Challenging the "one-size-fits-all" approach to BBS: A Perceptual Analysis of Employees in Dairy Industry

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ABSTRACT

Workplace safety is important to both employee and the employer. Safety climate plays an important role in encouraging responsible behavior of employees towards safety. Different dimensions have to be considered while designing policy towards workplace safety by the management. The perception of employees towards these dimensions helps in shaping desirable behavior among employees that enhances workplace safety.

Many research works provide action plans for developing and implementing Behaviour-Based Safety (BBS) in organizations. But can the same action plan be effective in designing and implementing BBS in organizations? In this paper, the authors have tried to understand perception of employees towards BBS and also tested if demographic factors influence the perception from Dairy industry. Six important dimensions viz; Safety Commitment, Safety Compliance, Safety Awareness / Communication, Safety Behavior, Stress Recognition and Teamwork were studied. Findings of the data analyzed (n=261) show that the "one-size-fits-all" approach to BBS can hardly serve the purpose.

KEYWORDS: Behaviour-Based Safety (BBS), Safety Commitment, Safety Compliance, Safety

Awareness / Communication, Safety Behavior, Stress Recognition and Teamwork.

Introduction:

The safety of workers and employees at workplace has always been a matter of concern for organizations all over the world. The safety performance of organizations can be effectively evaluated using tools like safety audits, by studying safety climate and carrying out analysis of hazards involved in the jobs in the organization. The perception of safety management and behavior of workforce gets greatly influenced by the safety climate that exists in the organization and this in turn has an impact on safety performance. Safety climate is a component of overall organizational climate. Organizational climate is part of human subsystem of socio- technical view of an organization. Along with organizational climate, level of motivation, commitment, communication, willingness to accept change, compensation policies are also part of human subsystem of this view.

Behavior-based safety (BBS) is the "application of science of behavior change to real world safety problems". It can be defined as a process that creates a safety partnership between management and employees that continually focuses people's attentions and actions on theirs, and others, daily safety behavior." BBS "focuses on what people do, analyzes why they do it, and then applies a research-supported intervention strategy to improve what people do".

BBS may be implemented as strategy to avoid hazards in the company. It also acts as an administrative tool to control occurrence of accidents in the organization. It involves actively caring for safe and unsafe behaviors that leads to improved safety behavior in the organization. It involves listening, praising, group problem solving and celebrating safety achievements can increase actively caring behaviors. BBS addresses both individual and social dynamics for safety. It is a peer to peer safety learning approach that is bottom-up. Every organization needs to develop a customized plan to implement BBS.

BBS emphasizes that employees must take ownership of their own safety in the organization. To make the implementation of BBS successful in the organization, it is important that all employees must be included in the program. The importance of BBS, the reasons behind implementing it, the methods of implementing it, the procedures etc. must be informed to all and practiced by all irrespective of the hierarchy in the organization. All employees, from the CEO to the front line workers including hourly, salary, union employees, contractors and sub-contractors Must be included in the BBS implementation process. To achieve desired changes in behavior, the organization will have to change its policy, procedures and/or systems, which means change is inevitable. And to implement any change, we need the support of all employees to minimize their resistance.

BBS is a data-driven process and so for it to be successful; it must be based on scientific data and knowledge and not on assumptions and feelings.

Accident reduction can be achieved by increasing the level of practice. Alteration and modification are needed to change behavior of the workers in ensuring behavioral safety success. Implementation of a behavior based safety intervention is a major exercise and it involves the application of important change principles. The key features of the BBS implementation is the commitment, focus, purpose and execution.

Literature review:

Purdue (2000), observes that BBS is an effective method in reducing accident at the workplace.

According to research conducted by Heinrich (1931), he concluded that 80% to 90% from the accidents and injuries at the workplaces are caused by unsafe acts of employees.

Workforce involvement in a Behaviour-Based Safety (BBS) programme engendered trust in co- workers and management according to DePasquale and Geller (1999).

