

Behavioral study of diverse workforce towards various Health, safety & environment engagement strategies in upstream oil & gas industries

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ABSTRACT

The paper will provide a comprehensive outcome on the behavioral study on engagement strategies of diverse workforce in upstream oil & gas industries for enhancement of Health, Safety & Environment (HSE) performance. The petroleum industry is an essential element of the economy of any Country in the Gulf Region and it is vital importance for the health & welfare of its population. By considering the hazardous nature of oil & gas projects / plants, various legislations / standards have promulgated for health, safety & environmental protection. Upstream oil & gas companies require huge number of workforce due to its nature of operations. Upstream oil & gas companies in the Gulf region engages multi-cultural diverse workforce from different parts of the World. The workforce are highly diverse in nature and comes with different background, different languages, different skill set. Oil & Gas companies in the Gulf region have established the HSE Management Systems and procedures based on the international standards & regulations with a focus on the health & safety of workers and environment protection. It is altogether, a big challenge for upstream Oil & Gas Companies in the Gulf region to achieve HSE (Health Safety & Environment) targets under diverse workforce. Behavior Based Safety (BBS) is a process used for enhancing the HSE performance in industries. A study was conducted on factors that are influencing the diverse workforce and how Behavior Based Safety programs will be effective under diverse workforce in enhancing HSE performance in upstream Oil & Gas industry.

Keywords : *Upstream Oil & Gas Industries, Health safety & environment performance, Behavior Based Safety, diverse workforce*

1 INTRODUCTION

Behavior experimental analysis by B.F Skinner laid the ground for the Behavioral Science work in the 1940-50 and the Applied Behavior Analysis (ABA) later on. ABA was implemented on trial basis at a Bakery Shop by academics from Georgia Institute of Technology. They had initial success in the Bakery Shop although the implementation period was short. The same academics (Komaki, Judi, Waddell, William Et Al, 1977) were able to improve the performance of two small businesses by also using the ABA approach. One year later, Komaki, the Lead Team member, was able to improve safety performance of two departments by the same approach. They had 4-5 observations done weekly on workers. Observations data were noted on a checklist and observer's feedback was given to the worker during observation. Data from checklist were analyzed to pinpoint the targeted behavior for future enforcement. The Team was able to improve safety behavior by 21-26% within 26 weeks. Health Safety and Environment (HSE) performance of these departments went back to the baseline after stopping the study (Komaki, Judi, Barwick, Kenneth D, Scott, Lawrence R 1978). In the late 1970's Dr Krause and Dr Hidley suggested the Applied Behavior Analysis (ABA) approach for an off-shore drilling equipment manu-

facturing company. At the same time in Procter and Gamble, the term " Behavior- based Safety " was used to describe the work done by Gene Earnest and Jim Palmer (Krause T R 2001). Scientists started using similar approaches to reinforce safe behaviors in different companies. In 1983, E.Scott Gellar published a research to increase seatbelt usage (Gellar, E Scott, Davi, Liza, Spicer, Kevin, 1983). This Research was the starting point of Behavior-based safety (BBS) as we know it now. However, the early model of BBS was heavily dependent on the Supervisor role. The Supervisor trained on BBS analysis and feedback communication. Further changes took place on the BBS model in the 1980's during the popularization of Total Quality Management System (TQMS). In the early 1990's more researches and experiments made BBS a star in the safety arena (Krause T R 2001). One of the main reasons to focus on behavior is that worker's at-risk behavior is the main contributing factor to HSE incidents in most cases. We need to focus on the at-risk behavior, analyze these behaviors to find solution to change them. Behavior based safety process is seen sometime as the blame process since it involves direct interaction (Krause T R, 1995). BBS process depends on site observation including individual feedback. However, BBS application

under diverse workforce in upstream oil & gas industries was studied further for enhancement of HSE performance of upstream Oil & Gas Organizations with various HSE engagement strategies.

2 BEHAVIOR EMERGENCE THEORIES

There are two major theories that explain behavior emergence. First is the Value- attitude-behavior as illustrated in Figure 1.0 (Vaske, Jerry J Donnelly, Maureen P, 1999).

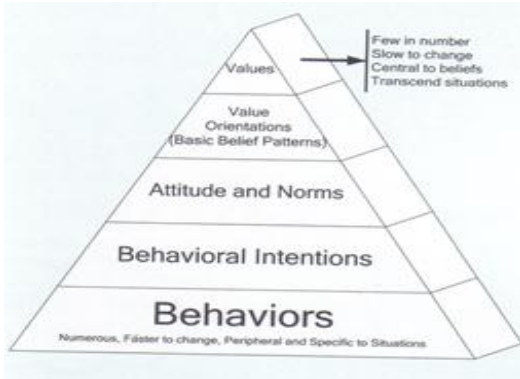


Figure 1.0 : Value-Attitude - Behavior Relationship Triangle(Vaske, Jerry J, Donnelly, Maureen P, 1999)

This theory relates to human behavior to a mechanistic response to one’s attitude. The theory suggests that individual sees his surrounding environment as a hierarchy of values, attitudes and behaviors. Behaviors are numerous and specific to the situation they are exerted for. Behaviors are easier to change when compared to values and attitudes. Values are at the heart of the believe system and difficult to change. Attitude is a hypothetical structure that represents an individual’s like or dis-like (Vaske, Jerry, J, Donnelly, Maureen P, 1999). The influence of values on attitudes and behavior occurs indirectly via other components in the cognitive hierarchy. For example, basic beliefs serve to strengthen and give meaning to fundamental values. Patterns of these basic beliefs create value orientations

The second theory is the Theory of Planned Behavior (TPB), which acknowledge the influence of values on final behavior to similar to the above theory. However TPB count for the surrounding environment on the individuals behavior since social pressure could help or contradict the individual’s behavior (Vaske, Jerry J, Donnelly, Maureen P, 1999).

