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The Status of Occupational Safety and Health and effectiveness of Contractor Management Programs at Kenya Breweries Limited

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Abstract

Kenya Breweries Limited (KBL) is involved in the manufacture and sale of alcoholic and non-alcoholic beverages. A significant amount of work in this company is outsourced to contractors. The study sought to develop an in-depth understanding of the current occupational safety and health (OSH) management programs at KBL by examining the perspectives of staff and contractors who are certified to access the workplace. The study employed a descriptive cross sectional study design. Departments were selected purposively and divided into 4 clusters namely; Engineering & Services, Manufacturing, Sales-Marketing & Logistics and HR & Security. Data collection tools were questionnaires, observation and retrieval from records. All data forms underwent scrutiny for logical inconsistencies; skip patterns and missing values. The percentages and their 95% confidence intervals were presented.

A total of 302 (100%) workers participated in this study, of which 18% were fulltime KBL employees and 82% were contractors. In this study 70.5% had college education and above although there was no significant association between educational level and awareness of OSH. Most (93.4%) workers were aware of all hazards in their respective workplaces; 95.0% of workers confirmed that OSH policies were adequate. Majority (93.6%) confirmed that safety information was visible to all staff. The most prevalent cause of injury at KBL was established to be broken glass (cullet), accounting for 66.5% of all respondents who had sustained occupational injuries. Introduction of contactor safety passport training and appointment of safety officers were identified as the most effective programs in improving OSH performance, particularly of contractors. Records from the company point to a significant improvement of performance seen from accident statistics lens with over 81% reduction in accidents between 2010 and 2014.

Further research is recommended in similar firms, so as to help in setting feasible OSH benchmarks for manufacturing industries.

Keywords: occupational safety and health, hazards, risks, awareness, contractor management programs

1. Introduction

East African Breweries Limited is a Kenya-based holding company with subsidiaries specializing in malt production, manufacture, marketing and sale of branded alcoholic and non-alcoholic beverages. KBL is the principal subsidiary and is the main focus of the current study. A significant amount of the work in this company is outsourced from contractors. Training of employees on matters related to occupational safety and health is a requirement by the Directorate of Occupational Safety and Health services in Kenya. Permanent employees are trained by the company while contractors are required to be trained by their employer/contractor although they are more often than not on temporary engagement.

Like in any other employment sector, workers in breweries especially contractors run an equal if not higher risk of being injured as a result of the type of work they do. The main risks they are exposed include; manual handling - especially of kegs and crates of beer; slips and trips - 90% of slips are on wet surfaces (ILO, 2007); people being struck by moving objects, including falls of articles (sometimes from vehicles); falls - especially from vehicles, stairs, ladders and work platforms; and collision with vehicular traffic - especially fork-lift trucks. Other hazards include dust, chemical, biological agents and unfavorable working conditions like high temperatures (WHO, 2010). Work plays a central role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is on a factory, plantation or office. Work environments should therefore be safe and healthy. Yet this is not the case for many workers especially contractors. This study investigated the role of contractor engagement and training programs that are currently in place at KBL to safeguard the safety and health of all workers.

2. Materials and Methods

2.1 Study design

A descriptive cross sectional study design was employed in this study because the study was a fact finding mission and this type of research design is the most recommended (Wiegmann *et al*., 2007).

2.2 Study site

The study was done at Kenya Breweries Limited (KBL) situated at Ruaraka in Nairobi County, 12 km northeast of the city center along Thika superhighway. KBL is an industrial and a business organization dealing with manufacture and sale of alcoholic and non-alcoholic beverages. Data was collected between May and July 2015.

2.3 Study Population

The study populations comprised both permanent and contractor employees working at the brewery. Currently, there are about 40 contractor companies with approximately 1,000 staff in charge of different work categories including Engineering & Services, Manufacturing, Sales-Marketing and Logistics, Human resource (HR) and Security. There are about 400 permanent employees making a total of 1,400 workers. The contractor workforce form about 71.4% of the company's total employees. This workforce is equally exposed to various occupational safety and health issues as the permanent employees.

