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Challenges in implementing occupational health and safety in Indian information and communication technology industry

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ABSTRACT

An organization's safety culture encompasses the values, perceptions, attitudes, and behaviors of its members. This culture forms a shared bond among individuals within the organization, influencing every facet of life. As a result, the safety ethos of a company plays a crucial role in nurturing a more expansive safety culture in society. Key components of a safety culture include leadership commitment, occupational health and safety (OHS) policies, meticulous planning, resource management, active participation across all levels, seamless integration, regular review processes, well-defined procedures, comprehensive documentation, and effective risk management. The amalgamation of these elements contributes to cultivating a work environment where prioritizing workplace safety becomes paramount. This commitment not only enhances the safety of the workplace but also addresses a crucial aspect of social sustainability, directly linked to human well-being. This study investigates the correlation between the successful execution of an occupational health and safety management system (OHSMS) and the level of involvement of both internal and external stakeholders in promoting safety practices within the organization, evaluates the mediation effect of work engagement and social sustainability on OHSMS implementation and safety behavior and examines the safety standards and actual implementation of these standards in information and communication technology (ICT) industry in India.

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1. INTRODUCTION

Information and communication technology (ICT) and digital economy have a contribution of more than 13% to India's gross domestic product (GDP). Approximately $200 billion is generated by India's digital economy annually. Due to drastic digitization majorly due to COVID-19 pandemic, companies implemented new systems with improved efficiencies thus realigning their IT strategies, operational costs and automation processes. Robotics, the Internet of things (IoT), big data analytics, artificial intelligence (AI), machine learning (ML), blockchain technology, cloud computing, cybersecurity, and virtual reality (VR) represent a suite of emerging technologies facilitating organizations in achieving these realignment strategies [1]. India with its 1.18 billion wireless and 20 million wired subscribers has the second largest number of telecom users in the world. India's 778 million broadband subscribers include 755 million wireless and 22 million wired users. With widespread adoption of mobile technology, the wireless subscriptions reached 98% of all telephone

usage. The telecom sector in India grew rapidly with plans for 5G rollout to improve upon the coverage, speed, latency and reliability [2].

The National Broadband Mission (NBM) rolled out by the government in December 2019 with the target to improvise the digital infrastructure so as increment the fiber footprint to 5 million kilometers and count of fiber-connected towers by 60% by the year 2022. The NBM with its $100 billion investment, provides $35, $30 and $35 billion for telecom towers, optical infrastructure and spectrum and research respectively. India has an established optical fiber network making it easy to rollout 5G services, generating multiple opportunities in field of technology [1]. In order to deliver the services to end users Telecom industry requires lot much effort in deploying the network and up keeping the same and ensuring seamless quality services committed to their clients. It requires numerous skilled, semi-skilled and un-skilled resources working under different capacities on 24X7. It is inevitable to say that various identified or un-identified hazards at these working locations resulting into incidents causing fatality, temporary and permanent disability to human life. Safety of human life has been a major concern due to various kinds of hazards while performing the work at site locations. There are hazards present at every stage of ICT project which may be known and unknown at the same time for people working there.

An organization's work environment and culture are assessed by climate which includes organizational policies, processes and procedures which reflects perceptions of various aspects of work environment including product innovation, customer service and safety. Shared perception about Safety by employees of organization forms safety climate which is further assessed by policies, procedures and practices of the organization. Perception can be further categorized as individual and group perception. Individual perception of organization overall environment is referred as perceived safety climate where in shared perception of the organization forms group safety climate. Safety climate and safety behavior are closely connected [3]. Safety behavior can manifest as either compliance-oriented or participative. There are fundamental tasks essential for maintaining workplace safety, which organizations mandate. These include adhering to standard work procedures and wearing personal protective equipment, expected at both individual and group levels. Such behaviors are called compliance-oriented safety behaviors. Safety participation refers to behaviors which might not contribute directly towards individual safety but helps to create an environment that supports safety culture of the organization. Participating in voluntary safety activities/initiatives, extending help to co-workers for issues related to safety, attending safety meetings are few examples of participative safety behaviors [4].

