



Journal of Engineering, Project, and Production Management 2025, 15(1), 0004

Organizational Elements that Shape Construction Employees' Approach and Behavior Towards OSH

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Project Management Received January 21, 2024; received revision November 24, 2024; accepted November 21, 2024 Available online December 22, 2024

Abstract: The construction industry has one of the highest known rates of occupational incidents. Construction organizations are increasingly recognizing the significance of occupational safety and health (OSH) problems as a prominent area of concern. Though numerous studies have shown that employees' behavior and approach towards OSH are impacted by Environmental (such as governmental regulations), Personal and Organizational factors, there is a lack of consensus on the organizational elements. Hence, the primary objective of this study is to ascertain the organizational elements that influence employees' adherence to OSH and suggest improvement needs, if any. To achieve the objective, the study adopted a qualitative research approach and conducted semi-structured interviews with fifteen highly experienced professionals in the construction industry. Using manual thematic analysis, the interview transcripts were analyzed to identify and extract major themes based on commonalities. Six themes were recognized: Empowerment, communication, knowledge management and learning and development, leadership and top management commitment, internal systems and processes, and work culture and spirituality. The findings of this study will assist the industry in developing a framework of effective solutions for OSH management. These themes can form the basis of a good approach to an integrated OSH strategy.

Keywords: occupational safety and health, approach, behavior, elements, employee, thematic analysis.

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1. Introduction

The construction sector may be seen as a distinctive, intricate, and hazardous work environment. It has been widely recognized as a high-risk industry due to the continual occurrence of injuries and fatalities. Construction employees are engaged in a multitude of tasks that expose them to significant risks and dangers. The business possesses certain characteristics, such as a temporary workforce, the necessity of working at elevated heights, exposure to fluctuating risks, and the rigorous physical and mental requirements of the work process, that contribute to the occurrence of accidents (Jaafar et al., 2018). A safe workplace is a cultural standard across all industries and so it is in the construction industry, enabling organizations to progress beyond compliance and towards commercial sustainability. Enhancing productivity and lowering organizational expenses can be achieved through the reduction of accidents.

Occupational safety and health (OSH) involves creating and regulating organizational policies and programs to protect employees' mental, physical, and emotional health, and prevent hazards that could harm them (Sánchez et al., 2017). The development of the OSH program depends on human welfare, legal frameworks, and economic considerations (Jaafar et al., 2018). Organizations need to ensure a robust OSH ecosystem for a safer workplace. Studies show that individuals are the main cause of OSH issues at work. Understanding the factors that impact worker attitude is crucial for enhancing safety performance within an organization. Factors that influence workers' behavior fall into three categories – Environmental (external), Personal and Organizational. Organizational factors are one of the major contributors to unsafe workplaces

(Reason, 1997). They influence the context that shapes employees' behavior at work. As such, they play a significant role in human errors at workplace (Papazoglou and Aneziris, 1999). When examining matters pertaining to workplace safety, researchers primarily concentrate on analyzing the direct factors that contribute to occupational accidents (Hoła and Nowobilski, 2019). It is important to acknowledge, however, that every construction site is situated within a distinct environment, which may have an indirect impact on the rate of accidents within this particular business. For instance, choices made within the realm of politics and economic governance exert influence on the advancement of the construction business.

The underlying factors contributing to occupational safety and health (OSH) can be attributed to external and organizational components, whilst the more visible causes of occupational accidents and diseases are related to human elements (Jaafar et al., 2018). Though numerous studies have shown that employees' approach towards OSH is impacted by a number of factors. There is a lack of consensus on the organizational factors. Effective enforcement of OSH can be achieved by considering organizational elements that affect workers' attitudes and behaviors. Hence, the primary objective of this study is to propose a framework based on organizational elements that influence employees' adherence to OSH and suggest improvement needs, if any. To do this, a qualitative research approach using semi-structured interviews with highly experienced professionals, who possess extensive domain expertise in the field of construction, was employed.

2. Literature Review

Safety concerns, procedures, and practices are still poorly understood in the construction business, indicating a knowledge gap (MD and Mahesh, 2021). The presence of inadequate safety conditions and subpar performance can be attributed to a combination of individual (safety attitudes, knowledge, skills) and organizational / group (culture, policies, leadership, job characteristics) elements (Basahel, 2021). The existing body of research indicates that a significant proportion of occupational accidents may be attributed to employees, rather than only being a result of dangerous working environments (Ünal et al., 2021). This highlights the need to acknowledge the significance of factors that influence employee behaviors as a primary underlying issue. Ng et al. (2005) noted that factors influencing OSH can be categorized into two levels: project level and organization level. This demands extending safety measures beyond the project site and implementing them across all levels of an organization. The study conducted by Ünal et al. (2021) has shown that managers' dedication towards OSH had a beneficial impact on workers' engagement, awareness and proficiency in OSH matters, as well as the culture of reporting incidents. According to Basahel (2021), senior management should promote and evaluate effective leadership and approaches and motivate and educate employees to enhance safety-related behavior.