2.1 THE ACTIVATOR – BEHAVIOR- CONSEQUENCE (ABC) MODEL

The ABC Model is a simple and forward model that depends on three steps. First step is the activator “A”, which is mostly the surrounding environment. The activator will trigger certain behavior “B” to yield a consequence “C” (Scott Geller E,

1994). Following Figure 2.0 explains the ABC Model

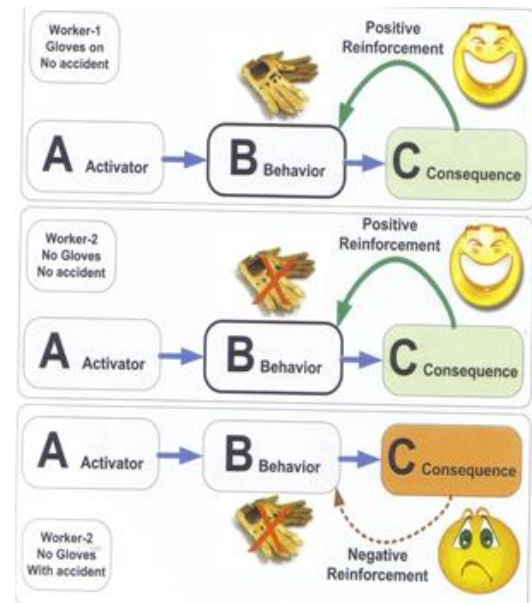


Figure 2.0: Activator- Behavior- Consequence Model (Sami Hussain Mallallah, 2005)

The ABC Model is useful for understanding why some workers keep on performing risky habits.

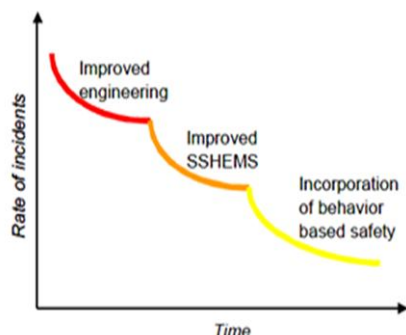
2.2 APPLIED BEHAVIOR ANALYSIS (ABA)

Applied Behavior Analysis concentrates on socially significant areas that can have a long term behavioral change. The behavior change is related to workers behavior itself, not only changing what workers are saying or stopping their complaints. Behavior change should be measured during the change attempt. First, a base line behavior is observed and measured then an intervention is introduced. The change should be noticed and measured after the intervention. Lastly, final measurement is taken after the intervention is stopped the change in the behavior (Baer,D, Wolf M, Risley T, 1968).

Applied Behavior Analysis should be detailed in a way to make it easy to understand and apply without further explanations and clarifications. The systematic approach of ABA makes it easy to replicate and produce effective results that reach the targeted behaviors and related behaviors. Most of the ABA work is public, where the results are observed and recorded. During the execution, the analyst can observe his interventions’ result and guess the reason for their deviations. Adjustments can be made directly on the intervention, without further guessing. Then further observations and analyses can de done again (Heward W et al, 2004).

Proven records of major companies also show that further improvement in HSE performance can be achieved by taking better and more explicit account of Behavioral Based Safety. As per the study conducted By E. Scott Geller, 1994 on the re-

duction of incidents with application of BBS programs, complimenting with improved engineering programs & implementation of HSE Management systems, indicates that the rate of incidents will further come down (Refer, Graph 1.0).



Graph 1.0 : Time Vs Rate of Incidents

3 BBS APPLICATION IN UPSTREAM OIL & GAS INDUSTRIES

Adopting state of art HSE practices in upstream Oil & Gas Industry is essential to improve the HSE performance and to provide a safe work environment. The safety of the workplace is influenced by a number of factors such as the organizational environment, management attitude and commitment, the nature of the job or task and the personnel attributes of individual. Safety related behavior at the workplace can be modified by addressing these major influences on workforce in enhancing HSE performance in upstream Oil & Gas industry.

Health Safety & Environmental (HSE) issues within the Oil and gas industry remains under a high level of scrutiny in the Gulf Region particularly in the State of Kuwait following several high profile accidents. As a result, Oil & Gas companies have ensured that the rigorous measures are implemented and reassessed accordingly. Despite all the efforts, accidents are taking place leading to valuable human loss, property damage and environmental pollution. From Analysis of Safety performance reports published by International Association of Oil & Gas Producers (OGP) UK, it was discovered that the root cause of most accidents resulted from or at least related to the personal behavior.

Management of personal behavior is then, an essential role in the control of risk. Behavioral Based Safety (BBS) is recognized as an established methodology used to attain performance excellence in the field of HSE performance improvement. It does not replace all of the good – and necessary-work of traditional systems & procedures; rather, it complements and enhances these approaches. BBS programs focus on preventing injuries HSE awareness and preventing unsafe behaviors that lead to incidents in the first place. By dramatically reducing unsafe behaviors, the consequential injuries also reduced. Suc-

cess of BBS programs depends on its adaptation by employees & their culture. At many times, safe work environments are not primarily a technical problem but it is a cultural problem.