Geller (1994) has stated that Behavioral-Based Safety is a process and approach to improve safety and health performance at the workplaces through observation and feedback to the Human (employer/employee) to change their behavior. He states that human, become the main factor contributing to BBS. Human refers to the individuals who have knowledge, experience, ability, motivation and personality. Human factor are influenced by many situation such as safety training received, workload and level of understanding. According to Geller, behavior refers to compliance, coaching, recognition, communication and action. These factors are mostly influenced by culture and practices that are used in daily life. Behaviour is simply anything someone does or says. Psychologically, behaviors are actions or reactions of per-sons or things in response to external or internal stimuli. Environment refers to equipment, machinery, housekeeping, weather and temperature changes, and engineering.

Again in 1999, Geller observed that at risk work behaviour becomes the main problem contributing to the accident at the workplaces, supporting the findings of research by Heinrich.

Toole (2002) has observed that accidents at workplace occur either due to several reasons like lack of knowledge about safe or unsafe behavior, lack of training to employees. Accidents also occur due to lack of management or simply lack of means to carry out the task safely. Toole also observes that occupational accidents can also happen due to judgmental error or carelessness and indifference.

As BBS implementation must include employees from all levels, the responsibility of the Top management to make the required arrangement for practicing BBS. The commitment of Top management towards making BBS successful in the organization becomes very important in this respect (Liu, Mei, & Shen, 2010; Depasquale, J. P., & Geller, E. S. (1999).

Several research carried out concludes that role of management is integrated with other safety issues such as perception of employees about risk, personal accountability, perceptions of the physical environment and job communication and involvement of workers (Cheyne et al., 1998; Cox and Cox, 1991; Cox and Flin, 1998; Lee, 1998; Mearns et al., 1998; Mearns et al., 2001; Williamson et al., 1997).

Ashill et. el. (2006) found that management commitment can be seen through various ways. One way is whether management provides training to employees on OSH. By investing in training, employees may be made aware of safe and unsafe behavior and this can help in implementation of BBS. Another way to know level of management commitment is to see if it gives rewards to employees showing desired behavior and those reporting unsafe behavior of others. If management is serious of implementation of BBS, can be seen if it penalizes employees not following safety guidelines or not using personal protective equipment.

Cooper (2006) states that by commitment of management, we mean the level of involvement and its active engagement in the task of achieving safety goals.

Vredenburgh G.A (2002), safety training can reduce number of accidents. The purpose of safety training is to improve staffs' operation skill, dangerous identification ability, and safety consciousness in order to make staffs attach importance to production safety, and have the ability to operate safely. It includes pre and post service training and also regular and special training that aims at training employees about new techniques of OSH. There are different definitions of safety culture. Most of them have the basic assumption that employees of an organization with a good safety culture are committed to safety. They also value safety Luria(2008). Safety culture is a product of individual values, attitudes, behavioural patterns (Cox and Flin (1998). Carroll (1998) elaborated that a good safety culture is where expectations prevail to preserve and enhance employee safety practices and where organizations place high value and prioritize employee safety. The employees too take personal responsibility for safety, and where employees are rewarded for enhancing safety.

Kletz (1993) states that occupational accidents are not new occurrences but recur when employees have experienced minor accidents in past that have not injured them or others seriously.

Kalia (2006) observes that BBS is BBS is a teamwork; it is company-wide and people driven. The purpose of BBS is to identify safe and at-risk behaviors, identify possibility for injury, communicating the risk and helping to identify safer solutions.

Turner (1991) observes that people cannot be expected to behave in a safety-conscious manner unless they have the authority to change their own actions to improve their work conditions. He enunciates that it is illogical to ask employees to be careful if they do not have the power or discretion to avoid hazards.

According to Roughton (1993), regular feedback on performance can be communicated to employees through posted charts and a review of behavioural data can be done in safety meetings.

As per research done by Rosliza Osman et. al. (2015) in which they measured the awareness among workers about BBS in manufacturing industry showed that though the level of awareness about BBS among workers is at a high level, the level of understanding and practicing it is much less.

In another research by Lingard and Rowlinson (2010) in which they studied the effectiveness of behavior-base methods of safety management in construction industry in Hong Kong. The researchers have used a proportional rating safety measurement instrument to collect data for the study. The data were analyzed and the findings were mixed, that there is a significant improvement in safety performance in housekeeping category of intervention but no improvement was observed in the access to heights and bamboo scaffolding categories.