The efficacy of the OSH program is contingent on effective leadership, provision of a secure working environment, and implementation of safe practices. Unal et al. (2021) found that the effectiveness of OSH system is enhanced when there is a well-defined channel between top management and employees. The enhancement of OSH results is contingent upon the integration of managers' commitment, employees' engagement, and OSH systems. Most workplace accidents are caused by risky acts and human behavior, raising physical and psychological problems for safety professionals. Zara et al. (2023) observed that the primary factors contributing to workplace accidents are the presence of insufficient safety rules, inadequate safety supervision, ineffective training, and unfavorable safety approaches. The absence of safety incidents at a workplace where workers exhibit dangerous behaviors, such as disregarding safety norms, does not necessarily imply a safe environment. Accidents may arise due to several variables, including the extent of safety engagement, risky conduct, and organizational elements. Hence, safety-related behavior can be regarded as a proactive approach that effectively mitigates the occurrence of future incidents within a workplace setting. Gao et al. (2018) noted that the degree of occupational safety is significantly impacted by human factors, including leadership and management capabilities, employee experience and knowledge, training levels, effective communication, and factors that incentivize the implementation of safe work practices, such as rewards and other forms of acknowledgment. Safety knowledge and motivation increase worker participation and compliance. Creating a good safety ecosystem in organizations requires the capacity to recognize, respond, voice views, and learn from unfavorable incidents (Deepak and Mahesh, 2023). In a study conducted by Naji et al. (2021), it was shown that a noteworthy correlation exists between safety culture and safety performance. Additionally, the study revealed that psychosocial hazards have a substantial influence on safety performance. Zhang et al. (2022) study supported Social Cognitive Theory, which says that workers' actions are linked to their surroundings and vice versa, in relation to workplace safety. This study demonstrated that management commitment, employee knowledge and training, leadership, and policies all have a big effect on several hidden factors.

3. Research Objective

The purpose of this study is to qualitatively identify and analyze organizational elements that influence workers' approaches and behaviors towards safety and health. The objective is as follows:

1. To determine organisational elements that impact workers' approaches and behaviours towards safety and health

4. Research Methodology

In this study, the authors employed a qualitative research strategy to collect information through a series of semi-structured interviews designed around systematic literature review (SLR), from people in leadership roles at construction companies. The qualitative method relies on information obtained from subject matter experts through in-depth analyses of the situation. According to Glesne (2016), qualitative research places significance on the attributes of language or observations that are hard to measure and are subject to interpretations in many different ways. The interviews and also additional follow-up discussions were conducted by phone or in person.

Building on SLR, a qualitative interview methodology around organizational elements that affect workers' safety and health attitudes and behaviors was created. As a first step, open-ended questions focusing on the organizational elements

influencing employees' safety and health approaches and behavior at the workplace were drafted. To verify the appropriateness of the questions in relation to the study, two senior professionals – Vice President (Projects) and Sr. General Manager (Health and Safety) from two construction firms were consulted. The formulation of interview questions adhered to the guidelines proposed by DiCicco-Bloom and Crabtree (2006), which advocate for the inclusion of experience/behavior questions as well as opinion/values questions.

For selecting the interviewees, the authors used their over two decades of industry and academic experience to connect with people in leadership roles in the construction industry. Information-rich respondents for the study were identified using purposive and snowballing techniques. This technique is predominantly observed in qualitative research and may be characterized as the deliberate selection of units, such as people, groups of people, or organizations, based on particular objectives aligned with addressing the research questions (Jones, 2014). The authors were very particular regarding the experience of the respondents. The criteria used to shortlist the potential respondents were as follows,

- 1. Minimum 20 years of total construction industry experience,
- 2. Minimum 10 years of project site experience,
- 3. Experience of at least three construction projects with a minimum of two years in each project, and
- 4. Rich experience in OSH-related activities, processes and issues.

The rationale for choosing individuals in leadership roles was to obtain crucial insights on safety culture practices. The anticipation was that leaders, being responsible for overseeing organizational culture, value systems, and beliefs, are in a better position to provide clear information on the organizational factors that influence workers' OSH practices in the workplace.

Due to time, location and schedule constraints the authors' shortlisted 15 respondents for the interviews. Table 1 below gives the details of the respondents.

Sr. No.	Position	Total Experience in yrs.	Project site experience in yrs.	No. of Projects with minimum 2 yrs. in each	Brief profile of the firms
1	MD (Retd. Lt. Col. of Indian Army)	33	18	6	Project Management Consultancy
2	Principal Consultant	22	11	4	Project Management Consultancy
3	Interim CEO	29	12	4	Infrastructure developer
4	Partner	29	12	3	Project Management Consultancy
5	Promoter	30	25	10	EPC Contracting
6	VP (Projects)	27	14	6	Power generation company
7	Head (EPC)	23	11	4	Highways developer
8	Head (OSH)	20	13	4	Railway sector
9	AVP (Health & Safety)	23	12	3	Construction Engineering
10	Sr. GM (Projects)	26	13	5	Cement manufacturing
11	Project Manager	18	14	5	Water sector
12	Head (Safety & Health)	21	14	4	Real Estate developer
13	GM (Safety & Health)	22	14	4	Airports developer
14	AVP (EHS)	23	15	3	Airports developer
15	GM (EHS)	20	13	4	Real Estate developer

Table 1. Details of the participants

MD- Managing Director, CEO- Chief Executive Officer, VP- Vice President, GM- General Manager, AVP- Associate Vice President, EPC-Engineering, Procurement and Construction, EHS- Environment, Health and Safety

Once shortlisted, the respondents were contacted for explaining the aim of the research and requested their availability for the interview. The interviews were recorded with the respondents' consent and later transcribed to ensure precision. The rationale for employing a semi-structured interview methodology was to start each interview by posing open-ended questions that would elicit a reflective conversation and provide the opportunity to ask relevant follow-up questions and seek clarity on respondents' individual responses. This provided the authors with a chance to investigate the thoughts and opinions of the respondents on the organizational factors that influence workers' approaches and behavior towards OSH, as well as their recommendations for improving compliance with OSH measures.