3.1 BBS APPLICATION IN UPSTREAM OIL & GAS INDUSTRIES UNDER DIVERSE WORKFORCE

Diversity is generally defined as acknowledging, understanding, accepting, valuing, and celebrating differences among people with respect to age, class, ethnicity, gender, physical and mental ability, race, sexual orientation, spiritual practice, and public assistance status (Esty, et al., 1995). The world's increasing globalization requires more interaction among people from diverse cultures, beliefs, and backgrounds than ever before. People no longer live and work in an insular marketplace; they are now part of a worldwide economy with competition coming from nearly every continent. For this reason, organizations need diversity to become more creative and open to change. Maximizing and capitalizing on workplace diversity has become an important issue for management today. Supervisors and managers are the targeted audience because they need to recognize the ways in which the workplace is changing, evolving, and diversifying. Since managing diversity remains a significant organizational challenge, managers must learn the managerial skills needed in a multicultural work environment. Supervisors and managers must be prepared to teach themselves and others within their organizations to value multicultural differences in both associates and customers so that everyone is treated with dignity (Kelly A Green et al, 2005)

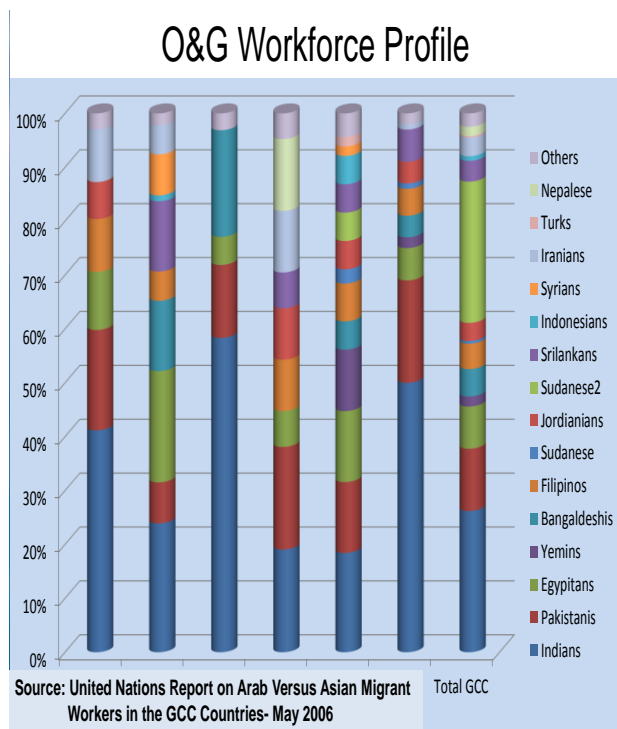
There are challenges to managing a diverse workforce. Managing diversity is more than simply acknowledging differences in workforce. It involves recognizing the value of differences, combating discrimination, and promoting inclusiveness. Managers may also be challenged with losses in personnel and work productivity due to prejudice and discrimination and complaints and legal actions against the organization (Devoe, 1999).

Negative attitudes and behaviors can be barriers to organizational diversity because they can harm working relationships and damage morale and work productivity including health safety and environmental issues (Esty, et al., 1995).

Workforce in the upstream Oil & Gas industry in the Gulf region including State of Kuwait comes from diverse cultures, different skill set & background etc. Engagement of diverse workforce in enhancing HSE performance in upstream Oil & Gas industry is a recurring problem for the operating companies. Unlike downstream industries, there is a tremendous turnaround of workforce is a common phenomena in upstream oil & gas industries. Also workforce from many nationalities with different skill sets, diverse backgrounds are recruited in upstream industries due to high demand of manual labor.

As per the United Nations (UN) Report on migrant workers in GCC Region particularly in Kuwait, workforce from more

than 65 Countries of the world are working in Oil & Gas industries (See Graph 2 below).



Graph 2.0 O&G Expat workforce profile in GCC

Majority of workforce comes from Asian & African countries particularly from India and other South-Asian countries. Many of these workers are prone to personnel injuries due to high risk operations in Oil & Gas industries. Each Company in the State of Kuwait is finding its own methods & techniques to change the behavior of their diverse workforce in engaging to improve the HSE performance. A study was conducted on the Behavior of this diverse workforce towards various HSE engagement strategies in order to improve the HSE performance in upstream Oil & Gas industry.

4 STUDY METHODOLOGY

Exploratory Research method focuses on unstructured and not well-understood problems and aims to uncover and better comprehend the nature of the phenomenon of interest and develop knowledge in that area, (Gahuri et al., Sekaran 2003). This method has been used in studying the behavior of diverse workforce towards various engagement strategies.

According to (Sami Hussain Mallallah, 2005), every Company adopts variety of methods in implementing the HSE Management by engaging the diverse workforce. There is a direct relationship between the level of employee engagement and

HSE performance of the Company. Companies try to find the best ways & means to engage employees in its operations to improve the HSE performance. There are proven strategies for engaging workers in order to improve the HSE Performance but it always changes / varies to suit each Organization. The below diagram shows how engagement initiatives / strategies can interlink with Safety Programs & other additional incentive programs to enhance HSE awareness and helps in enhanced Safety culture (E Scott Gellar, 1994).