2.4 Sample size determination

Estimation of sample size was based on Krejcie and Morgan (1970) formula as illustrated below:-

$$s = X^2 NP(1-P) \div d^2 (N-1) + X^2 P(1-P)$$

$$= 3.841^2\ 1{,}400 \text{ x } 0.5\ (1\text{-}0.5)/0.05^2\ (1{,}400\text{-}1) + 3.841^2 0.5(1\text{-}0.5) = 302$$

2.5 Sampling method

Purposive sampling was used to choose the four departments/sections at Kenyan Breweries Limited. Stratified sampling method was used to divide the different departments into clusters. In each cluster, simple random sampling method was used to select the individual study participants. The clusters were manufacturing, engineering, sales and human resources. In each cluster, participants were assigned numbers and those assigned odd numbers were selected to participate in the study.

2.6 Data collection tools

2.6.1 Primary data

Primary data was collected using semi-structured questionnaires. These provided qualitative and quantitative data from respondents based on a five point Likert scale to extract individual perceptions on OSH matters. An interview guide, observation checklist and site photographs formed important components of primary data. A total of 302 questionnaires were distributed.

2.6.2 Secondary data

Secondary data was obtained from health records, incident & accident occurrence books at the safety office, general registers, various statutory audits and other relevant safety and health reports at KBL.

2.7 Study procedure

Consent was first obtained from KBL management after explanation of the objective of the study. Questionnaires were then distributed to individual respondents where each respondent had to sign a consent, the first page of the questionnaire before proceeding to answer the rest of the questions.

2.8 Data analysis

Different types of qualitative data was gathered, transcribed, coded, and analyzed systematically. Various statistical data analysis methods were employed. These include calculating standard deviations and mean scores of responses from questionnaires to determine the occupational safety and health practices among the workers. Correlation coefficient was used to analyse the occupational safety and health data in different departments. Statistical Package for Social Scientists version 20 was used for analysis at 95% confidence interval.

3. Results and Discussion

3.1 Response rate

A total of 302 employees participated in this study. The response was 100% meaning that the respondents were willing to participate in the study. Mugenda and Mugenda (1999) in their observation stated that a response rate of 50% is adequate for analysis and reporting while 100% response rate is excellent. Among the participants, 116 (38.4%) were drawn from the Manufacturing department, 94 (31.1%) were from Sales, Marketing and Logistics department, 56 (18.5%) were from Human Resource and Security department while the remaining 36 (11.9%) were from Engineering and Services department.

3.2 Demographic Information of the participants

249 (82.5%) of the respondents were contractors while 53 (17.5%) were permanent employees.

In this study majority 229 (75.8%) of the workers were male while females were 73 (24.2%). (Table 1). Work in manufacturing industry attracts more males than females because most of the work is manual and requires musculinity. A similar study by Kimeto (2015) on safety provision among tea factory workers reported that male workers in the factories were high (75.0%) compared to their female counterparts (25.0%). Hard work with high occupational risk is mostly done by men according to ILO (2007) and WHO (2010).

Among the participants, 126 (41.7%) had up to college level of education, 87 (28.8%) had up to university level of education, 83 (27.5%) had up to secondary level of education while the remaining 6 (2%) had up to primary level of education as their highest level of education attained (Table 1). In Kenya primary school and secondary school education is considered basic education. In this study 70.5% had college education and above. This group is considered literate while those with secondary education and below are considered illiterate or semi-literate.

A similar study by Khairuzzaman *et al.,* (2014) found that the level of education achieved by his participants was comparatively low hence does not concur with the results of this study. Education and experience is considered a human resource asset in any given organization. Training on OSH is mostly conducted in English hence most workers were able to benefit from these training due to their literacy level. Karwowski and Marras (1998) acknowledge that education of workers in the construction industry is key in informing and training the construction crew of the necessary equipments, in addition this helps in selecting competent workforce.