Yule, S., Flin, R. and Murdy, A. (2007) through their research found safety climate as an important performance indicator that can provide insight into safety performance before accidents have occurred. Variables related to management aspect have emerged as a major determinant of safety climate in empirical research. To further investigate relationship between management commitment and worker risk-taking, a theoretical model was developed and tested. Perception of workforce about safety climate was collected and analysed using Structural Equation Modelling (SEM). The tested model revealed that the relationship between management commitment and supervisor involvement with risk-taking behaviours was mediated by knowledge and training.

The research further found that not engaging in risk taking behaviours was related to enhanced feelings of workers' responsibility for safety. It also showed that positive appraisals of senior management commitment lead to this positive behaviour. Hence, safety climate needs to be developed in organizations to avoid accidents.

Objectives of the study:-

1) To study and understand perception of workforce about Behavioral Based Safety in Dairy industry.
2) To bring out relationship between demographical factors and perception of employees BBS.
3) To recommend strategies and action plan to implement BBS successfully in the dairies.

Methodology

Researchers have used both, primary and secondary data to conduct the above study. In order to understand the complete picture of existing management system, physical observation by actual visit to the industries was carried out . A structured questionnaire based on six dimensions identified through the review of literature was adopted to collect primary data. The six dimensions identified were Safety Commitment, Safety Compliance, Safety Awareness / Communication, Safety Behavior, Stress Recognition and Teamwork. This validated scale was adopted from (Arunagirinathan, A (2013).. This structured questionnaire was distributed among all employees at all levels from production department in

different Dairy industries in Kolhapur. Secondary data was collected through documents, journals, periodicals and internet. Data on

different items on dependent and intervening variables was collected using Likert five point scale.

The responses were arranged in the sequence; "strongly agree=5", "Agree=4", "Neutral=3" "Disagree=2" and "Strongly disagree=1".

Selection of the sample

The study is mainly focused on employees working in the production department of the dairy cooperatives dairy cooperatives in Kolhapur. Dairies employing more than 500 employees and in operation for more than 25 years were only considered.

300 questionnaires were sent to employees and workers of Production department of these dairies out of which 268 were received back. Out of the received ones, 7 were found to be incomplete and were not included in the study.

Normality of distributions:

All parametric statistical hypothesis tests depend on the assumption that the data follows a normal distribution, it is necessary to test the normality of the data distribution (Bluman, 2009). Common problems are skewed distributions which can be either positively skewed or negatively skewed. Problems may also appear when the distribution is too flat or too peaked. The measurement method to determine whether distribution varies significantly from normality is to simply divide the skew value by the standard error of the skew to create a Z score.

For sample sizes less than 300, the skew is significant when the calculated value exceeds an absolute value of 2.58. When the sample size is bigger than 300, any value exceeding an absolute value of 3.29 has been deemed to show significant skewness. Distributions of the variables were examined for skewness through SPSS in this research (Field, 2009).

Table No. 1 Skewness and Kurtosis

Dimensions	**Skewness**			**Kurtosis**		
	Statistic	*Std. Error*	*Z Score*	*Statistic*	*Std. Error*	*Z Score*
Safety Commitment	-0.72	0.351	-2.06	0.896	0.356	2.54
Safety Compliance	0.15	0.15	0.93	-0.44	0.30	-1.46
Safety Awareness / Communication	0.09	0.15	0.60	-0.50	0.30	-1.68
Safety Behaviour	0.39	0.25	1.57	-0.14544	0.30	-0.48
Stress Recognition	0.49	0.259	1.94	0.53	0.30	1.77

Team Work	0.17	0.15	1.13	-0.37	0.30	-1.24

Source: Data compiled for this research

The Z score value for all the variables is below the absolute value of 2.58 hence variables are normally distributed. This means that the data collected is suitable for parametric statistical test.