Figure 3 : Enhanced Safety Culture model

The study was aimed on the factors which are influencing the behavior of diverse workforce thus impacting on the HSE performance of the upstream Oil & Gas industries and also to understand how the BBS programs are effective under diverse workforce in enhancing the HSE performance in the upstream Oil & Gas industries.

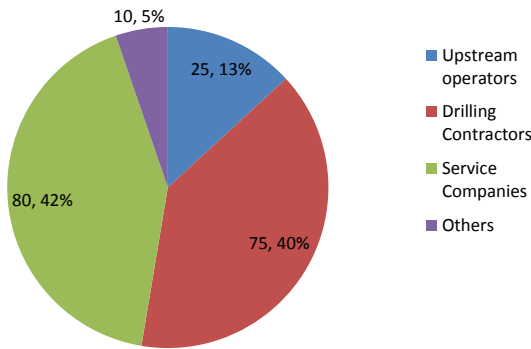
In order to study the behavior diverse workforce towards various HSE engagement strategies, following approaches were adopted:

- A perception survey was carried out among workforce from five upstream oil & gas companies who have come from different countries with multi-cultural background. The survey focused on their % of nationalities among workforce, educational, cultural, language spoken, BBS programs in place and their impact on HSE performance such as leading & lagging indicators etc.
- Interviews were conducted with BBS Consultants, BBS Auditors, HSE professionals etc, who have implemented BBS process in upstream Oil & Gas companies under diverse workforce in the Gulf Region including State of Kuwait.
- A survey with specific questions relevant to the study was posted in the Linked-in site of internet and inputs were also collected from other resources.
- A comprehensive literature survey was conducted on BBS implementation in upstream oil & gas industries and their impact on improving HSE performance.

- Analysis of data using statistical tools such as Factor analysis and other techniques were used. HSE performance leading and lagging indicators were be thoroughly studied in identification of suitable Behavior based safety processes / techniques for diverse workforce.

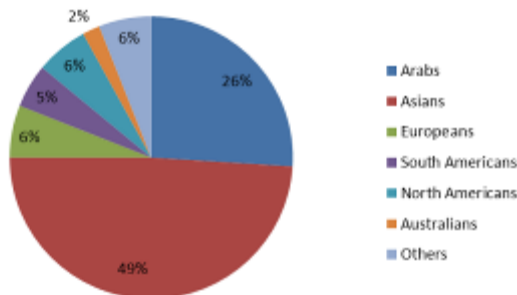
5.0 ANALYSIS OF DATA & FINDINGS

The survey was conducted among the diverse workforce belonging to upstream oil & gas companies viz. Operating companies, Drilling contractors, Service providers and other associated with upstream oil & gas operations. Following graph 3.0 indicates the respondents profile and their numbers as well as % from different sigments.



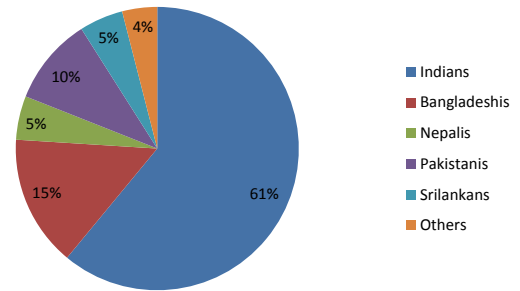
Graph.3.0: Respondents profile

As par of the data collection, the respondents' nationality background was collected. It is understood from United Nations report that more than 65 nationalities are working in the Gulf Region including in the State of Kuwait. A special focus has been put in the data collection with respect to nationalitiies to indicate the diversity component of the sampling frame. Following Graph 4.0 represents the information about the regional profile.



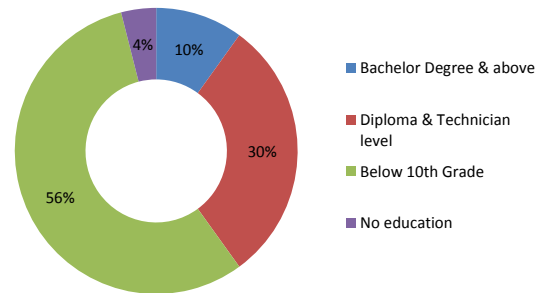
Further breakdown of Asian expat workforce was done to

have a better understanding on the diverse nature of Asian population. Graph 5.0 shows the Asian expat workforce as per country wise among the respondents.



Graph.5.0: Asian expat respondents' nationality profile

Education background of workforce plays a major role in understanding work processes including the requirement of health safety and environment procedures / regulations. The required data to assess the educational background of the diverse workforce was collected. Graph 6.0 shows the information about the educational background of respondents.

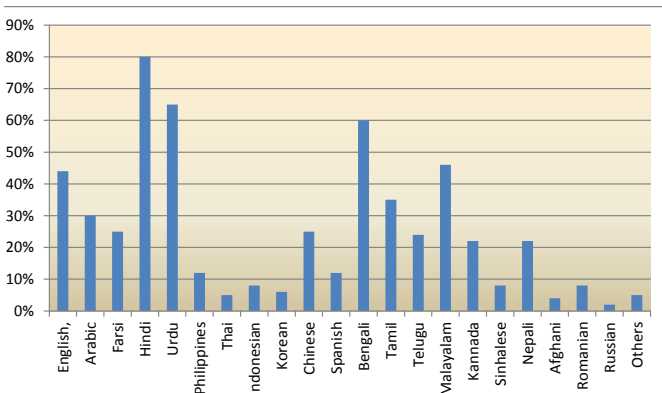


Graph.6.0: Educational background of respondents

As it can be seen from the data of respondents about 56 % of workforce is having less than 10th grade qualificaion, who really requires special focus and initiatives to drive health safety and environment programs among these people. These are either at risk or capable of putting others at risk by their behaviors. Health, safety & environment management will focus on correct utilization of resources based on skills and competency. Programs will involve education, assessment, verification, and observation. A fundamental component of the HSE program / initiative is making people aware of what risks exist, getting them to self-identify and mitigate the risks. A key challenge in the area of people is being able to understand and manage the relationships between individuals, groups, and supervision. In upstream oil & gas industries, there are often multiple cultures en-