Table 1. Demographic information of the participants

Terms of employment	Frequency (n)	Percent (%)	Valid Percent (%)	Cumulative Percent (%)
Engagement				
On Contract	249	82.5	82.5	82.5
Permanently Employed	53	17.5	17.5	100.0
Total	302	100.0	100.0	
Gender				
Male	229	75.8	75.8	75.8
Female	73	24.2	24.2	100.0
Total	302	100.0	100.0	
Education level				
College	126	41.7	41.7	41.7
University	87	28.8	28.8	70.5
Secondary	83	27.5	27.5	98.0
Primary	6	2.0	2.0	100.0
Total	302	100.0	100.0	

3.3 Associations between departments and nature of engagement

85 (73.3%) workers from the Manufacturing Department were employed on contract basis while 31 (26.7%) were employed on permanent terms. Manufacturing department forms the bulk of employees since the core business of the brewery is to manufacture beverages. From the Sales, Marketing and Logistic Department were 80 (86%) who were employed on contract while 13 (14%) were employed on permanent terms. Sales marketing and logistics is the second largest department in the brewery. Those from Human Resources and Security Department were 52 (92.9%) who were employed on contract while 4 (7.1%) were employed on permanent terms.

In all the departments, contractors outnumber the permanent employees. There was significant association (p=0.01) between terms of engagement and the department one comes from (Table 2). Wilding and Juriado (2004) in their study found that there was significant association between outsourcing of workers and the departments, hence concurs with this study.

Table 2. Association between participants departments and nature of engagement

Department	Relationship between Department and the nature of engagement			
	Contractor (n) (%)	Permanent (n) (%)	Total (n) (%)	p-value
Manufacturing	85 (73.3)	31 (26.7)	116 (100.0)	0.01
Sales, Marketing and Logistics	80 (86.0)	14 (14.0)	94 (100.0)	
Human Resource and Security	52 (92.9)	4 (7.1)	56 (100.0)	
Engineering and Services	31 (86.1)	5 (13.9)	36 (100.0)	
Total	248 (82.4)	54 (17.6)	302 (100.0)	

3.4 Awareness of OSH activities by employees

In this study, one (0.4%) participant strongly disagreed that KBL as a company had adequate OSH policies, 2 (0.9%) disagreed, 6 (2.7%) were uncertain, 101 (44.7%) agreed while 226 (51.3%) strongly agreed (Table 3). Majority (95.0%) confirmed that the company had adequate OSH policies in place. According to the Directorate

of Occupational Safety and Health Services all workplaces are required to comply with the Occupational Safety and Health Act (OSHA, 2007) and other standard practices as per the government rules and regulations. Control of major accident hazards requires a specific focus on process-safety management over and above conventional safety management.

According to the response of the participants, 1 (0.3%) worker strongly disagreed that the employees understood the company's OSH policies, 9 (3%) disagreed, 37 (12.3%) were uncertain about the issue, 160 (53.2%) agreed while 94 (31.2%) strongly agreed with statement (Table 3). Again majority (84.4%) confirmed that they understood the companies OSH policies in this study. Those who disagreed were either ignorant or they were genuine that they did not understand the OSH policies. According to a study by Garcia *et al.,* (2004), Workers' perceptions and experience in relation to occupational health and safety are scarcely considered in programs for the prevention of work related injuries and diseases. But in the current study workers perceptions and experience in relation to occupational health was adequate.

Concerning KBL safety information, 1 (0.3%) worker strongly disagreed that at KBL safety information was visible to all staff, 6 (2.0%) disagreed, 12 (4.0%) were uncertain, 116 (38.5%) agreed while 166 (55.1%) strongly agreed that at KBL safety information was visible to all staff (Table 3). Majority (93.6%) confirmed that safety information was visible to all staff at the KBL. The rest either disagreed or were uncertain. According to the observation checklist, safety information was displayed in the notice boards, main entrances and strategically placed within production areas for all the employees to read and familiarize themselves.

On hazard awareness, 41 (1.3%) workers in the study disagreed that they were aware of all hazards in their respective workplaces, 16 (5.3%) were uncertain, 132 (43.7%) agreed while 150 (49.7%) strongly agreed that workers were aware of hazards in the work place (Table 3). Most (93.4%) workers were aware of all hazards in their respective workplaces. The rest were either ignorant or they were not genuinely aware. Cohen *et al.,* (2013) in their studies found out that interventions over workers' behavior intended to risk prevention are usually based on specific training programs. These programs are generally devoted to increasing workers' knowledge of job hazards and promoting safer work behavior within the work place.