On the basis of review of literature and personal interview critical dimensions were identified. Six individual dimensions were identified. These dimensions were identified as:-

Table No.2 Reliability

Dimensions	No. of Items	Cronbach's Alpha
Safety Commitment	6	0.780
Safety Compliance	5	0.809
Safety Awareness / Communication	8	0.810
Safety Behavior	4	0.809
Stress Recognition	6	0.798
Team-work .	7	0.701

Cranach's alpha is calculated to measure internal consistency in the data. It shows how closely a set of items as a group are related. Researchers have calculated the alpha of reliability analysis of each dimension reflects that alpha score of each items varied between o.701 to 0.81. This indicates that all items have relatively high internal consistency..

Table NO. 3 Descriptive Statistics Safety Commitment

Constructs	N	Minimum	Maximum	Mean	Std. Deviation
Our management visibly demonstrates an interest in the safety and health of their employees.	261	2	5	4.55	0.78
All the required PPEs (Personal Protective Equipment's) like safety shoes, helmets, goggles, gloves, etc. for my job are always available.	261	3	5	4.23	0.51
The health and safety training program offered by my organization meet my needs.	261	3	5	4.14	0.55
The Safety committee of my department is an active and result oriented group.	261	2	5	3.95	0.75
Senior managers seem interested in health and safety before an incident / accident happens.	261	2	5	3.98	0.67

I am satisfied with the investigation and follow-up measures after incidents and accidents have taken place.	261	3	5	4.09	0.6

Safety Commitment encourages workers to make a personal contribution to the safety of the workplace. It has been shown that developing a dedication to safety decreases accidents in the workplace substantially. Here the mean score of all the constructs are above 3.95; therefore it shows good safety commitment. It also indicates that our management is always takes interest in the safety and health of their employees, safety committee is always an active in Dairy industries

Table No.4 Descriptive Statistics Safety Compliance

	N	Minimum	Maximum	Mean	Std. Deviation
The Safety committee meetings are conducted effectively in my department.	261	1	5	3.92	0.56
All workplace incidents / accidents and near misses in my department /section are reported.	261	1	5	3.3	0.76
I am comfortable with the work environment (noise, dust, heat and vibration) in my work place.	261	3	5	3.84	0.59
I am satisfied with the facilities at our Occupational health and safety research center (OHSRC).	261	2	5	3.92	0.73
The Safety related issues raised in various audits / inspections in my work area are liquidated with all seriousness	261	3	5	4.16	0.6

Safety compliance refers to the state of being in accordance with established safety standards and regulations, or the process of becoming so. Safety compliance is regulated by safety compliance companies or organizations, as well as government legislation, and is monitored and enforced by these bodies to ensure compliance with the established standards. The calculated mean score related to each construct is more than 3.30 it shows safety compliances are very good in organization. It indicates that safety reports are prepared in time and related audits are always carried out very seriously in organization. Employees are satisfied with the facilities provides by the Occupational Health and Safety Research Center.

Table NO.5 Descriptive Statistics Safety Awareness / Communication

Constructs	N	Minimum	Maximum	Mean	Std. Deviation
The health and safety policy of my organization is clearly understood by me.	261	3	5	4.19	0.51
If I have a concern about health and safety, I know whom to contact.	261	2	5	3.63	0.62
The supervisors / front line officers of my department / section discuss accidents with employees concerned.	261	2	5	3.68	0.74
I use the safety committee team to get action on a safety complaint which concerned me.	261	2	5	4.11	0.55
All employees in my work area are provided information on type, cause and	261	3	5	4.29	0.59

recommendations of all accidents in our company.					
I have been informed about what to do in case of an emergency like fire and gas leakage etc. in my work area.	261	2	5	4.15	0.63
The visitors are permitted to enter inside our department only after giving necessary safety instructions to be followed.	261	3	5	4.17	0.54

Safety Awareness and Communication is viewed as awareness of safety policy, information about the causes and remedies of all accidents , safety training to employees and safety warning to outsiders. It is a daily realization that every employee should have at all times. The calculated average means related to all constructs is between 3.63 to 4.29. It indicates that safety awareness between the employees of Dairy industries is very good. It requires continually being aware of how they operate and being able to consider the threats they face. In minimizing safety- related risks, safety awareness / communication is absolutely important. Safety communications with their subordinates are known to be important in influencing subordinates' behavior. Exchange relations and communication between employees and supervisors have also been shown to affect specific employee behaviors such as safety performance.