gaged in work activities and issues with diversity differences are often neglected in implementing HSE management programs. Operating with an internationally diverse workforce means individuals with various languages, cultures and belief systems have to work side by side under challenging conditions. Worker competency is a key concern in implementing any systems including HSE management systems.

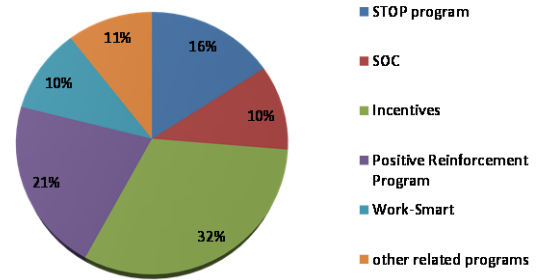
Further, data has been collected on the different languages spoken by diverse workforce in the upstream oil & gas industries.



Graph 7.0 Languages spoken by respondents

It is observed that more than 25 languages are predominantly spoken by respondents. Only 40 % of respondents speaks English language and others are speaks their national languages. Many of Indian workers speaks two or three languages with basic English communication skills. Communication and Inanguages spoken by employees plays huge role in implementation of Behavior Based Safety (BBS) program. The BBS process involves repeatedly going to an employee and making random observations until he reaches safe behaviors and learns the concept of self-observation and observing others for safe performance. Critical behaviors can be listed in a checklist based on previous accident and injury records and also by brainstorming. Different observers will notice different safe and unsafe behaviors, which is why employees need to observe one another. Feedback is an interaction based on genuine concern. Feedback is to be given one on one, immediately. Again the understanding capabilities of workers make a huge difference in success of the BBS program.

Information on availability of Health Safety & Environment Management system also collected from the respondent companies. All respondent companies have already BBS programs or its related programs are in place. The respondent companies are currently using BBS programs such as STOP, Safety Observations and Conversations (SOC), Positive reinforcement, Work Smart program, financial incentives etc. Graph 8.0 provides the information on different types of BBS related programs being practiced in their companies.



Graph.8.0: Type of BBS programs available in respondent companies

Each respondent organization has introduced and customized BBS program. STOP™ (Safety Training Observation Program) is introduced by Dupont and the objective of the program is to stop injuries by improving safety observation skills and helping employees to talk with others about safety. It teaches employees to recognize safe and unsafe conditions as well as safe and unsafe acts.

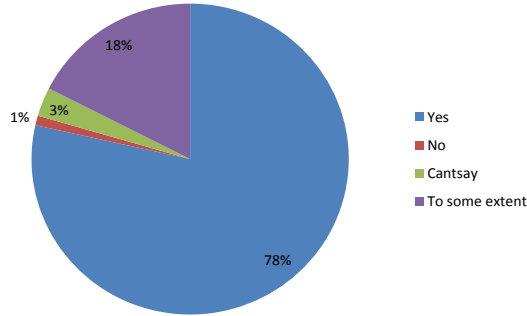
Incentive approach is designed based on the targets achieved by the Organization with good HSE performance of the Company.

Positive reinforcement is a technique to provide the feedback to the employee first on reinforcing their positive safe behaviors and later on deliver negative reinforcement to point out the employee’s at risk unsafe behaviors. Recognition will only work with a total safety process. It’s always good to congratulate and appreciate any good safety behaviour on the spot. In the long run this immediate response it has proved much more effective in producing g a behavioural change rather than handing over rewards for being safe. In a survey which was conducted among employees in America, the top 2 satisfiers turned out to be Achievement and Recognition where as top 2 dissatisfies were Unfair pay and Unfair boss and money was rated very low. About 68% of the employees said they would really like to hear the word ‘thank you ‘ from their boss or a pat on the back which raised the satisfaction level along with a sense of belongingness or appreciation. Its not that people did not like money, but personal recognition gave them much more satisfaction with the potential to arouse positive behaviour which is natural and long lasting. Using a neuron study he explained that appreciation from the boss or a pat on back produced almost he same positive reinforcement that money could produce (Bill Sims, Jr 2007).

Work Smart Program is also based on the motivational concept; it motivates all employees to choose the right behavior at all times and in all aspects of their work. The goal of this program is to encourage safe behaviors and correct at-risk behaviors in the workplace

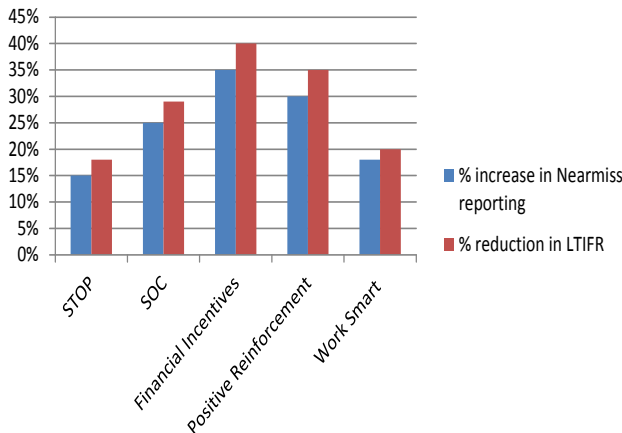
An open ended question was asked among the participants

that any improvement is seen in their companies after implementation of the BBS program. Following Graph 9.0 shows that the about 78% of respondents indicated that the performance is improved and 18% said it improved to some extent.