Although the sample size of fifteen respondents may appear small, Mason (2010) argues that in qualitative research, the significance of the study is in the quality of the data rather than the quantity of the sample. The recruitment of the fifteen respondents was mostly based on their high level and relevant expertise and their expressed desire to participate in the study. The use of such a technique, as posted by Simms and Rogers (2006), has been found to enhance the depth and quality of data collected, mostly attributed to the dedication and engagement exhibited by the interviewers.

The distinguishing characteristic of this study is the rich domain experience of the participants, the comprehensive orientation provided about the study and the willingness to spare quality time with the interviewers for both the initial set of questions and for follow-up questions. The interviews were conducted in person or via phone calls and lasted anywhere between 45 minutes and 65 minutes.

4.1. Interview Questions

The study focuses on organizational factors that influence employees' approach and behaviors towards OSH. The questions asked to the participants were,

- 1. Do you agree that Organisational factors influence workers' approach and behavior towards OSH?
- 2. What organizational factors do you perceive influence workers' approach and behavior towards OSH? Why?
- 3. Do you concur that the outlined organisational factors obtained from the literature review influence workers' approach and behavior towards OSH? Why? (This question is asked if some factors from the literature review were not addressed by the response to question 2)

5. Data Analysis

Manual thematic coding was used to analyze the data and identify patterns and themes in the qualitative responses (Gibbs, 2007). The analysis primarily focused on identifying and extracting statements/phrases/words relevant to the organizational elements that addressed the research questions. Using a coding approach, these raw data were grouped into meaningful groupings to identify themes that influence employees' OSH attitudes and behavior. Both authors analyzed the data to discover fundamental dimensions and grouped them based on theoretical commonalities. The authors worked independently and coded transcript statements conveying the same meanings with the same codes. The authors used their own discretion, literature review, and guidance from subject matter experts (to minimize bias) to help them interpret features in data. The authors then compared each other's coding lists, discussed the reasoning behind their coding choices, and moved on to develop overarching themes by grouping similar codes together. Through inductive reasoning, a concise overview of the observations was accomplished based on the acquired empirical evidence, rather than relying on theoretical considerations.

According to Jimoh et al. (2019), thematic analysis offers a framework that enables the comprehensive representation of data and facilitates the organization of it into a coherent structure. The steps following for the analysis are stated below.

• Familiarization with Data

In order to enhance the reliability of the data, the transcripts were sent to the interviewees for verification. Every interview transcription was carefully examined to comprehend the information it provided. This step was repeated several times throughout the entirety of the analytic procedure in order to guarantee that the codes and themes accurately reflect the information obtained from the interviews.

• Generating Initial Codes

The process of creating initial codes started during the previous phase. Once the entire transcription had been thoroughly read and comprehended, initial codes were constructed. This was done by highlighting and commenting on relevant passages and reviewing them further.

• Generating Themes

Codes that share commonalities/similarities were grouped separately to reflect certain themes. Wherever necessitated, subthemes were formed which were then grouped to form final themes.

• Reviewing Themes

Themes generated from the previous step were reviewed several times to ensure they reflect the information from interviews.

• Defining and Naming Themes

The themes were named in a manner that provided a concise and precise presentation of the content of each subject. This was done along with the previous step, i.e., 'reviewing themes'.

It is important to acknowledge that the present study serves as a preliminary investigation, which can subsequently be developed into a bigger mixed methods study in the future.

6. Results and Discussion

Based on the data provided by the respondents, the following major themes and sub-themes related to organizational elements influencing workers' approach and behavior towards OSH surfaced.

6.1. Empowerment

Empowering workers enables them to control their environment thereby setting high standards in OSH. When employees understand their obligations in case of adversities, they are more driven to maintain workplace safety (Ninan, 2023). Experts say that no matter how diligent workers/individuals are, if they lack the authority to act effectively, it may affect their safety performance. Workers with increased empowerment are more engaged in their jobs and more attached to the results. To quote some respondents,

'An empowered worker freely raises concerns about OSH and in a righteous manner intervenes whenever things are not going the proper way.'

'When employees are empowered they remain at work both physically and mentally, and perform their duties with alertness and focus.'

The subthemes under Empowerment are:

Engagement

Ünal et al. (2021) have shown in their study that engaged workers had a positive effect on OSH performance. Individuals immerse themselves in a task as they start, and their higher involvement produces energy, positivity, and a sense of completion. Thus, employee engagement influences and enhances their behavior for better safety, health and wellbeing at the workplace (Rasool et al., 2021).

• Proactive actions

Organizations value, take cognizance and reward workers for proactive actions. This also helps to set a favorable culture, enabling a safer and healthier workplace. Safety-related behaviors, such as compliance with safety rules, are supported by employees' holistic and proactive participation in OSH measures (Botti et al., 2022).

Involvement in policy making

The inclusion of employees in the process of formulating OSH policies facilitates their active participation, cooperation, and sense of responsibility towards ensuring a safe working environment (Boczkowska et al., 2022). The practice entails proactively promoting employees' participation in sharing their experiences, thoughts, and lessons learned in order to collaboratively increase workplace safety.