Safety climate can be called an antecedent of safety behaviors. It is important that employees are motivated to follow safety practices, volunteer for safety initiatives and take extra effort to safety for all willingly. Hence, safety motivation also plays vital role in creating safety climate which has a trailed effect in long run. Safety climate also influence individual motivation as employees observe and understand organizations priorities and expected behavior related to safety. A positive safety climate motivates employees to take up safety as priority willingly and a negative safety climate effects employees' motivation conversely. Further perceived safety climate and safety motivation are linked to social exchange perspective as employees develop an inherent safe behavior if they consider that organization is concerned about their safety and well-being. Workers in a positive safety climate are inclined to be more motivated to participate in safety practices and adopt safety behaviors over the long term. Another motivation for employees is safety compliance practices and willingly participate in safety practices are positive and effective results of these practices [5].

Accidents at work have a direct negative impact on job satisfaction and productivity [6]. Therefore, major objective of occupational safety practices for reducing the chance for occurrence of accidents at work helps in improving the productivity and efficiency of the employees. Hence, implementation of occupational health and safety management systems (OHSMS) results into positive outcome by reducing the fatalities and related cost and hence increased profits. It also improves the working condition and hence the employee motivation. Within the total quality management philosophy, OHSMS are viewed as a component contributing to employee satisfaction [6]. Recently, in 2021 there were three fatalities reported in Haryana and Orissa circle of a renowned telecom service provider. Organizations working in ICT space are obliged for safety of people working directly and indirectly; these organizations have adopted OHSMS to identify and manage occupational health and safety risks and hazards catering to their requirements. However, creating safety culture and develop safety behavior is a much bigger challenge for such organizations. Safety culture and safety behavior are outcomes of continuous commitment, resources, participation and acceptance across the levels, which most of the organizations struggle with [7].

Workplace behaviors impact social behavior and relationship of employees. If an employee feels valued at workplace, perceive fairness in practices, observe civility culture then his societal relationships will experience similar kind of behaviors. Hence, organization culture has huge impact on human behavior and sustainability approach of the business influence sustainable development of human beings directly or indirectly. It is imperative to adopt leadership approach to improve occupational health and safety to ensure employees towards workplace safety is positive. The safety culture of an organization encompasses the values, perceptions, attitudes, and behaviors exhibited by its members. Culture establishes a common link among

people which reflects in every aspect of life, hence, safety culture of an organization contributes to create a safety culture in societal setting as well. Basic elements of a safety culture are commitment of leadership, occupational health and safety policy, planning, resource management, participation across the levels, integration, review, procedures, documentation, risk management [4]. All these elements contribute to engendering a working environment where work place safety is priority and address an important aspect of social sustainability which is linked to human well-being. Ensuring workplace safety is pivotal in fostering trust among employees, a quality essential for navigating uncertainty effectively.

A sustainable social system cannot be attained without fostering trustworthy relationships, which serve as the foundation for civil and cooperative behavior. People identify themselves in two basic social contexts, work place as their organization and the society where they are residing. It is very difficult to demarcate these two and behave differently in work settings and social settings [8]. Hence, when a person develops trusting behavior at workplace it reflects in social settings also. It is widely accepted fact that OHSMS practices in an organization prevent accidents, saves lives, and take care of well-being in an organization but question remains why organizations struggle in functioning of systematic OHSMS practices. Lack of commitment, absence of safety behavior, perception towards safety management committees, and governance of safety culture. are major factors affecting performance of OHSMS. Determining whether organization culture is aligned to safety incidents and performance along with inter organizational factors is another critical area. Organizations must develop, implement, and continuously improve the safety culture in alignment with structure [9], [10].