Graph.9.0: HSE performance Improvement upon implementation of BBS program

Also a question was raised among respondents to check their views on enhancement of HSE performance in their respective companies% reduction before and after implementation of BBS program. The lagging performance indicator LTIFR (Lost Time Injury Frequency Rate) is taken as a common parameter for measuring the performance. A lost-time injury is defined as an occurrence that resulted in a fatality, permanent disability or time lost from work of one day/shift or more. Also one of the leading performance indicator "Nearmiss Reporting" is measured in terms % of increased reporting. A Near Miss is an unplanned event that did not result in injury, illness, or damage - but had the potential to do so. Taking immediate corrective actions after Nearmiss incident is reported will further prevent the similar occurrences and avoid incidents. Graph 10.0 indicates the % of HSE improvement with respect to leading indicator Nearmiss reporting and also lagging indicator LTIFR.



Graph.10.0: HSE performance Improvement in terms of leading and lagging indicators Vs BBS programs

6.0 IDEAL BBS STRATEGY FOR DIVERSE WORKFORCE IN UPSTREAM OIL & GAS INDUSTRIES

It has been proven that BBS programs implementation is helping organization to improve HSE performance. Also observed that to reduce accidents, the managements have taken safety interventions such as risk assessment, training, suggestion scheme, training, safety committee, auditing, plant inspection, work permit system etc. Most of these HSE management systems have aimed at controlling unsafe conditions, whereas 80-95% of accidents are triggered by unsafe acts or behaviors.

Workers behave unsafe because it saves their time and effort (taking short cuts or not using PPE). Punishment may lead to positive or negative effects. Attitude change does not help much, as it does not really convert into behavior. Behavior Based Safety (BBS) is typically an observation program focused on watching and recording worker behaviors in the field usually with the intent of providing feedback to ensure compliance. Effectiveness of a BBS program will usually suffer if not properly implemented as people generally do not like being observed or critiqued. A key pit-fall of BBS implementation is in failing to take into consideration cultural biases when dealing with a diverse international workforce

The general approach to traditional HSE management system can be described by using an interface model which shows the interaction of three primary components People, Management systems and work environment.

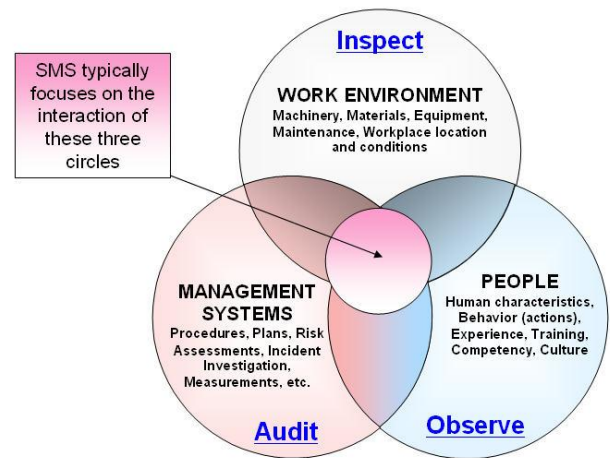


Figure 4.0 : Traditional HSE Management Model

- a. People – Workers are either at risk or capable of putting other workers at risk by their behaviors. A fundamental component of the HSE safety program is making people aware of what risks exist, getting them to self-identify and mitigate the risks. A key challenge in the area of people is being able to understand and manage the relationships between individuals, groups & diverse workforce, and supervision. In international arenas, there are often multiple cultures engaged in work activities and issues with diversity differences are to be considered in the HSE Management systems.
- b. Work Environment - the location where workers are exposed to risk. Considerations need to be made for the geographic location of the workplace, the types of environmental conditions that exist, the various hazards that are present such as moving equipment or high pressure systems, heavy loads, working at height etc in upstream oil & gas industries..
- c. Management Systems – are formalized work practices that outline roles and responsibilities, require accountability to ensure programs are implemented effectively and where continuous improvement is taking place.

There is a fundamental assumption that it is able to identify what needs to be established to prevent, mitigate, and control both the work location and the people. However, a challenge with relying on this approach too much is that a single act of acceptance of non-compliance with the rules and policies can put the whole program in jeopardy.

HSE Management Systems (SMS) programs may be well developed in isolation before a work location or contractor has been selected. The persons engaged in developing safety management systems often create programs without truly understanding the real dynamics of what is actually going on in the workplace. It is always expected that that workers will follow rules and that programs designed to control environmental exposure issues are going to be followed. Organizational resourcing may be established based on these assumptions.

The workforce may be getting exposed to a new work environment or task that it has not seen or worked with before. Risks and hazards identified and mitigation processes developed in the HSE Management System may well be alien to the contractor workforce. The workforce may not see any real value of what is being proposed in the HSE MS. It's possible for a program to be totally disconnected between what the management systems are trying to achieve and what the contractor and workers really want or think they need to do.