6.2. Communication

Open and honest communication is crucial for effective risk management in cross-disciplinary teams. On many building sites, communication remains a significant challenge. Poor communication and information flow create harmful working conditions for workers (Khan, 2020). It could be a result of a lack of shared language, workplace stress, management attitudes towards workers, misinterpretation of instructions, and poor communication skills among workers (Olanrewaju et al., 2017). Similarly, undocumented building site information hinders analysis and monitoring, making information availability and communication challenging.

Healthy, safe, and productive workplaces require understanding roles and duties. Communication provides stakeholders with valuable, relevant, and accurate information in clear and understandable language. Leaders believe it is important to convey ambiguous guidelines to employees; employees are trained and reminded of safety requirements before starting work. Through vision, values and beliefs, top management sets the expectations by the organization. It's the reporting manager who serves as a communication champion to influence workers' attitudes and beliefs towards OSH. To quote,

'Maintaining open and honest communication in a multi-disciplinary team is crucial for a safer and healthier work place. Non-existence of organizational layers helps to maximize ideas and knowledge exchange. Transparent communication fosters dedication to safety goals and trust.'

'In our regular meetings we verbally inform our employees regarding the hazards associated with their work and the corresponding preventive measures.'

The subthemes under Communication are,

• Open Communication

An efficient OSH requires open and dependable communication channels that allow each employee to stay connected to all others (Skład, 2019). Firms profit from employees' ideas and knowledge by breaking down the traditional hierarchical structure. Communication is crucial for top management to explain the organization's vision and exhibit their commitment to the inspirational goal. A two-way communication builds trust among project partners, workers' and top management through consultative actions. This creates a platform to share knowledge and thus help solve any disagreements that may come up about how to manage OSH.

• Channels of communication

Safety briefings, newsletters, information displays, videos, safety days and events celebrations, monthly safety themes, documenting lessons learned etc., are some of the channels employed. Establish effective employee safety reporting channels for complaints, near-misses, and suggestions (Yanar et al., 2020). A dynamic process that encourages an effective and constant flow of communication promotes health and productivity. Signs, posters, morning talks, weekly update etc. convey safety messages. To achieve communication goals, careful assessment of safety professionals' standing, training importance, and the impact of safe work behavior on promotion and reward is needed (Karakhan and Gambatese, 2018).

6.3. Knowledge Management (KM) and Learning and Development (L&D)

Integrating knowledge management through organizational learning competence is gaining interest for occupational safety and health management (Duryan et al., 2020). L&D in OSH should be imparted to workers' regularly until safe practices turn out to be their habits (Deepak and Mahesh, 2023). Employees having more knowledge about OSH show a higher level of compliance (Gyekye and Salminen, 2009). Besides, knowledgeable workers encourage co-workers into learning and development in OSH; an experienced OSH worker can provide better on-the-job training to newcomers. It has been noticed that Organizations that give importance to L&D have been seen to perform better than those who don't.

Knowledge (Duryan et al., 2020) and skills are two major constituents of safety behavior. Workers share knowledge and seek knowledge from each other. This knowledge must be captured and managed for effective decision-making and better safety compliance. Institutionalization and knowledge transmission across organizations are crucial in mitigating OSH concerns (Deepak and Mahesh, 2023). Organizations should set systems to enable these transactions. Results have shown higher OSH compliance in organizations with appropriate KM systems (Deepak and Mahesh, 2019). Implementing best practices and learning from others can improve safety within and beyond the firm. To quote,

'Knowledge management cultivates an environment of employee development. Regular refresher courses on OSH motivates, empowers and builds confidence in the workers.'

'Our organization encourages exchange of ideas, information, experiences etc. on methods, choice of technology, processes etc. concerning daily tasks. This helps in knowledge sharing.'

The subthemes under KM and L&D are,

Knowledge Management

Despite efforts by elite construction firms and safety enforcement authorities, accidents and illnesses in construction sites persist due to a lack of awareness, thus, necessitating prioritization of construction workers' safety knowledge. While safety information and knowledge distribution are crucial for effective OH&S management, the safety-knowledge exchange process received little attention (Deepak and Mahesh, 2023). Construction workers confront considerable health and safety risks due to job, location, and workforce changes. These changes considerably impact construction safety culture evaluation. Despite improvement at project sites, accidents and fatalities still occur without learning from past mistakes (Duryan et al., 2020). MD and Mahesh (2021) found that for efficient OSH rule enforcement and culture, knowledge management solutions are required.

• Learning and Development

Learning creates an organizational culture that encourages human growth to meet organizational adaptation needs and avoid stagnation and complacency. Safety managers argue that creating and maintaining safety awareness requires organizational learning to involve frontline staff through safety programs (Provan et al., 2020). Inexperienced and temporary workers benefit from experienced personnel; firms with continuous learning perform better. This key quality allows organizational learning by continuously updating employees' safety knowledge and skills (Duryan et al., 2020).

6.4. Leadership and Top Management Commitment (Walk-the-Talk)

Top Management should walk-the-talk if it wants to influence workers' OSH behavior. Safety performance improves when leaders recognize their responsibilities and they emphasize the necessity of OSH (Lu and Yang, 2010). Visible actions by top management serve as manifestations of their underlying principles and collective command.