Table No.6 Descriptive Statistics Safety Behavior

Constructs	N	Minimum	Maximum	Mean	Std. Deviation
In my department, Safety and health issues / hazards identified are corrected in a timely manner.	261	3	5	4.16	0.53
Safety and health is a high priority when I am performing my job responsibilities.	261	3	5	4.13	0.56
Rewards for safety behavior are a good way to increase safety awareness levels.	261	1	5	3.3	0.86
Penalties for safety violations would cause employees to work more safely.	261	2	5	3.48	0.72

Safety Behaviour refers to the use of models of applied conduct analysis to achieve continuous improvement in security performance. BBS stems from the field of organizational behavior analysis. The focus in both organizational behavior analysis and BBS is behavior. The overarching theme in behavior analysis and BBS is that behavior is maintained by what occurs after it (consequences). The calculated Mean score is between 3.30 to 4.16 it viewed as safety behavior that means safety issues are always identified and rectified in proper way in time.

Table No.7 Descriptive Statistics Stress Recognition

Constructs	N	Minimum	Maximum	Mean	Std. Deviation
I feel my department is flexible in adjusting work assignments according to employee's safety considerations.	261	2	5	3.88	0.56
I trust my Supervisors / Managers to act on safety concerns.	261	3	5	3.8	0.6
Sometimes, I work "under crisis / under pressure" when trying to do more work too quickly.	261	2	5	3.8	0.78
I am satisfied with my current work assignments.	261	1	5	3.51	0.77
Supervisors / managers are inclined to resolve our personal problems.	261	2	5	3.76	0.63
The job expectations or targets are practicable at my workplace.	261	1	5	3.43	0.7

Stress can present itself through a wide range of physical, behavioural and/or psychological symptoms. Common symptoms include: Physical , Behavioural and Psychological. Here Stress recognition is defined as flexibility of department in recognizing and adjusting as per safety considerations, overall satisfaction of employees related to their present work assignment. The Calculated mean score of all constructs between 3.43 to 3.88. It indicates that stress recognition is above average, but as compared to other variables stress recognition shows lower.

Descriptive Statistics Team work

Constructs	N	Minimum	Maximum	Mean	Std. Deviation
My immediate superior shows interest in the safety and health of the employees in my department /work area.	261	2	5	3.94	0.72
My superior often observes my work practices for the purpose of protecting my safety and health.	261	1	5	3.86	0.68
If I saw another employee committing an unsafe practice, I would say something directly to him or her.	261	3	5	4.16	0.75
I have opportunities to provide input into the health and safety program in my organization.	261	3	5	3.95	0.63
I report every workplace injury or illness to my supervisor that I sustain, regardless of its severity.	261	1	5	3.77	0.9
In my department / section, we discuss ways to prevent errors / mistakes from happening again.	261	3	5	4.29	0.58
Staff / workers will freely speak up if they see something that may negatively affect health and safety at work.	261	3	5	3.93	0.6

Effective teams are focused on the same **safety** mission—identifying hazards, working safely, and preventing accidents. Goals. Effective teams understand **safety** goals and commit to achieving them. Everybody on the team works together toward the same goals to achieve success and prevent injuries. The calculated mean score is between 3.77 to 4.29. It shows team engagement related to safety concept is effective. Involvement of all employees from top to bottom is appreciable. The Dairy industries are always brings open and transparent communication among the employees, motivate employees to provide inputs related to Health and Safety Programs , proper and timely report of injuries and appreciable preventive measures to bring safety in industries

Hypothesis of the study: Past study shows some relationship between demographic factors and behavior based safety. To find out the relationship between demographic factors and behavior-based safety, researcher has formulated some hypothesis.

1) "Educational qualification has significant impact with all dimensions of behavior-based safety."
2) "There is no relationship between gender of the respondents and behavior based safety"

Analysis:-

Independent t test and one- way Anova was used to test the hypothesis formulated for the study.