Behavior Based Safety (BBS) is typically considered to be an observation program focused on watching and recording worker behaviors in the field usually with the intent of

providing feedback to ensure compliance. Effectiveness of a BBS program will usually suffer if not properly implemented as workers generally do not like being observed or critiqued. A key pitfall of BBS implementation is in failing to take into consideration cultural biases when dealing with a diverse international workforce.

6.1 LINE OF SIGHT APPROACH:

In order to ensure HSE management system is effective under diverse workforce, a holistic look at the dynamics of the workplace, workers etc to be considered. A HSE management system model to be developed that focuses not just on hazard identification and compliance, but also on the mechanisms that create the workplace “climate”. By creating the right climate first, the traditional HSE management system will have better chance of being effective and are able to generate more sustainable results over the long term. We need to consider the end-point first and then work backwards to what we believe will generate the most desirable outcome. Figure 5.0 provides an outline of Line of Sight approach for HSE management under diverse workforce.

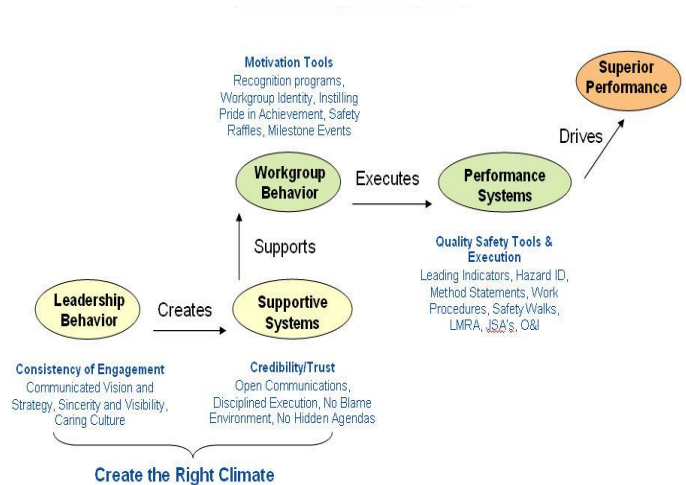


Figure 5.0: Outline of Line of Sight approach

It is seen from the Figure 5.0 from left to right; organizations have to ensure that what has to exist before one can reach the end point, which ultimately leads to an organization that generates superior HSE performance. To achieve this, Organization need to have effective programs and processes that are executed by workers that are both motivated and competent. To get motivated and competent workers, executing processes effectively requires the leadership of the organization to be truly committed in providing the required support and commitment, which enables

the organization to succeed. An organization that wants to achieve this requires taking a different approach to creating and implementing a safety management program. Focus must be placed on creating the 'right' climate for HSE management to flourish.

In upstream Oil & Gas Industries in the Gulf region and in specific to State of Kuwait, companies are faced with an enormous challenge of business targets with a very large mix of experienced and inexperienced diverse workforce. To undertake or overcome this challenge, companies need to establish a climate that is conducive to sustaining a high performing workforce under difficult and dynamic conditions. It is believed that the climate is the mechanism that allows for superior performance to exist. Establishing the correct climate requires that companies have to focus on the leadership skills of the organization with a no-blame climate, where we focus on leading indicators, address workforce motivation, and employ a disciplined systematic approach to HSE management. HSE should be a core value of any company and should sustain in making it personal to the management as well as to the workforce (Figure 6)



Figure 6.0 : Organizational Climate based HSE Management Model

Organizational Climate based HSE Management (Safety) management will focus on correct utilization of people resources based on their culture, language they speak, skills and competency. Programs will involve education assessment, verification, competency and behavior observation. Organizations typically will assess these conditions and put in place effective controls to mitigate exposures to create ideal work environment. Management systems will be developed to measure the HSE performance, by creating Champions for every area to ensure the focus is given to Operational and HSE aspects of the every process.

The interaction of the people, work environment and management systems is essential for HSE management system to be effective under diverse workforce.

In addition, companies have to establish a set of principles by which it will operate with respect to HSE management. These principles laid the foundation on expectations within the companies and then with contractors workforce. These principles should steer the focus of HSE Management away from lagging metrics and focus on learning and improving.

6.2 POSITIVE REINFORCEMENT (P+) BEHAVIOR MODEL FOR DIVERSE WORKFORCE IN UPSTREAM OIL & GAS INDUSTRIES

Holistic approach is considered to ensure the engagement of diverse workforce in upstream oil & gas industries for HSE management. The Positive Reinforcement (P+), to focuses on two discrete aspects of organizational behavior; Leadership and Workgroups. The ladder model (Figure 7) highlights the key fundamental principles of what can be achieved and clearly shows that at the bottom of both sides of the ladder, management system processes are the driver. Each management system affects a different dimension of the workforce with complementary but differing aligned outcomes.