Experts agree that a lackluster attitude towards safety on the part of top management makes it unrealistic to expect high standards of safety from employees (Basahel, 2021). When it comes to encouraging safe practices among employees, top management buy-in is crucial. Motivation, empathy, concern and support enhance workers' compliance with OSH (Lu and Yang, 2010). To quote,

'Top Management should enforce better standards of safety measures, use of superior personal protective equipment (PPE), follow international norms which can elevate health and safety culture and allow safe working of people irrespective of gender.'

'Reporting officers regularly stress the importance of wearing PPE; they demonstrate by judiciously adhering themselves to safety norms.'

'A safe and heathy work place is a top-down approach phenomena. Leaders and Managers should commit to safer and healthier workplace and lead by example.'

The subthemes under Leadership and Top Management commitment are,

• Top Management commitment

When employees perceive that top management prioritizes safety and healthy work practices, they exhibit a greater inclination to collaborate in making a safer and healthier work environment. The commitment of top management to OSH fosters a shift in worker behavior from a compliance-based approach to safety conduct. This entails a willingness to go beyond mere adherence to safety rules and actively engage in behaviors that promote a safer work environment. Top management's meaningful actions instils a sense of ownership among workers.

Leadership

Leadership perspective that builds and sustains corporate culture affects occupational safety and health performance (Çalış and Büyükakıncı, 2019). Safety performance improves when Leaders recognize their responsibilities and makes employees acknowledge the importance of safety (Li et al., 2020). Safety leadership, as stated by Wu (2005), is where leaders influence followers to meet organizational safety goals under organizational and individual factors through interaction. Transformational leadership is recognized as a crucial factor in establishing a culture that prioritizes safety and prevention (Miño-Terrancle et al., 2023).

6.5. Internal Processes and Systems

Internal processes and systems determine basic behaviors and actions. They play an important role in workers' approach to OSH compliance. The success of these systems and policies depends on organizations' efforts to implement them effectively. Similarly, a judicious reporting system serves as a state of heightened vigilance among workers, thereby increasing the likelihood of their compliance with safety protocols.

To quote,

'Our systems and processes encourage employees to take proactive steps in the area of safety and health. They are encouraged to come with measures to improve the workplace environment. We recognize and reward our employees for novel suggestions while our reporting mechanism help to take quick decisions.'

'Employees motivated intrinsically perform better than those motivated by tangible benefits."

'Before commencement of any work, all the workers check the PPE equipment. This is a routine and must-do practice.'

'Training and education are key to promoting safer and healthier workplace culture.'

The subthemes under Internal processes and systems are,

Training

An effective safety culture prevails when an organization provides timely safety training and information to employees. Training is seen as a crucial technique for instilling essential safety measures into regular work routines (Miño-Terrancle et al., 2023). This necessitates an approach that combines multiple disciplines, integrates various perspectives, and encourages collaboration. Experts mentioned that training and awareness, continuous monitoring, reward, reporting and feedback mechanisms enhances the efficiency of systems, processes and policies. It is crucial for employees across levels to be knowledgeable and trained about the potential hazards and the necessary preventive measures in order to effectively implement proactive measures (Zwetsloot et al., 2020).

• Processes and systems

Results have shown that firms that adopt appropriate safety processes and systems show a higher commitment towards safety (Deepak and Mahesh, 2023). An OSH system should encourage employees to report incidents related to safety and health (Al-Aubaidy et al., 2022) and be able to adopt appropriate measures without assigning blame to anyone (Duryan et al., 2020). Regular assessments of safety and health systems and accident reporting management systems can reveal root causes and opportunities for improvement. To ensure safety, management should establish budget, incentives, and compliance. Safety spending should be an investment, not a cost. Employee incentive programs should visibly display the achievement of a safer workplace by encouraging (and rewarding) failure reporting and allowing them to do so quickly. Disciplinary sanctions, job transfers, etc., may be used for preventable safety violations. Almklov et al. (2014) found that a safety management system would improve employee satisfaction and views of a standardized safety management framework.

6.6. Work Culture & Spirituality

Culture is just one of numerous elements that have an impact on workers' behavior (Deepak and Mahesh, 2023). Safety culture promotes openness and efficiency, assuring workplace safety. Culture involves working with fellow colleagues to modify attitudes, behaviors, and ideas and increase their situational awareness in today's society. Employees perceive their social environment and surroundings as establishing a culture, in which the manifestation of workplace values and norms prompts them to acknowledge and enforce safety standards (Bisbey et al., 2021). The human factor must be used to design policies, procedures, and practical tools and models to improve safety culture (Teperi et al., 2019).

The subthemes under Work Culture and Spirituality are,

Culture

The idea of "safety culture" is frequently invoked to explain how social processes in an organization may either promote or discourage particular OSH-related behaviors or results (Nordlöf et al., 2017). Safety culture pertains to cultural dimensions that encompass health and safety, as well as risks and hazards at the workplace (Nordlöf et al., 2015). Culture enhances commitment to achieving organizational goals. Moreover, creating a strong safety culture goes beyond reducing dangers and institutionalizing safety procedures. Experts believe that an appropriate work culture sets the right behavior of workers towards OSH measures. One of the experts quoted,

'Setting an appropriate example is important to develop right culture. Say for example when a reporting manager questions the workers for not following safety standards while executing a task, it conveys a right message that the firm is serious about workers' OSH. While on the other hand if the manager overlooks the wrong-doings of the workers and instead

praises them for accomplishing a task, it indirectly conveys that the manager approves of the wrong-doings. This sends a wrong message.'