Any fatality due to accidents at work will always result into heavy affliction to all the stakeholders including workers, management, organization, and the society [11]. Research indicates significant hesitancy among employers to invest in accident prevention measures due to viewing them as sunk costs, as they may not directly contribute to the firm's production objectives. Consequently, this reluctance can negatively impact profitability. Hence, occupational health and safety (OHS) becomes significant by focusing the prevention of accidents at work rather financial profits [12]. Social Sustainability has been identified and perceived as a critical factor for organization and is equally as important as financial, economic and environment sustainability requirements however challenge is absence of standard guidelines, though general guidelines and overall framework are there in OSHAS 18001. Guidelines to customize these requirements in ICT industry are subject to interpretation of understanding and capability of safety officers and commitment of leadership. Some of the industry giants have defined their own safety standards which are aligned to their safety and leadership philosophy while others have different standard operating procedures (SOPs) which impact business cost and opportunities for service providers [5], [13].

It is nevertheless to say that occupational accidents can have a whack on deliveries, competitiveness, and reputation of the organization. OHS cost not only include the human and financial components, but also the compensation in term of indemnities, fines, and medical expenses. Thus, the investment in OHS becomes critical for the organizations in both social and economic aspects [8]. Findings of many earlier studies clearly states that the organizations who invests in OHSMS to develop relevant safety culture can experience drastic decrease in fatalities at work and improved employee satisfaction resulting positive outcomes for the firm and employees [6].

The intra-organization and inter-organization alignment regarding safety practices is a pain area as organizations do not operate in isolated environment. There are internal stakeholders as well as external stakeholders (partners, general contractors, sub-contractors, investors to name few). Hence, safety culture of these interdependent or interrelated organizations affects the safety behavior which is based on work performance considering task and contextual behaviors. Both variables are linked to safety violations which might be situational or routine depending on the safety philosophy of management of the organizations which is sometimes a product of company size, structure, financial performance and reputation or creditworthiness of the organization [14], [15]. The intra-organization and inter-organization alignment for safety management practices need to be studied further with respect to stakeholders as safety performance is affected by each of stakeholders at various stage of project. Stakeholders responsible for implementing safety must own the process of planning and implementing as well as monitoring safety practices however measurement matrices must be designed and measured with involvement of other stakeholders. Safety performance targets are achieved only when defined in agreement and with participation across the levels and considering inter-organizational factors as well as intra-organizational factors with an understanding of human behavior of social exchange perception.

The subsequent sections of this manuscript are structured as follows: Section 2 offers an exploration of the theoretical background. Section 3 delineates the methodology in detail and presents the testing of hypotheses. Section 4 comprises the results and discussion. Finally, Section 5 presents the conclusions drawn from the findings.

2. THEORETICAL BACKGROUND

Social sustainability is no longer a choice for business however, to be considere as an impacting factor of business directly related to the environment. This is more evident than ever, and organizations are compelled

to effectively adhere to moral and social obligations to safeguard not only their interests but also those of the environment. It has been evident from studies that working environment of an organziation effect societal image and interaction of the employees. There is a nessacity of social sustainability assessment and unconventional approach to measure the sustaibaility from specific industry point of view. Roca-Puig [16] established that fairness perception of an organization is positevly linked to achieveiment, civility and thriving at work. Organizations must encourage fairness across the levels as it provides multifaced benefits to the business in form of quality product, enhanced employee morale, learning and development opportunities; contritbutes to society civility as an outcome of fairness perception of employees who are more willing to contribute for sustainable human development [17]. Business which consider social sustainability as the part of the organization strategic decission making process will definitely enhancing the sustainability culture in the society. Social aspects are critical in creating a sustainable organizational culture, based on trust and cooperative values. Social sustainability plays vital role in production as well other than ecological and economic facet of it.

Though social sustainability index is qualitative when compared to environmental and economic sustainability hence different models would be required to formulate to social sustainability index for different industries. Digalwar *et al.* [18] has established that working environment and workplace conditions are rated high as an indication of higher job satisfaction and better performance at work in machining industry. These indicators might change to few degrees in other industries however a positive linkage among these factors shall be evident across the industries. However, there will be a need to establish management systems in accordance with internal and external dynamics of the organizaton. OHSMS must be considered under strategic decission making processes as safety culture is the key concept for the success of an organizations' social sustainability. A management system need to be created in a way that it supports the culture and structure of society [19]. Fairness, safe work practices, civility and equality are critical in creating sustainable organization culture, sustainable product and further supports the implementation of integrated management systems which result in profitability and sustainable development for the business.