Hypothesis No.1:- "Educational qualification has significant impact on all dimensions of behavior based safety"

One-way Anova test is used to test the significance of difference between sample means, where two or more groups are compared. 261 employees having different educational qualifications across different dairy industries in Kolhapur area are considered. Post-Hoc test is used to determine which of the means differ.

The qualifications of employees also studied. The largest group of respondents were either SSC (10^{th} grade) or HSC (12^{th} Grade). Only 14 respondents have studied below 10^{th} Grade or SSC. The average calculated score of employees on the basis of educational qualification reflects that SSC/Intermediate holders has the largest safety commitment and safety compliance and degree holders has the highest safety awareness/communication, safety behavior, stress recognition and team work.

Levene's test shows that test values are significant (ie with $P<0.05$) indicates that variance patterns across the groups are significantly different to all six dimension related to behavioural based safety.

F statistic shows a significance level of .000 for safety commitment, safety compliance, safety awareness/ safety communication and safety behavior therefore we considered Welch's F statistic rather than F statistic.

Here, Welch's F statistic of 8.755, 15.445, 13.927, 77.597, 44.504 and 20.675 respectively related to safety commitment, safety compliance, safety awareness/communication, safety behaviour, stress recognition and team work with three degrees of freedom at significance value of .000. Here we can conclude that significant effect of educational qualification on all six cases.

To identify the significance difference related to qualification-wise gone through post-hoc test. Here we have considered Games-Howell test because of Levene's test reflects that variances are not equal, so ignored Tukey test. Here the differences between below ssc and SSC/intermediate related to safety commitment is – .17135 (mean difference between these two variables 4.0238- 4.1952).

Difference in safety commitment items of Below SSC and Degree holders is significant (-.15801) P.002< p<.01)

Difference in safety compliance items of SSC/Intermediate holders and post graduate is significant (.30488) (.000<(p<.01)

Difference in safety compliance among degree and post graduate holders is significant (.29838), (.000<(p<.01).

Related to safety awareness / communication , the difference between below ssc and ssc / intermediate is significant (-.22009) .002< P<.01., between below ssc and degree holders is significant (-.31960) .000<p<.001), between ssc/intermediate and post graduate is also significant .30342 .001<p<.01), and difference between degree holders and post graduation members the value .40294 is significant (.000<p<.01).

Difference in safety behavior items of below ssc and ssc/intermediate is -.31349 is significant (.000<p<.01), below ssc and degree is also significant (-.76867) (.000<p<.01), difference between below ssc and post graduation is also significant (-.67857) .000<p<.01), difference between ssc/intermediate and degree is significant (-.45518) (.000<p<.01), difference between ssc/intermediate and post graduation is significant (-.36508) , (.000<p<.01).

Related to stress recognition, the differences of below ssc with ssc/intermediate (.10663) .040<p.05), with degree (-.34037) .000<p<.01), with post graduation (-.28175) (.000<p<.01) all are significant. Differences in safety behavior of ssc/intermediate and degree and post graduation are significant the values are (-.44700 (.000<.01), -.38838 (.000<p<.o1).

The difference between below ssc holder and degree holders related to team work is -.25723 (.000<p<.01), between ssc/intermediate and degree holders is significant (-.20081), .000<(p<.01) and difference between degree holders and post graduation holder is also significant i.e .22136 (.002, P<..01).

It indicates that there are differences observed towards behavior based safety among the employees related to all dimensions as per qualifications.

Hypothesis No.2:- "There is no relationship between gender of the respondents and behavior based safety"

Independent-means t-test: This test is used when there are two experimental conditions and different participants were assigned to each condition (this is sometimes called the independent- measures or independent-samples t-test).