'It's a culture that we have developed over the years – 'Be safe and make others safe.'

Spirituality

One more element the authors would like to add in the domain of culture is 'spirituality'. Spirituality at work is contentment and intrinsic happiness with employment and has nothing to do with religion or particular faith. It involves being honest about one's efforts and goals (Paloutzian et al., 2010). Employees who practice spirituality report better physical and mental health, work engagement, and contentment (Samanta and Gochhayat, 2022). Spirituality focuses on factors that support human health and wellbeing, rather than on factors that cause disease (Guillemin, 2018), thus reducing employee fatigue, increasing commitment, and boosting performance, thereby improving occupational health.

'Spirituality makes people feel good about themselves and spreads positive vibes.'

7. Conclusion

Research has shown that numerous factors affect employees' behavior and approach towards OSH. Amongst them, organizational factors are the driving force that shapes the behavior. This study used a qualitative approach to comprehend organizational elements that influence employees' behavior. Using purposive and snowballing sampling techniques, highly experienced construction industry professionals were identified and shortlisted for semi-structured interviews. The data obtained was analyzed using manual thematic analyses to draw six major themes of organizational factors - empowerment, communication, knowledge management and learning and development, leadership and top management commitment, internal systems and processes and work culture and spirituality. The study found that engaged employees participate in OSH activities, foster health and safety debates, model preventive behaviors, and encourage colleagues. Effective communication helps leaders share their vision and principles and set objectives and methods for everyone, say experts. Capturing and sharing experiences on OSH serve as valuable case studies for future reference. Top management's commitment plays a crucial role in securing employees' acceptance of elements such as processes, systems, policies etc., for a safer workplace. Culture is linked to autonomy, growth, and gaining competence; work with purpose; a sense of bonding with co-workers. Thus the study proposes a 6-point framework encompassing the elements at organizational level that can ensure an effective OSH management, refer to Fig. 1.

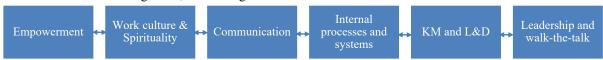


Fig. 1. Framework of organizational elements for effective OSH management

Using the recommended framework for developing OSH system, organizations can identify gaps if any. This framework aims to provide an interactive learning environment and promote safety training and knowledge management in the construction sector. This approach helps project managers assess the efficacy of safety management practices and identify the necessary effort for improvement. This study will benefit policymakers responsible for planning, managing, and enforcing OSH management. The findings can be used to measure and examine the importance of organizational elements in OSH management. It aids organizations with an insight into designing organizational strategies, which may help management provide a safer workplace.

The participants for the study were primarily from construction/infrastructure sector. Hence, other sectors such as FMCG, automobiles, agriculture etc., could be explored; similarly, quantitative method could be used to compare the results and gain more insights.

Author Contributions

Vimlesh Prabhudesai contributes to conceptualization, methodology, validation, analysis, investigation, data collection, draft preparation, manuscript editing, visualization, supervision and project administration. Lysette Dsouza contributes to conceptualization, methodology, validation, analysis, investigation, data collection, draft preparation, manuscript editing, and project administration. Anil Singh contributes to conceptualization, methodology, software, validation, analysis, manuscript editing. Vikram Bhadauria contributes to conceptualization, methodology, draft preparation, analysis, visualization and manuscript editing. All authors have read and agreed with the manuscript before its submission and publication.

Funding

This research received no specific financial support from any funding agency.

Institutional Review Board Statement

Not applicable.

References

Al-Aubaidy, N. A., Caldas, C. H., and Mulva, S. P. (2022). Assessment of underreporting factors on construction safety incidents in US construction projects. *International Journal of Construction Management*, 22(1), 103-120. https://doi.org/10.1080/15623599.2019.1613211