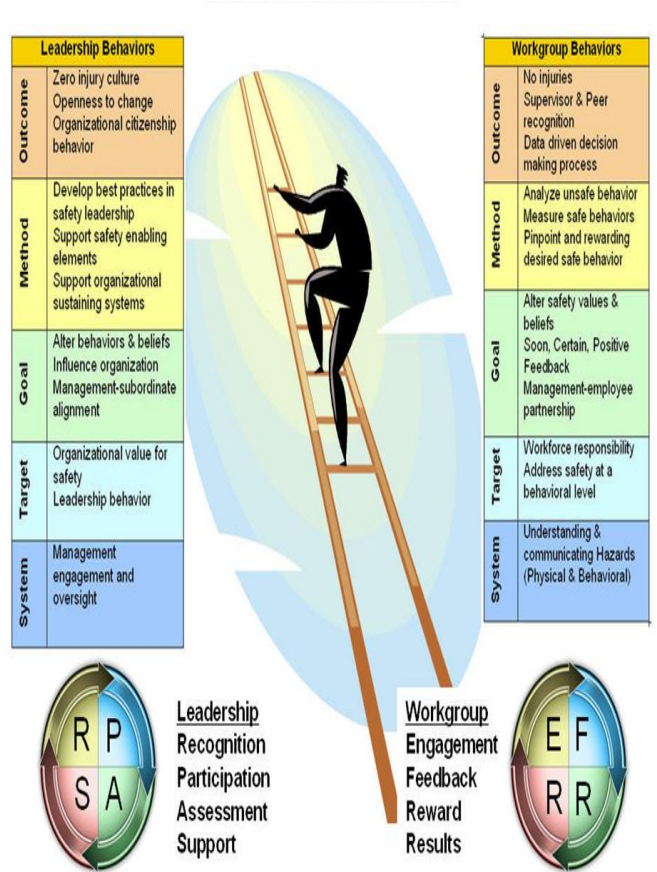


Figure 7.0 Positive Reinforcement (P+) Behavior Model concept for diverse workforce in upstream Oil & Gas industries

A primary step is to focus on understanding both the climate within the organization as well as individual leadership skills and competencies that helps create the climate. On the right hand side of the ladder, workgroup behaviors will be tackled by implementing a management system that is specific to the diverse workforce. The management system employed focuses on getting the workforce engaged through positive reinforcement, providing feedback in a timely manner, rewarding desired behaviors, and providing proof of results. The key aspect of this management system is an enhanced BBS program that is run by the workforce and gets modified as risks and hazards change over time including the changing profile of workforce (diversity). The feedback process from the BBS program is designed to provide information to workgroups on those behaviors that management want to see continue and also provides an opportunity for the teams to work on areas where deficiencies are noted. The target audience for the feedback is the workgroups themselves with the intent of modifying behavior and utilizing subtle peer pressure. It is not sufficient just to report back to the workgroups that there are good and bad behaviors. Management has to be committed to providing positive feedback on a continuing basis and they have to develop a credible relationship with the diverse workforce to affect change. The methods in this step to include understanding why unsafe acts or conditions exist, recognizing positive behaviors that create safe acts and conditions, in addition to pinpointing those behaviors that we want to continue. The outcome from this collective effort by management and the workforce using a data driven program, provides for worker and supervisor recognition, which ultimately creates an organization that is striving to achieve an injury free environment.

On the left hand side of the ladder, leadership management system will be in place that seeks to drive recognition, gain full participation from leadership, ensure program assessment is ongoing, and develops an organization that provides full support to the safety management efforts. Validation that this management system is generating the correct results is done by measuring self perception against actual perception, in order to understand what leadership changes need to be made to influence the organizations behavior as it relates to safety. This effort is necessary to create the support mechanisms that lead to more effective execution of HSE management programs. Without credible leadership, organizational HSE performance is solely dependent on the front line workers wanting to execute processes which are outside the immediate task at hand.

As the diverse workforce comes from different countries leaving their families back home, the positive reinforcement (holistic approach) behavior model for diverse workforce also shall focus beyond worksite management ie in their camps, travel times etc. It creates a caring culture that supports the organization to assess the quality of life & wellbeing of its workforce and become engaged in activities outside of the workplace. The positive side of wellbeing is obviously in dealing with health care as it relates to illness

and injury. We took health care a step further and included additional disciplined systematic programs on health management such as worker health screening and health education. In consideration to weather conditions in the Gulf region, work schedules of the workforce needs to be adjusted during hot periods.

On the leadership side of the positive reinforcement BBS model, leadership shall concentrate on maintaining recognition, visible participation, assessing how well programs were performing, and supporting initiatives. On the workgroup side, worker engagement for HSE Management programs, feedback on a routine basis; rewarding positive behavior and provide evidence of improvement results. These two focused management systems will contribute to the enormous success of HSE engagement strategies among diverse workforce.

7.0 CONCLUSION

Most organizations have a tendency to try and manage HSE aspects through the establishment of rules and the use of various safety tools such as job safety analysis (JSAs) or wearing of PPE etc. Organizations have been trying for quite a long time to achieve this with limited success. BBS approach in upstream oil & gas industries has shown positive results in terms of reducing unsafe behaviors, promoting safe behaviors, and creating a safety culture and thereby enhancing HSE performance. BBS approach needs a visible presence and a clear management adoption and open communication down the line for its launch with full breath, failing which it is difficult to succeed. BBS exposure for employees has been an enriching and refreshing experience. At-risk behavior of diverse workforce needs to be changed and safe behavior to be reinforced requires repeated external stimuli, which are provided through a positive reinforcement and feedback process. Positive reinforcement (P+) based BBS approach is an ideal approach for achieving better HSE performance improvement under diverse workforce in upstream oil & gas industries. This model integrates and ensures engagement of leadership as well as diverse workforce in holistic implementation of BBS programs in upstream Oil & Gas industries.

8.0 LIMITATION

The study is carried out in the upstream Oil & Gas industries in State of Kuwait under certain conditions, the findings of research need to be reviewed prior to its applications in similar environments.

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