Regarding the workers involvement in risk assessment, 13 (4.3%) participants strongly disagreed that they were always involved in risk assessment in their work areas, 38 (12.6%) disagreed, 28 (9.3%) were uncertain, 123 (40.9%) agreed while 99 (32.9%) strongly agreed that they were always involved in risk assessment in their work areas (Table 3). Most (73.8%) workers in this study were involved in risk assessment. It is very important to involve workers in risk assessment in a workplace because in doing so workers will understand the elements of risks in their activities as well as the recommended mitigations.

In this study 11 (3.7%) workers strongly disagreed that adequate personal protective equipment was provided to all employees, 16 (5.4%) disagreed, 24 (8.1%) were uncertain, 123 (41.3%) agreed while 124 (41.6%) strongly agreed that adequate personal protective equipment was provided to all employees (Table 3). Most workers (82.9%) confirmed that there was adequate personal protective equipment that was provided to them by the company. The OSHA (2007) stipulates that it is the responsibility of the employer to provide a safe working environment to the workers including the provision of proper and working PPE's. A similar study conducted in Vishakapatnam Steel plant of India showed that 27.5% of the workers were provided with PPE (Ziauddin, 2006). Another study among dyes printing workers found that 34% of the workers were using PPE (Paramasivam *et al.,* 2010). The results of these other studies do not concur with the current study on PPE provision since PPE provision and utilization was over 82.9% while these other studies were below 50%.

Similarly, 4 (1.3%) workers strongly disagreed that safety and health induction trainings were mandatory for all staff, 2 (0.7%) disagreed, 8 (2.7%) were uncertain, 85(28.3%) agreed while 201 (67.0%) strongly agreed that safety and health induction trainings were mandatory for all staff (Table 3). Most (95.3%) workers confirmed that safety and health induction trainings were mandatory for all staff. In this study, 10 (3.3%) workers strongly disagreed that all staffs received refresher occupational safety and health trainings, 24 (8.0%) disagreed, 49

(16.3%) were uncertain, 126 (42.0%) agreed while 91 (30.3%) strongly agreed (Table 3). Majority (72.3%) confirmed that all staffs received refresher occupational safety and health trainings. Refresher training is very important in a manufacturing industry like KBL which engages in various hazardous and risky activities.

Table 3. Organizational OSH characteristics and policies at KBL

Awareness and preventive measures			**Response**		**df**	**X^2**	**Sig.**
A (n) (%)	**B (n) (%)**	**C (n) (%)**	**D (n) (%)**	**E (n) (%)**			
KBL as a company has adequate OSH policies					4	0.137	0.235
1 (0.3)	3 (1.0)	7 (2.7)	144 (48.3)	143 (48.0)			
Employees understand the company's OSH policies					4	0.059	0.903
1 (0.3)	9 (3.0)	37 (12.3)	160 (53.2)	94 (31.2)			
At KBL safety information is visible to all staff					4	0.118	0.376
1 (0.3)	6 (2.0)	12 (4.0)	116 (38.5)	166 (55.1)			
I am aware of all hazards in my workplace					3	0.088	0.501
0 (0.0)	4 (1.3)	16 (5.3)	132 (43.7)	150 (49.7)			
I am always involved in risk assessment in my work area					4	0.125	0.315
13 (4.3)	38 (12.6)	28 (9.3)	123 (40.9)	99 (32.9)			
Safety operating procedures are available to all workers					4	0.087	0.686
2 (0.7)	10 (3.3)	27 (9.0)	132 (43.9)	130 (43.2)			
Adequate personal protective equipment is provided to all employees					4	0.097	0.589
11 (3.7)	16 (5.4)	24 (8.1)	123 (41.3)	124 (41.6)			
Safety and health induction training is mandatory for all staff					4	0.097	0.589
4 (1.3)	2 (0.7)	8 (2.7)	85 (28.3)	201 (67.0)			

Key: A-Strongly Disagree, B-Disagree, C-Uncertain, D-Agree, E-Strongly Agree

3.5 Participants' awareness on safety in the workplace

The study found that, 4 (1.3%) workers strongly disagreed that they were strongly encouraged to report unsafe conditions and behavior, 5 (1.7%) disagreed, 6 (2.0%) were uncertain, 106 (35.1%) agreed while 181 (59.9%) strongly agreed (Table 4). Employees are very happy when they are allowed to report any unsafe conditions in their work place. In any organization communication is very important and it should be two- way traffic. According to a study that was done by Angelica and Vecchio (2007) communication allows people, tasks, processes and systems to interact purposively and cooperatively to achieve health and safety objectives. The way we communicate about safety issues as well as reporting any unsafe condition in a work place will influence whether or not people will understand and participate in a safety process.