Levene's has low F value (.107) related to safety compliance, Levene's has low F value (.080) related to safety behavior and Levene's has low F value (.037) related to team work are not significant (P>.05) it means the pattern of difference among different gender are similar, i.e the pattern of variance is not significantly different. Levene's has high F value (15.545) related to safety commitment (15.545), safety awareness (22.299) and stress recognition (17.594) are significant (.00<P<.05). Levene's test is used to verify the equal variance assumed and equal variance not assumed to see whether variance are different on the basis of gender group. The t(259)=6.060, P<.05 related to safety compliance, t(259)=4.516, P<.05 related to safety behavior, t(61.788)=4.126,P<.05 related to safety commitment, t(60.934)=2.863,P<.05 related to safety awareness and communication, t(129.352)=2.203, P<.05 related to stress recognition. Hence it can be conclude that safety commitment, safety compliance, safety awareness/communication, safety behaviour and stress recognition are significant, it indicates that gender wise differences are observed towards behavior based safety among the employees.

Recommendations:

1. **BBS is based on "DO IT" model.** It means, develop, observe, implement and test. To do this, it is recommended to constitute a steering committee, consisting of employees and workers from all levels in the organizations to plan and monitor effective implementation of BBS.
2. **Commitment of Top management** is also very important in making BBS successful. Strong and committed leadership will infuse a sense of responsibility in minds of workforce about BBS
3. **Checklists** must be developed to list out all important observable behavior related to BBS to facilitate easy monitoring, training and rewarding. The checklist should be used only for observing not for criticizing. It is better to carry out observation by a team rather than an individual to eliminate rater's errors. It is recommended to have one veteran/senior and one junior employee in the team to observe BBS behavior.
4. The BBS plan must be properly **communicated** to all. **Display boards** can be used to make employees aware about the precautions they need to take to be safe at workplace. Both graphical and textual content can be used to communicate BBS practices and their importance. Use of appropriate language must be made. Migratory labour needs to be considered while drafting the textual content of the boards.
5. **Training on BBS** must be a regular part of the training calendar prepared by the management. This time table must be communicated to all stakeholders in advance and attending it should be made mandatory. Training should cover different aspects like importance of BBS, myths surrounding it, problems in its implementation, managerial interventions, psychological factors involved etc. Demonstration method proves to be very effective in this, especially while training about use of PPE.
6. **Proper documentation** related to BBS must be maintained by the organization. It is recommended

to carry out a pre and post study of the safety behavior of the workforce to understand if the BBS policy is actually working for the organization of needs modification of any kind.

Conclusion:

The present paper studies the perception of employees and workers towards BBS and tests if demographic factors really influence the perception of workforce. It was found that there exists difference in way BBS is perceived by different employees based on their education. It was also observed that there were perceptual differences males and female about BBS. The data analysis showed that designation of employee made no difference in which the employee perceives BBS.

This paper thus challenges the "one-size-fits-all" approach towards BBS. Future directions of research on BBS could be developing models that would address the differences among employees with different qualifications and gender working in the organizations.

References:

1. Abdullah, D., & Wern, G. C. M. (2011). An analysis of accidents statistics in Malaysian construction sector. In 2010 International Conference on E-Business, Management and Economics. IPEDR(Vol. 3, pp. 1–4)
2. Arunagirinathan, A, A study on behavior based safety management: with reference to Visakhapatnam Steel Plant, Visakhapatnam, http://hdl.handle.net/10603/8661
3. Ashill, N.J., Carruthers, J. and Krisjanous, J (2006). The effect of management commitment to service quality on frontline employees' affective and performance outcome: an empirical investigation of the New Zealand public healthcare sector. International Journal of Nonprofit and Voluntary Sector Marketing. 11: 271-287.
4. Ashari, H, Mahmod, N.A.K (2013), "Legal Knowledge of Legislated Employment Rights : An Empirical Study." International Journal of Social, Management, Economics and Business Engineering, 7,1460-1466.
5. Cameron, I., & Duff, R. (2007). A critical review of safety initiatives using goal setting and feedback. Construction Management and Economics, 25(5), 495–508.
6. Clancy J.(2016),"Behaviour-Based Safety: A Case Study Illustrating A Successful Approach", Qest Consulting Group. Citeseer.
7. Cooper, M. D. (2009). Behavioral safety interventions: A review of process design factors. Professional Safety, 54(2), 36.
8. Cooper, D. (2006). Exploratory Analyses of the Effects of Managerial Support and Feedback Consequences. Journal of Organizational Behaviour Management. 26: 41-82.
9. Depasquale, J. P., & Geller, E. S. (1999). Critical Success Factors for Behaviour-Based Safety : A Study of Twenty Industry-wide Applications. Journal of Safety Research, 30(4), 237–249.