- Almklov, P. G., Rosness, R., and Størkersen, K. (2014). When safety science meets the practitioners: Does safety science contribute to marginalization of practical knowledge? *Safety Science*, 67, 25-36. https://doi.org/10.1016/j.ssci.2013.08.025
- Basahel, A. M. (2021). Safety leadership, safety attitudes, safety knowledge and motivation toward safety-related behaviors in electrical substation construction projects. *International Journal of Environmental Research and Public Health*, 18(8), 4196. https://doi.org/10.3390/ijerph18084196
- Bisbey, T. M., Kilcullen, M. P., Thomas, E. J., Ottosen, M. J., Tsao, K., and Salas, E. (2021). Safety culture: An integration of existing models and a framework for understanding its development. *Human Factors*, 63(1), 88-110. https://doi.org/10.1177/0018720819868878
- Boczkowska, K., Niziołek, K., and Roszko-Wójtowicz, E. (2022). A multivariate approach towards the measurement of active employee participation in the area of occupational health and safety in different sectors of the economy. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 17(4), 1051-1085.doi: 10.24136/eq.2022.035
- Botti, L., Melloni, R., and Oliva, M. (2022). Learn from the past and act for the future: A holistic and participative approach for improving occupational health and safety in industry. *Safety Science*, 145, 105475. https://doi.org/10.1016/j.ssci.2021.105475
- Çalış, Ç., and Büyükakıncı, B. Y. (2019). Leadership approach in occupational safety: Taiwan sample. *Procedia Computer Science*, 158, 1052-1057. https://doi.org/10.1016/j.procs.2019.09.146
- Deepak, M.D., and Mahesh, G. (2023). A framework for enhancing construction safety through knowledge-based safety culture indicators. *International Journal of Construction Management*, 23(12), 2039-2047. https://doi.org/10.1080/15623599.2022.2033420
- Deepak, M.D., and Mahesh, G. (2019). Developing a knowledge-based safety culture instrument for construction industry: Reliability and validity assessment in Indian context. *Engineering, Construction and Architectural Management*, 26(11), 2597-2613. https://doi.org/10.1108/ECAM-09-2018-0383
- DiCicco Bloom, B., and Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, 40(4), 314-321. https://doi.org/10.1111/j.1365-2929.2006.02418.x
- Duryan, M., Smyth, H., Roberts, A., Rowlinson, S., and Sherratt, F. (2020). Knowledge transfer for occupational health and safety: Cultivating health and safety learning culture in construction firms. *Accident Analysis & Prevention*, 139, 105496. https://doi.org/10.1016/j.aap.2020.105496
- Gao, S., Low, S. P., and Howe, H. J. A. (2018). Systemic lapses as the main causes of accidents in the Singapore construction industry. *Civil Engineering and Environmental Systems*, 35(1-4), 81-98. https://doi.org/10.1080/10286608.2018.1518437
- Gibbs, G. R. (2007). Thematic coding and categorizing. *Analyzing Qualitative Data*, 703, 38-56. https://dx.doi.org/10.4135/9781849208574
- Glesne, C. (2016). Becoming qualitative researchers: An introduction. *Pearson*. One Lake Street, Upper Saddle River, New Jersey 07458.
- Guillemin, M. (2018). 1645a The spiritual dimension in occupational health: a key emerging issue. https://doi.org/10.1136/oemed-2018-ICOHabstracts.612
- Gyekye, S. A., and Salminen, S. (2009). Educational status and organizational safety climate: Does educational attainment influence workers' perceptions of workplace safety? *Safety Science*, 47(1), 20-28. https://doi.org/10.1016/j.ssci.2007.12.007
- Hoła, B., and Nowobilski, T. (2019). Analysis of the influence of socio-economic factors on occupational safety in the construction industry. *Sustainability*, *11*(16), 4469. https://doi.org/10.3390/su11164469
- Jaafar, M. H., Arifin, K., Aiyub, K., Razman, M. R., Ishak, M. I. S., and Samsurijan, M. S. (2018). Occupational safety and health management in the construction industry: a review. *International Journal of Occupational Safety and Ergonomics*, 24(4), 493-506. https://doi.org/10.1080/10803548.2017.1366129
- Jimoh, R., Oyewobi, L., Isa, R., and Waziri, I. (2019). Total quality management practices and organizational performance: the mediating roles of strategies for continuous improvement. *International Journal of Construction Management*, 19(2), 162-177. https://doi.org/10.1080/15623599.2017.1411456
- Jones, C. (2014). Assessing safety culture and safety performance in a high hazard industry (Doctoral dissertation, University of Nottingham). https://eprints.nottingham.ac.uk/id/eprint/30956
- Karakhan, A., and Gambatese, J. (2018). Hazards and risk in construction and the impact of incentives and rewards on safety outcomes. *Practice Periodical on Structural Design and Construction*, 23(2), 04018005. https://doi.org/10.1061/(ASCE)SC.1943-5576.0000359
- Khan, A., Prem, H., and Pai, S. (2020). Challenges in implementation of safety practices for building implosion technique in India. In ICT Systems and Sustainability: Proceedings of ICT4SD 2019, Volume 1, Springer Singapore, 457-465.
- Li, M., Zhai, H., Zhang, J., and Meng, X. (2020). Research on the relationship between safety leadership, safety attitude and safety citizenship behavior of railway employees. *International Journal of Environmental Research and Public Health*, 17(6), 1864. https://doi.org/10.3390/ijerph17061864
- Lu, C. S., and Yang, C. S. (2010). Safety leadership and safety behavior in container terminal operations. *Safety Science*, 48(2), 123-134. https://doi.org/10.1016/j.ssci.2009.05.003
- Mason, M. (2010, August). Sample size and saturation in PhD studies using qualitative interviews. In *Forum Qualitative Sozialforschung/Forum: Qualitative Sozial Research* (Vol. 11, No. 3). https://doi.org/10.17169/fqs-11.3.1428
- MD, D., and Mahesh, G. (2021). Influence of knowledge-based safety culture in the construction industry: a stakeholder's perspective. *International Journal of Workplace Health Management*, 14(1), 111-128. https://doi.org/10.1108/IJWHM-11-2019-0150