Regarding safety performance goal settings and reviews, 15 (5.0%) workers strongly disagreed that they were involved in safety performance goal settings and reviews, 53 (17.8%) disagreed, 32 (10.7%) were uncertain, 123 (41.3%) agreed while 75 (25.2%) strongly agreed (Table 4). More than half of the participants confirmed that they were involved in safety performance goal settings and reviews. It is easy to minimize risks and accidents when all employees are involved from the very beginning during safety performance goal settings and also reviews of the same.

The results of this study showed that 13 (4.3%) workers disagreed that they underwent medical examinations before employment, 4 (1.3%) were uncertain, 104 (34.6%) agreed while 180 (59.8%) strongly agreed (Table 4). Majority (94.4%) of the workers confirmed that they underwent medical examinations before employment. Pre-employment medical examination is very important because it helps identify the workers fitness to work. In case of occupational disease, workers medical records will be used for mitigations that is to rule out if the disease was

acquired during work or before employment. Again, 1 (0.3%) workers strongly disagreed that regular medical tests were done to ascertain employee fitness to work, 21(7.0%) disagreed and were uncertain, respectively, 132 (44.0%) agreed while 125 (41.7%) strongly agreed. About 80.0% of the workers confirmed that regular medical examinations were conducted in the brewery. Again these examinations on occupational safety point of view help in identifying acquired occupational diseases or illnesses and can be crucial where early interventions are required. The result concurs with the work of Kimeto (2015) on pre-employment and post-employment medical examinations of factory workers.

The response showed that, 3 (1.0%) participants strongly disagreed that they knew all the potential emergencies at their work areas, 13 (4.3%) disagreed, 27 (9.0%) were uncertain, 146 (48.5%) agreed while 112 (37.2%) strongly agreed (Table 4). Most (85.7%) participants in this study confirmed that they knew all the potential emergencies at their working areas. Workers at any work place must be conversant with all the potential emergencies and evacuation strategies. There were signs and symbols showing potential emergencies in the KBL during the time of the study. Regarding emergency drills, 12 (4.1%) workers strongly disagreed that they were involved in regular emergency drills to test preparedness, 44 (14.9%) disagreed, 40 (13.5%) were uncertain, 133 (44.9%) agreed while 67 (22.6%) strongly agreed (Table 4). Less than 40.0% of the workers confirmed that they were not involved in regular emergency drills to test preparedness while the rest were involved in such regular emergency drills to test preparedness. Emergency preparedness is crucial in any manufacturing firm especially brewing industrial since it involves a lot of risky activities.

In this study, 10 (3.4%) participants strongly disagreed that there were adequate first aid kits and medical services, 23 (7.7%) disagreed and were uncertain, respectively, 145 (48.7%) agreed while 97 (32.6%) strongly agreed (Table 4). First aids kits and medical devices go hand in hand with trained first aiders and medical services/personnel. In this study majority (81.3%) confirmed that adequate first aid kits and medical services were available in their work place.

In this study, 1 (0.3%) participant strongly disagreed that all non-routine, high risk tasks were controlled by permit to work, 6 (2.0%) disagreed, 15 (5.0%) were uncertain, 116 (38.9%) agreed while 160 (53.7%) strongly agreed. Most (92.6%) workers affirmed that all non-routine, high risk tasks were controlled work permit. The response shows that KBL is compliant to OSHA (2007) on safety especially the need to have a permit for working in high risk tasks. Workers are normally certified medically that they are fit to work in such areas and all necessary hazard mitigations are in place before they are issued with work permits. In this study there was no significant association ($p<0.05$) between their awareness on any particular safety issue and their response on the same (Table 4).

