to Mysore city

Table 1.5 Comparison of Employee Involvement Based On Location

Location	Number	Mean	Standard deviation	T	Sig value (2 tailed)
Urban	63	69.84	4.190	6.214	.000
Rural	37	63.22	6.473		

Based on the locality wise analysis on Employee Involvement. The table 5 reports that P value is .000 which shows that there exists a significant difference in the Employee Involvement among employees in rural and urban areas of construction industry with special reference to Mysore city

Table 1.6 Correlation Of Behavior Based Safety Program And Employee Involvement Correlation

		BBSP	Employee involvement
Behavior based safety program	Person correlation	1	.472”
	Sig(2-tailed)		.000
	N	100	100
Employee involvement	Person correlation	.472”	1
	Sig(2-tailed)	.000	
	N	100	100

Table six indicates that correlation of behavior based safety program and employee involvement result shows that there exists a high correlation

IX. FINDINGS

- The level of safety training program and employers involvement exists high level among the employees of construction industry in Mysuru city.
- The analysis of data relating gender wise the behavior based safety program and employee involvement exists no significant difference among the employees of construction industry in Mysuru city.
- The analysis of data relating locality wise the behavior based safety program exists the significant difference in rural and urban sector of construction industry in Mysuru city.
- The analysis of correlation based on behavior based safety program and employee involvement contain the high result.

TENABILITY OF HYPOTHESIS

- The first and second hypothesis is completely accepted because there exists high level of employee’s attitude towards behavior based safety program and employee involvement.
- The third hypothesis is also fully accepted since there exist high positive correlation between employee’s attitude towards behavior based safety program and employee involvement.
- The fourth hypothesis is partially accepted since there exist significant difference on employee’s attitude towards behavior based safety program and employee involvement based on locality alone.

X. SUGGESTION

- Security based on behavior is a system that helps workers define and choose a healthy behavior over an unsafe behavior. Implementing a behavior-based security program can help employees understand the benefits of working safely within the company and empower employees to work safely and help the organization achieve its goals.
- This reduces hazard behavior and increases the conduct of protection. Through raising awareness among workers about working in a security environment, the company's costs of medical expenses are growing.
- When introducing safety training program in the construction industries, the employees will

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be aware of their safety techniques that is trained by the company in order to improve employee satisfaction and retention of employee levels.

- Organization must empower its over-confident workers with their actions, which may require additional guidance to switch from negative behavior to positive behavior.
- Organization should take appropriate action and communicate to their employees about those acts that help employees realize that they are being paid attention within the organization, resulting in affection and belonging among those employees, resulting in greater involvement of employees, which in turn helps the organization to expand.
- Behavior-based security plan results in workers thinking about making things safer not only at work within the company, but also off-work and with the community. Behavior-based safety program can provide a meaningful way for workers to embrace the protection efforts of an organization and help influence the community.
- In adopting this safety program, the company will help identify previously unrecognized problems within the organization and help to overcome those security issues.
- Safety training program will provide a system of tracking and pattern change that is well linked to the accident investigation theory and procedure.

XI. CONCLUSION

Result of these clearly states that there exists a high correlation between the safety training programs on employee involvement. The study based on safety training program and employee engagement carried out in Mysore City's construction industry resulted in workers being empowered to work in a safer environment by introducing the safety training program and turning the employees ' negative behavior to positive. It also maintains the good relationship between them. Due to the reduction of unsafe practices, 90 percent of injuries and near misses are decreased. For the protection of both workers and organizations, these services are introduced.

REFERENCES

1. Rethy B Menon, Arathy k (2018) “Can knowledge management be obverse to performance management in construction industry with special reference to Mysore city”. International journal (IGCIET) volume 9, issue 11, pp.1094-1101, IJCIT.
2. Dr, U K Chakrabarty (2018) “Behavior based safety study of oil and gas industry in India”, International Journal of Engineering and Technology and science and Research, ISSN 2394-3386, Vol 5, Issue 3.
3. Rethy B Menon (2017) “RECENT TRENDS IN INDUSTRY IN ADOPTING CROWD SOURCING AND PROBLEM SOLVING FOR EMPLOYEES PRODUCTIVITY AND EFFICIENCY WITH SPECIAL REFERENCE TO IT INDUSTRY”. International journal of mechanical and production engineering in research and development(IJMPERD) ISSN(P):2249-8001, vol-7, issue 6, 171-178.
4. Suman Mohan (2017) “Behavior based safety approach in shipyard” International research Journal of Engineering and technology (IRJET), Vol 04 Issue e-ISSN:2395-0056 P-ISSN:2395-0072.
5. A Mansur and M I Nasution (2016) “Identification of behavior based safety by using traffic light analysis to reduce accidents” 10P Conference series: Material Science and Engineering 105 012033.
6. Dr. Nehal Anwar Siddiqui, B. Sekar. (2015). “A study on behavior based safety in refinery”, International Journal on Occupational Health and Safety, fire and Environment-ALLIED Science, Volume 6, Issue 1, ISSN 2349-977X (007-013)
7. N Murali (2015) “Behavior based safety approach to advance injury free culture” International Journal on mechanical engineering and Robotics (IJMER) ISSSN (print) 2321-5747, vol3 issue2
8. Raphik M Choudhry (2014) “Behavior based on construction sites: A case study” Accident analysis and Prevention 70, 14-23.
9. Harbans Lal Kaila (2014). “A case of behavior based safety (BBS) implementation at a multinational organization” journal of organization and human

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ISSN: 0193-4120 Page No. 12906 - 12913

behavior, new Delhi. Vol.3 iss.2

10. . Kaila Dr Harbonslal (2014) "A case of behavior based safety implementation at a multi national organizations", Journal of psychosocial research, vol 9 no 2
11. Mortezaoostakhan (2012) "Behavior based safety approached at a large construction site in Iran". Iranian rehabilitation Journal, volume 10.
12. Metter (2006). "A study on the effectiveness of the behavior based safety program at Jacobs Sverdrup's NASA Langley Rome contract".