- Miño-Terrancle, J., León-Rubio, J. M., Leon-Perez, J. M., and Cobos-Sanchiz, D. (2023). Leadership and the promotion of health and productivity in a changing environment: a multiple focus groups study. *Safety*, 9(3), 45. https://doi.org/10.3390/safety9030045
- Naji, G. M. A., Isha, A. S. N., Mohyaldinn, M. E., Leka, S., Saleem, M. S., Rahman, S. M. N. B. S. A., and Alzoraiki, M. (2021). Impact of safety culture on safety performance; mediating role of psychosocial hazard: An integrated modelling approach. *International Journal of Environmental Research and Public Health*, 18(16), 8568. https://doi.org/10.3390/ijerph18168568
- Ng, S. T., Cheng, K. P., and Skitmore, R. M. (2005). A framework for evaluating the safety performance of construction contractors. *Building and Environment*, 40(10), 1347-1355. https://doi.org/10.1016/j.buildenv.2004.11.025
- Ninan, J. (2023). Construction safety in media: an overview of its interpretation and strategic use. *International Journal of Construction Management*, 23(6), 945-953. https://doi.org/10.1080/15623599.2021.1946898
- Nordlöf, H., Wiitavaara, B., Högberg, H., and Westerling, R. (2017). A cross-sectional study of factors influencing occupational health and safety management practices in companies. *Safety Science*, 95, 92-103. https://doi.org/10.1016/j.ssci.2017.02.008
- Nordlöf, H., Wiitavaara, B., Winblad, U., Wijk, K., and Westerling, R. (2015). Safety culture and reasons for risk-taking at a large steel-manufacturing company: Investigating the worker perspective. *Safety Science*, 73, 126-135. https://doi.org/10.1016/j.ssci.2014.11.020
- Olanrewaju, A., Tan, S. Y., and Kwan, L. F. (2017). Roles of communication on performance of the construction sector. *Procedia Engineering*, 196, 763-770. https://doi.org/10.1016/j.proeng.2017.08.005
- Paloutzian, R. F., Emmons, R. A., and Keortge, S. G. (2010). Spiritual wellbeing, spiritual intelligence, and healthy workplace policy. In *Handbook of Workplace Spirituality and Organizational Performance* (pp. 89-102). Routledge.
- Papazoglou, I. A., and Aneziris, O. (1999). On the quantification of the effects of organizational and management factors in chemical installations. *Reliability Engineering & System Safety*, 63(1), 33-45. https://doi.org/10.1016/S0951-8320(98)00013-1
- Provan, D. J., Woods, D. D., Dekker, S. W., and Rae, A. J. (2020). Safety II professionals: How resilience engineering can transform safety practice. *Reliability Engineering & System Safety*, 195, 106740. https://doi.org/10.1016/j.ress.2019.106740
- Rasool, S. F., Wang, M., Tang, M., Saeed, A., and Iqbal, J. (2021). How toxic workplace environment effects the employee engagement: The mediating role of organizational support and employee wellbeing. *International Journal of Environmental Research and Public Health*, 18(5), 2294. https://doi.org/10.3390/ijerph18052294
- Reason, J. T. (1997). *Managing the Risks of Organizational Accidents*.1st ed. Aldershot: Ashgate Publishing Company, 252 (1997).
- Samanta, S., and Gochhayat, J. (2022). Human Factors and Workplace Wellbeing: An Empirical Analysis in Construction Work. In Electronic Systems and Intelligent Computing. Proceedings of ESIC 2021, Singapore: Springer Nature Singapore, 775-782.
- Sánchez, F. A. S., Peláez, G. I. C., and Alís, J. C. (2017). Occupational safety and health in construction: a review of applications and trends. *Industrial Health*, 55(3), 210-218. https://doi.org/10.2486/indhealth.2016-0108
- Simms, C., and Rogers, B. (2006). The significance of flexibility in improving return on property investment: the UK perspective. *Facilities*, 24(3/4), 106-119. https://doi.org/10.1108/02632770610649377
- Skład, A. (2019). Assessing the impact of processes on the Occupational Safety and Health Management System's effectiveness using the fuzzy cognitive maps approach. *Safety Science*, 117, 71-80. https://doi.org/10.1016/j.ssci.2019.03.021
- Teperi, A. M., Lappalainen, J., Puro, V., and Perttula, P. (2019). Assessing artefacts of maritime safety culture—current state and prerequisites for improvement. *WMU Journal of Maritime Affairs*, 18, 79-102.
- Ünal, Ö., Akbolat, M., Amarat, M., and Tilkilioğlu, S. (2021). The role of the human factor in occupational safety and health performance. *International Journal of Occupational Safety and Ergonomics*, 27(1), 179-184. https://doi.org/10.1080/10803548.2018.1554932
- Wu, T. C. (2005). The validity and reliability of safety leadership scale in universities of Taiwan. *International Journal of Technology and Engineering Education*, 2(1), 27–42.
- Yanar, B., Robson, L. S., Tonima, S. K., and Amick III, B. C. (2020). Understanding the organizational performance metric, an occupational health and safety management tool, through workplace case studies. *International Journal of Workplace Health Management*, 13(2), 117-138. https://doi.org/10.1108/IJWHM-09-2018-0126
- Zara, J., Nordin, S. M., and Isha, A. S. N. (2023). Influence of communication determinants on safety commitment in a high-risk workplace: a systematic literature review of four communication dimensions. *Frontiers in Public Health*, 11. https://doi.org/10.3389%2Ffpubh.2023.1225995
- Zhang, Y., Abdullah, M. R. T. L., Javaid, M. U., Nazri, M., and Shah, M. U. (2022). High Safety Risk Assessment in the Time of Uncertainties (COVID-19): An Industrial Context. *Frontiers in Psychology*, 13, 834361. https://doi.org/10.3389/fpsyg.2022.834361
- Zwetsloot, G., Leka, S., Kines, P., and Jain, A. (2020). Vision zero: Developing proactive leading indicators for safety, health and wellbeing at work. Safety Science, 130, 104890. https://doi.org/10.1016/j.ssci.2020.104890



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