Table 4. Participant's awareness on safety in the workplace

Awareness and preventive measures	Response					df	χ^2	p
	A (n) (%)	B (n) (%)	C (n) (%)	D (n) (%)	E (n) (%)			
I am strongly encouraged to report unsafe conditions and behavior	4 (1.3)	5 (1.7)	6 (2.0)	106 (35.1)	181 (59.9)	4	0.086	0.689
I am involved in safety performance goal setting and review	15 (5.0)	53 (17.8)	32 (10.7)	123 (41.3)	75 (25.2)	4	0.127	0.31
I underwent medical examinations before employment	0 (0.0)	13 (4.3)	4 (1.3)	104 (34.6)	180 (59.8)	3	0.074	0.65
Regular medical tests are done to ascertain employee fitness to work	1 (0.3)	21 (7.0)	21 (7.0)	132 (44.0)	125 (41.7)	4	0.132	0.262
I often attend pre-shift safety tool box talks	16 (5.4)	55 (18.6)	44 (14.9)	117 (39.5)	64 (21.6)	4	0.214	0.009
I know all the potential emergencies at my work area	3 (1.0)	13 (4.3)	27 (9.0)	146 (48.5)	112 (37.2)	4	0.133	0.259
I am involved in regular emergency drills to test preparedness	12 (4.1)	44 (14.9)	40 (13.5)	133 (44.9)	67 (22.6)	4	0.104	0.523
There are adequate first aid kits and medical services	10 (3.4)	23 (7.7)	23 (7.7)	145 (48.7)	97 (32.6)	4	0.104	0.519
Employees are aware of safety measures in case of fire	1 (0.3)	17 (5.7)	23 (7.7)	133 (44.5)	125 (41.8)	4	0.114	0.424
All non-routine, high risk tasks are controlled by permit to work	1 (0.3)	6 (2.0)	15 (5.0)	116 (38.9)	160 (53.7)	4	0.124	0.337
All plant and equipment is generally well maintained	1 (0.3)	8 (2.7)	19 (6.4)	165 (55.2)	106 (35.5)	4	0.192	0.026
	1 (0.3)	8 (2.7)	19 (6.4)	165 (55.2)	106 (35.5)	299 (100.0)		

Key: A-Strongly Disagree, B-Disagree, C-Uncertain, D-Agree, E-Strongly Agree, p-level of significance

3.6 Effectiveness of contractor engagement programs on OSH

The study showed that 15 (5%) participants thought that introduction of contractor safety passport training was least effective in improving OSH performance at KBL, 5 (1.7%) stated that the training was slightly effective, 26 (8.6%) stated that it was somewhat effective, 71 (23.6%) stated that it was moderately effective while 184 (61.1%) stated that the training was most effective (Table 5). About 84.7% of all the workers stated that introduction of contractor safety passport training was effective in improving OSH performance at KBL. For OSH training to be effective, the trained individuals should be able to apply the knowledge at their respective work stations. Indicators of effective training are such as reduced accidents/incidents, increased workers morale and so on. As long as there are no serious accidents, occupational health and safety policies and practices are not carried out fully. As a result, threats to employees' safety are not eliminated in time because accident-prone areas are not recognized and taken care of before accidents occur. It is therefore important that the conditions that pose threat to the safety and health of all workers especially on contract terms are identified and addressed amicably (Taderera, 2012).

Regarding safety officers appointment, 14 (4.7%) participants stated that appointment of safety officers and departmental representatives for both contractors and permanent workers was least effective in improving OSH performance at KBL, 31 (10.3%) stated that it was slightly effective, 75 (24.9%) stated that it was somewhat effective, 90 (29.9%) stated that it was moderately effective, 88 (29.2%) stated that the it was most effective while 3 (1%) did not respond to this statement (Table 5). About 60% of the workers stated that appointment of safety officers and departmental representatives was effective in improving OSH performance at KBL.