The aim of distinguishing between corporate social responsibility (CSR) and sustainability is to bring clarity to the concepts of corporate social responsibility, corporate sustainability, sustainability, and sustainable development. By delving into their intellectual origins and pinpointing their specific policy goals and scopes, their disparities become clearer and consequently more beneficial. Although there may be some overlap among these terms, failing to adequately differentiate them creates obstacles in advancing and regulating global business conduct [20]. This study is limited to scholarly work; does not provide comprehensive content analysis. Further, colloquial usage of CSR is not taken into account which could have significant impact in shaping meaning and defining activity. Social sustainability indicators as performative and processual at the same time informed by a logical examination toward inequality, encourages echo about how these indicators help to develop more varied and impartial accumulations. Researchers have discussed about social sustainability as an effort as a tool to escape the controlling nature which might be characteristics of some indicators. They argued it is more advisable to push the changes and their need. They have identified frameworks which can be worked through this using to assess potential benefits of viewing social indicators as performative [8].

A time bound research about involvement of sustainability in project decision making concluded quality, cost/resources and time are more important factors and decision-making factors at the work of the respondents than the consideration of sustainability. Sustainability is about stakeholder orientation is most evident and natural characteristics of the project managers while decision making in the project and further at organizational level. Though there are missing statements related to governance, compliances and politics as it impacts decision making process [21]. Kanji and Agrawal [22] identified 12 enablers and further ranked those however with a limitation of the enablers identified and analysed in this study are variable in nature, which might not work in similar fashion as it is supposed to be in a real time situation. It is important to mention that there must be an ecosystem to recognised these efforts the society. There must be outcomes of a positive image of the company for internal and external customers. Researcher also explained how these parameters can contribute towards disaster resilience which might ne natural or manmade in rare circumstances however it is imparative to understand the resultant model and how to interpret these interlinked enablers which leads to a sustainable society.

The primary objective of this research initiative is to conduct a comprehensive investigation into the multifaceted dynamics surrounding the implementation of OHSMS within organizational contexts. Central to this enterprise is a meticulous exploration of each the outside and internal factors that exert influence on the execution of OHSMS, shedding mild on their tricky interaction and resultant effect. Furthermore, this take a look at pursuits to parent the fundamental success factors contributing to the development of a robust safety culture, which in flip enables the effective implementation of OHSMS. This entails an in depth exam of the nuanced components comprising safety culture and their function in fostering a surroundings conducive to optimal OHSMS capability. Additionally, the studies seek to explain the relationships among paintings engagement, social sustainability, and human resource investment strategy, and their collective impact on enhancing the organizational safety climate and protection conduct. By delving into these interrelated

dimensions, the observe objectives to provide insights into how companies can strategically leverage these factors to reinforce their commitment to protection. Lastly, the research endeavors to investigate the intricate interdependencies between social sustainability projects and OHSMS implementation in shaping a robust safety culture. Through this comprehensive inquiry, the study aimed to advance scholarly understanding and provide practical insights for organizations seeking to enhance their safety management practices.

3. METHOD

As part of this study, we have followed exploratory and descriptive research design. Under exploratory research design we conducted interviews with the experts from the concerned field in ICT industry. This helped us in understanding the problem statement in more depth. Under descriptive research design we prepared the questionnaire on five-point Likert scale and conduct the survey to capture primary data. For this survey we targeted a balanced mix of respondents from industry working under different roles and capacities to understand how these variables are perceived by them. Survey was conducted in online mode based on 5-Point Likert scale. We have majorly focused on below mentioned respondents: i) Engineers/technicians working at sites; ii) Supervisors/project managers coordinating the activities at sites; iii) Health safety and welfare (HSW) team members; iv) Vendor companies' key persons/decision makers; v) Senior management key members. The reliability of the collected data is evaluated using Cronbach's alpha coefficients. Additionally, the convergent and discriminant validity of the measures are assessed through confirmatory factor analysis.