10. Cooper, D. (2010). The return on investment of the B-BS process. Giornale Italiano Di Medicina Del Lavoro Ed Ergonomia, 32. DOSH Statistic 2013, Department Of Safety and Health, Putrajaya
11. Geller, E. S. (1994). Ten principles for achieving a total safety culture. Professional Safety, 39(9), 18.
12. Geller, E. S. (2005). Behaviour-Based Safety and. Behaviour Modification, 29(3), 539– 561. doi:10.1177/0145445504273287.
13. Gilkey, D.P., Keefe, T.J., Hautaluoma, J.E., Bigelow, P.L., Herron, R.E. and Stanley, S.A.(2003). Management commitment to safety and health in residential construction: HomeSafe spending trends 1991–1999. Work. 20: 35-44. Guideline of HIRARC 2008, Department Of Safety and Health, Putrajaya
14. Gil Luria, Anat Rafaeli, Testing safety commitment in organizations through interpretations of safety artifacts, Journal of Safety Research, Volume 39, Issue 5, 2008, Pages 519-528, ISSN 0022-4375
15. Heinrich, H. (1931). Industrial accident prevention. New York : McGraw-Hill.
16. Kaila H L. Behaviour based safety in organizations. Indian J Occup Environ Med 2006;10:102-6.
17. Kathirgamanathan. T & Wong . T.K (2005) Behaviour Based Safety - Implementation, Learnings and Results of Loss Prevention System in ExxonMobil Malaysia SPE Asia Pacific Health, Safety and Environment Conference and Exhibition, 19-21 September, Kuala Lumpur, Malaysia doi:10.2118/96499-MSKlein,
18. K.J., &Sorra, J. S. (1996).The challenge of implementation.Academy of Management Review, 21, 1055-1080.
19. Kletz, T. A. (1993). Organizations have no memory when it comes to safety: a thoughtful look at why plants don't learn from the past. Hydrocarbon Processing, 6, 88– 95. ISSN: 2201-6333 (Print) ISSN: 2201-6740 (Online) www.ijern.com
20. Purdue, S.R (2000). Beyond Observation and Feedback: Integrating Behavioural Safety Principles Into Other Safety Management System. Proceedings of the 2000 American Society of Professional Engineers (ASSE) Conference and Exposition.
21. Roughton, J. (1993). Integrating quality into safety and health management. Industrial Engineering, 7, 35– 40. SOCSO 2012, Annual SOCSO Report 2012
22. Rosliza Osman1 , Noorhasimah Awang1 , Syed Abdul Hamid Syed Hassan2 , Norsyahidah Mohammad Yusof, "Level of Awareness on Behaviour-based Safety (BBS) in manufacturing industry towards reducing workplace incidents. International Journal of Education and Research, Vol 3, January 2015.
23. Sulzer-azaroff, B. B., & Austin, J. (2000). Does BBS Work ? Professional Safety, 19–24.
24. TALABI, B.O., GIBB, A.G.F. and EDUM-FOTWE, F.T., 2015. Behaviour-based safety (BBS): a construction industry's perspective. IN: Behm, M. and McAleenan, C. (eds). Proceedings of the CIB W099 Benefitting Workers and Society through Inherently Safe(r)

Construction, 9th-11th September 2015, Belfast, pp. 181 - 190.

25. Toole, T.M.,(2002). Construction site safety roles. Journal of Construction Engineering and Management,128,203-210
26. Turner, B. A. (1991). The development of a safety culture. Chemistry and Industry, 4, 241–243.
27. Vredenburgh G. A (2002), "Organizational safety: Which management practices are most effective in reducing employee injury rate?", Journal of Safety Research,33, 259-276.
28. Yule, S., Flin, R. and Murdy, A. (2007) 'The role of management and safety climate in preventing risk-taking at work', Int. J. Risk Assessment and Management, Vol. 7, No. 2, pp.137–151.