Among the participants, 15 (5%) stated that scheduled workplace inspections/audits involving all stakeholders was least effective in improving OSH performance at KBL, 23 (7.6%) stated that it was slightly effective, 60 (19.9%) thought that it was somewhat effective, 98 (32.6%) stated that it was moderately effective, 103 (34.2%) stated that the it was most effective while 2(0.7%) did not respond to this statement (Table 5). About 66.8% of the workers confirmed that scheduled workplace inspections / audits involving all stakeholders were effective in improving OSH performance at KBL. This shows that it is important to involve all stake holders in the industry when planning for OSH of the workers.

Similarly 9 (3%) participants stated that OSH performance goal setting and review in line with zero harm was least effective in improving OSH performance at KBL, 24 (8%) stated that it was slightly effective, 42 (14%) stated that it was somewhat effective, 105 (34.9%) stated that it was moderately effective, 117 (38.9%) stated that it was most effective while 4 (1.3%) did not respond to this statement. Most (73.8%) workers confirmed that goal setting and review in line with zero harm was effective in improving OSH performance at KBL. The result of this study on OSH performance goal setting concurs with that of Sakamoto and Konings (2003) who found that 70.0% of the workers accepted that goal setting and review in line with zero harm was effective in improving OSH performance.

A total of 47 (15.6%) participants stated that regular safety-only meetings between KBL management and contractor directors was least effective in improving OSH performance at KBL, 35 (11.6%) stated that it was slightly effective, 60 (19.9%) thought it was somewhat effective, 76 (25.2%) stated that it was moderately effective, 79 (26.2%) stated that it was most effective; 4 (1.3%) did not respond to this statement. Over 50.0% of the participants confirmed that regular safety meetings between KBL management and contractor directors was effective in improving OSH performance at KBL. Manufacturing industries should involve the contractors in their quest to improve OSH performance in their companies and reduce costly incidents and accidents. Managers should establish a relationship with their workers that encourage open and honest discussion and mutual trust.

Regarding safety performance incentives, 28 (9.3%) workers stated that safety performance incentive schemes and recognition was least effective and slightly effective in improving OSH performance at KBL, respectively, 70 (23.3%) stated it was somewhat effective, 91 (30.2%) stated that it was moderately effective, 80 (26.6%) stated that it was most effective while 4 (1.3%) did not respond. About 56.8% of the workers confirmed that safety performance incentive schemes and recognition was effective at the KBL. Those workers who work safely should be given incentives for them to keep working safely and encourage their partners to work safely.

In this study, 16 (5.3%) employees stated that robust accident/incident reporting procedures and shared learnings through safety alerts was least effective in improving OSH performance at KBL, 23 (7.6%) stated that it was slightly effective, 55 (18.3%) thought that it was somewhat effective, 97 (32.2%) stated that it was moderately effective, 106 (35.2%) stated that it was most effective while 4 (1.3%) did not respond (Table 5). All employees require information, advice, assistance and training to do their work, fully understand the health and safety risks that are part of their work and help keep their work environment safe.

Nine [9 (3%)] participants stated that strict adherence to Safe Operating Procedures and PPE was least effective and slightly effective, respectively in improving OSH performance at KBL, 26 (8.6%) thought it was somewhat effective, 60 (19.9%) stated that it was moderately effective, 194 (64.5%) stated that the it was most effective while 3 (1%) did not respond (Table 5). Majority (84.4%) of the workers confirmed that strict adherence to Safe Operating Procedures and PPE was effective and in improving OSH performance at KBL. OSHA (2007) stipulate that it is the responsibility of the employer to provide a safe working environment to the workers including the provision of appropriate and well maintained PPE's.

Regarding disciplinary action, 15 (5%) participants stated that robust enforcement of disciplinary framework was least effective in improving OSH performance at KBL, 17 (5.6%) stated that it was slightly effective, 46 (15.3%) thought that it was somewhat effective, 84 (27.9%) stated that it was moderately effective, 135 (44.9%) stated

that it was most effective while 4 (1.3%) did not respond (Table 5). Most (72.8%) workers confirmed that robust enforcement of disciplinary framework was effective in improving OSH performance at KBL. Enforcement of disciplinary measures is very important so that errant workers will not repeat the same mistakes.