Figure 1 represents the conceptual framework of OHSMS implementation. We predict that effective implementation of OHSMS aimed at enhancing work engagement, social sustainability and consequently enhance the level of safety climate and safety behavior in the organization. We adopted a bi-dimensional approach to examine success factors of an OHSMS. To study the same following hypothesis is considered:

Total Effect:

- H1a: Effective implementation of OHSMS →safety climate
- H1b: Effective implementation of OHSMS →Safety Behavior

Mediation Effect:

- H2a: Effective implementation of OHSMS →social sustainability → safety climate
- H2b: Effective implementation of OHSMS →social sustainability →safety behavior
- H3a: Effective implementation of OHSMS →work engagement → safety climate
- H3b: Effective implementation of OHSMS →work engagement → safety behavior

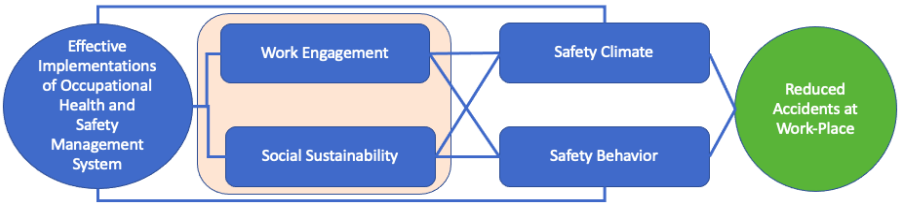

Figure 1. Framework of implementation of OHSMS

We used structural equation modeling to estimate the coefficients for hypothesized paths. The outcome from the study is identifying the challenges in effective implementation of OHSMS and their relationship with safety behavior of the organization. Work engagement and social sustainability are major contributing factors for an effective implementation of OHSMS and safety culture. Indeed, there appears to be a gap in evaluating the impact of both interorganizational and intraorganizational collaboration on safety management practices and, consequently, on the overall safety performance of the organization. This suggests a need for further research to explore how collaboration between different organizations and within individual organizations can contribute to improved safety outcomes. Safety culture must be embraced as life routine by the organizations while designing management systems which will be applied to a successful OHSMS implementation. However, there are gaps in addressing core issues such as resistance and their resolutions. Existing studies are majorly focused on micro, small, medium, and large manufacturing companies in specific countries. Transferring research findings between nations is challenging due to variations in cultural and societal contexts. These differences hinder the development of a unified theory of safety culture and safety behavior. The reciprocity principle within social exchange theory highlights a mutual reinforcement dynamic, wherein actions from one party prompt responses from another. Expanding upon this idea, we suggest that when organizations invest in OHSMS alongside human resource initiatives, and exhibit leadership dedication to

nurturing a safety-oriented environment, they foster a culture of care and empathy. Consequently, employees respond with heightened levels of dedication to their work. The perception of safety culture significantly impacts employees' perspectives of their workplace. Recognizing the organization as ethical, empathetic, and socially aware can foster a supportive organizational atmosphere and climate. Frontline employees, reciprocating the satisfaction and well-being they experience in such environments, may demonstrate increased work engagement and dedication. Past research indicates that CSR activities facilitate the development of high-quality social exchange relationships between employees and their organizations.

Employees who are engaged at work and perceive their work environment as safe typically invest their physical, cognitive, and emotional energies into task performance, yielding positive outcomes. The degree of work engagement is influenced by organizational dedication to employees, leadership commitment to fostering a safety culture, employees' adherence to safety protocols, and compliance with safety regulations. Work engagement correlates with organizational commitment, engagement in extra duties beyond job requirements, and safety performance. Previous research has consistently found associations between work engagement and the effective implementation of OHSMS, adherence to safety protocols, and compliance with safety regulations. A positive safety climate within an organization motivates employees to go above and beyond, engaging in proactive safety behaviors. Engaged employees are inclined to participate willingly in initiatives that enhance a safety-conscious workplace.