Table 5. Effectiveness of contractor engagement programs on OSH

Program/ Effectiveness	**1 (n) (%)**	**2 (n) (%)**	**3 (n) (%)**	**4 (n) (%)**	**5 (n) (%)**	**No Response (n) (%)**	**Total (n) (%)**
Introduction of contractor safety passport training	15 (5.0)	5 (1.7)	26 (8.6)	71 (23.6)	184 (61.1)	0 (0.0)	301 (100.0)
Appointment of safety officers and departmental representatives	14 (4.7)	31 (10.3)	75 (24.9)	90 (29.9)	88 (29.2)	3 (1.0)	301 (100.0)
Scheduled workplace inspections / audits involving all stakeholders	15 (5.0)	23 (7.6)	60 (19.9)	98 (32.6)	103 (34.2)	2 (0.7)	301 (100.0)
OSH performance goal setting and review in line with zero harm	9 (3.0)	24 (8.0)	42 (14.0)	105 (34.9)	117 (38.9)	4 (1.3)	301 (100.0)
Regular safety-only meetings between KBL management and contractor directors	47 (15.6)	35 (11.6)	60 (19.9)	76 (25.2)	79 (26.2)	4 (1.3)	301 (100.0)
Safety performance incentive schemes and recognition	28 (9.3)	28 (9.3)	70 (23.3)	91 (30.2)	80 (26.6)	4 (1.3)	301 (100.0)
Robust accident / incident reporting procedures and shared learning through safety alerts	16 (5.3)	23 (7.6)	55 (18.3)	97 (32.2)	106 (35.2)	4 (1.3)	301 (100.0)
Strict adherence to Safe Operating Procedures and PPE	9 (3.0)	9 (3.0)	26 (8.6)	60 (19.9)	194 (64.5)	3 (1.0)	301 (100.0)
Robust enforcement of disciplinary framework	15 (5.0)	17 (5.6)	46 (15.3)	84 (27.9)	135 (44.9)	4 (1.3)	301 (100.0)

Key: 1-Least effective, 2-Slightly effective, 3-Somewhat, 4-Moderately effective, 5-Most effective, n-number/frequency, %-percentage, (n) (%)

4. Conclusions

Over 70% of the respondents had college level of education and above. With regard to nature of engagement, over 80% of the respondents were employed on contract terms. Majority of the respondents were working in the manufacturing department i.e. 73.3% where processes such as brewing, blending and packaging take place. There was significant association (p=0.01) between terms of engagement and the department one comes from.

The workers are quite conversant with the safety and health measures in place as demonstrated by the following:-

a) 95.0% of the workers thought that OSH policies were adequate.

b) 73.8% of the workers in this study were involved in risk assessment.

c) 87.1% of the workers confirmed that safety operating procedures were available to all.

d) An overwhelming 80.3% confirmed the presence of trained first aiders in their work place.

The contractor engagement programs on occupational safety and health were found to be quite effective with respondents rating 50.0% of these programs as very effective. For example;-

a) Introduction of contractor safety passport training - 84.7% rated this program as effective in improving OSH performance at KBL.
b) Appointment of safety officers and departmental representatives - 59.1%
c) Scheduled workplace inspections/ audits - 66.8%
d) Goal setting and review in line with zero harm - 73.8%
e) Regular safety meeting between KBL management and contractor directors - 50.0%

5. Recommendations

The study recommends the following measures to be observed at KBL in order to consolidate the gains already being realized and safeguard occupational safety, health and welfare of all workers:-

a) Introduce annual safety passport / OSH refresher training to all staff. This will assure continued awareness creation.
b) Involve contractors and their managers in regular safety meetings and workplace inspections. This will promote ownership of OSH issues and further develop a positive safety culture.
c) Establish a system to routinely check on the status of pedestrian walkways to ensure they are visible and ensure positive segregation of pedestrians from vehicular traffic e.g. forklift trucks.
d) Develop a program that specifically focusses on reduction or elimination of cullet cuts since this is the leading occupational injury recorded at the brewery.
e) Review programs targeting control of non-routine, high risk tasks such as construction and engineering maintenance works.
f) Further encourage all workers to report all accidents, reinforce accident investigation and sharing of learnings.

Further research is recommended in similar manufacturing firms, so as to help in setting feasible OSH industry benchmarks.

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