Research data was collected from 15 organizations operating in the ICT sector in India, specifically in a service provider capacity. Permission to do so was obtained from project managers of these companies. The project managers randomly selected 115 workers deployed at the field level, and 100 questionnaires were returned, resulting in a response rate of 86.7%. Full-information maximum likelihood technique was used to take care of missing values, as it yields less biased results compared to other techniques. The average age of the participants was 27.86 years with standard deviation (SD)=4.52, and their average organizational tenure was 4.32 years with SD=2.74. Regarding educational qualifications, 8.3% had post-graduate degrees, 78.8% had completed a 4-year university degree or diploma, and 12.9% had a 2-year vocational college qualification. Figure 2 and Figure 3 present the proposed research model, illustrating the total effect and mediation effect, respectively.

Figure 2 illustrates the total effect of OHSMS implementation on safety climate and safety behavior within the ICT sector. The model highlights OHSMS as a central factor influencing safety outcomes, showing a minimal positive effect on safety climate (b=0.03), indicating that while OHSMS contributes to a positive safety environment, its impact is not strong. In contrast, the implementation of OHSMS has a significant positive effect on safety behavior (b=0.52**), suggesting that effective safety management practices substantially enhance employees' adherence to safety protocols. This figure underscores the importance of prioritizing OHSMS implementation to foster a proactive safety culture, with a more pronounced influence on safety behavior than on safety climate.

H1a: OHSMS → safety climate: b=0.03

H1b: OHSMS → safety behavior: b=0.52**

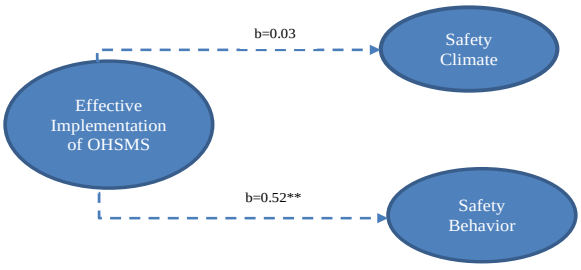

Figure 2. Research model-total effect

Figure 3 depicts the mediation effects of work engagement and social sustainability on the relationship between OHSMS implementation and safety climate and safety behavior. The model reveals that work engagement does not significantly mediate the relationship between OHSMS and safety climate (b=0.00), suggesting that engagement alone may not directly influence safety climate perceptions. However, work engagement does have a positive mediating effect on safety behavior (b=0.21*), indicating that engaged employees are more likely to demonstrate proactive safety behaviors. Furthermore, social sustainability has a weak but positive mediating effect on the relationship between OHSMS and safety climate (b=0.13*), while its influence on safety behavior is minimal (b=0.04). This figure emphasizes the need for organizations to enhance employee engagement and consider social sustainability initiatives to improve overall safety outcomes.

H2a: OHSMS → work engagement → safety climate: b=0.00
H2b: OHSMS → work engagement → safety behavior: b= 0.21*
H3a: OHSMS → social sustainability → safety climate: b=0.13*
H3b: OHSMS → social sustainability → safety behavior: b=0.04

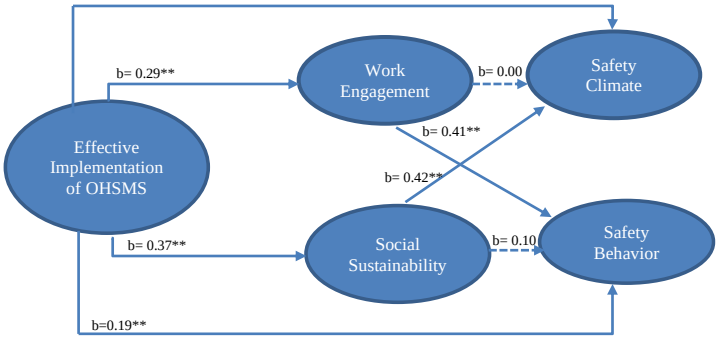

Figure 3. Research model-mediation effect

Following Brislin [23] back-translation procedure, the original survey items were translated into English. All survey items were rated on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) as shown in Table 1. Safety behaviors were evaluated using a five-item scale adapted from Hur *et al.* [24]. A six-item scale derived from the Utrecht Work Engagement Scale by Schaufeli *et al.* [25] was used for assessing work engagement. The measurement of OHSMS consisted of four items, while social sustainability was gauged using seven items developed by Pierce *et al.* [26]. In the analysis of the study's hypotheses, age and job tenure effects were controlled, as previous research has shown associations between demographic characteristics and work engagement [27], organizational-based self-esteem (OBSE) [28], and safety behaviors [29], [30].

Table 1. Results obtained for confirmatory factor analysis

Construct	Measurement item	λ
Social sustainability	Corporate social responsibility	0.6
	Sustainable development	0.71
	Sustainability	0.91
	Corporate sustainability	0.82
	Sustainable development goals	0.89
	Social investments	0.92
	Social accountability	0.75
Work engagement	Leadership perception	0.82
	Productivity	0.82
	Positive reinforcement	0.89
	Workforce retention	0.67
	Safety culture effectiveness	0.73
	Job satisfaction	0.78
Safety climate	Employee well-being	0.58
	Fairness perception (safety and human resource investment)	0.75
	Workplace civility	0.92
	Working conditions	0.95
Safety behaviors	Effectiveness of health and safety measures	0.65
	Ohsms implementation	0.95
	Employee participation	0.96
	Employee trust	0.98
	Employee motivation	0.84
OHSMS	Safety culture	0.67
	Company size	0.87
	Work environment priorities	0.86
	Financial performance variables	0.85

Note: The model fit statistics indicate a good fit:
$x^2(176) = 299.72, p < 0.05, CFI = 0.95, TLI = 0.94, RMSEA = 0.06, SRMR = 0.06$

4. RESULTS AND DISCUSSION

In Table 2, we provide details like averages, how much the values vary from these averages called SD, how the different factors relate to each other (inter-correlations), and how consistent our measurements

were (reliability coefficients). To make sure our measurements were reliable, we checked them using something called Cronbach's alpha coefficients. These were all between 0.84 and 0.91, which is higher than the minimum of 0.70 we needed. This shows that our measurements were consistent and accurate. We also checked if our measurements were valid, meaning they were really measuring what they were supposed to. All of our measurements demonstrated strong reliability, with composite reliability (CR) coefficients ranging in between 0.80 and 0.91. Next, we looked at whether our measurements were different enough from each other (discriminant validity). We found that they were, which means they were really capturing distinct aspects. Since our data came from self-reports, we wanted to make sure there wasn't any bias from how participants answered. We took steps recommended by experts to minimize this bias, like making sure participants felt comfortable and separating questions about different things. We also did a statistical test to see if there was any single underlying factor influencing our results, which could indicate bias. The results showed that our original model fit better than one where all the measurements were influenced by a single factor. This suggests that any potential bias from common methods wasn't a big issue. Overall, these findings suggest that our measurements were reliable and valid, and any potential biases didn't significantly affect our results.

We looked at the relationships between different factors in our study and how they affect safety behaviours at work. We used a method called structural equations modelling to analyse our data and found some interesting results, which we've listed in Table 3. First, we checked if frontline employees' perceptions of safety at work were linked to their commitment to the organization. We found that they were, supporting our first hypothesis. However, we didn't find a significant link between employees' perceptions of occupational health and safety and their social safety behaviours, so our second hypothesis was rejected. Next, we looked at whether factors like the organization's safety culture and employees' perceptions of occupational health and safety influenced their safety behaviours through things like work engagement. We found that perceptions of occupational health and safety did have an indirect effect on safety behaviours through work engagement (WE), supporting our third hypothesis. Overall, our findings suggest that perceptions of safety at work and organizational commitment play a role in employees' safety behaviours, but the link between perceptions of occupational health and safety and social safety behaviours might not be as strong.

Table 2. Mean, SD, and inter-correlations between the variables

Variable	Mean	SD	α	CR	1	2	3	4	5	6	7	8
Age	25.86	4.76	-	-	0.16*							
Job tenure	4.32	2.57	-	-	0.04							
Safety perceptions	3.17	0.67	0.86	0.87	0.08	-0.05	-0.06	(0.56)				
Work engagement	3.23	0.49	0.81	0.85	0.13*	-0.02	-0.01	0.31**	(0.70)			
OHSMS	3.62	0.57	0.88	0.90	0.06	0.02	0.04	0.30**	0.41**	(0.67)		
Safety climate	4.21	0.65	0.76	0.89	0.07	0.03	0.05	0.05	0.45**	0.15**	(0.69)	
Safety culture	3.61	0.81	0.88	0.81	0.13†	-0.02	0.02	0.25**	0.35**	0.45**	0.36**	(0.74)

Note: †p< 0.10, *p< 0.05, **p< 0.01.

Table 3. Path coefficients and indirect effects for the mediation models

From → to (b)	OHSMS	WE	Safety climate	Safety behavior
Age	0	- 0.02	-0.00	- 0.19
Job tenure	0.02	0.18	0.01	0.04
Safety behavior	0.28**	0.38**	- 0.09	0.15**
OHSMS			0	0.42**
WE			0.42**	0.1
R^2	10.45%	13.89%	16.73%	30.75%
	b	Cl low	Cl high	
Indirect effect				
OHSMS →work engagement → safety climate	0.21	0.1	0.4	
OHSMS →work engagement → safety behavior	0.04	- 0.02	0.14	

Note: †p< 0.10, *p< 0.05, **p< 0.01
Cl, 95% confidence level

Work place safety has become major concern for business due to regulations and sustainability prespective. Hence, having a management system which enables safety culture in sustainable manner is inevitable. An effective system encompasses policy, planning, organization, communication, participation, consultation, application and operation, performance measurement, corrective and preventive actions, management review, and continuous improvement [31]. It plays a crucial role in building trust among employees which is seen as a quality required to handle risk and uncertainity. A sustainable social system can not be achieved without trustworthy relationships which are basics of civil and cooperative behavior. People

identify themselves with the organization as their work place and the society where they are residing. It is very difficult to delineate these two and behave differently in work settings and social settings. Hence, when a person develops trusting behavior at workplace it reflects in social also. An improvement in social sustainability in society will produce positive results in organization social sustainability. A powerful external force can interfere in this interactive process but can not eliminate the impact of one on another [32].

Safety culture in a organization comprises the values, perceptions, attitudes, and behaviors of its members. Culture develops a common bond among people in the society which reflects in every aspect of life, hence, safety culture of an organization contributes to create a safety culture in societal setting as well. Basic elements of a safety culture are commitment of leadership, occupational health and safety policy, planning, resource management, participation across the levels, integration, review, procedures, documentation, risk management. All these elements contribute to engendering a working environment where work place safety is priority and address an important aspect of social sustainablitiy which is linked to human well-being [33].

Working environment and workplace conditions are rated high as an indication of higher job satisfaction and better performance at work irrespective of the industry [18]. These indicators might change to few degrees in other industries however a positive linkage among these factors shalll be evident across the industries. However, there will be a need to establish management systems in accordance with internal and external dynamics of the organizaton. OHSMS must be considered under strategic decission making processes as safety culture is the key concept for the success of an organizations' social sustainability. A management system need to be created in a way that it supports the culture and structure of society [31], [32].

Workplace behviours impact social behviour and relationship of employees. If an employee feel valued at workplace, percieve fairness in practices, observe civility culture then his societal relationships will experience similar kind of behaviors. Hence, organization culture has hugh impact on human behavior and sustaibility approach of the business influence sustainable development of human beings directly or indirectly [33].

Social sustainability is the basic requirement to safegaurd human systems from systematic degradation and in business settings trust and employee cooperation are key factors to achieve the synergy effect of social sustainability. A circluar relationship can be established between business and society if a positive feedback mechanism is identified and practiced. Social sustainability aspect needs immediate action is safety at workplace which further impact employees' moral, trust and performnace. Çalış and Büyükakıncı [19] has emphasised on adopting OHSMS in with a standarised approach and in a proactive manner to achieve goal of social sustainability in business. The challenge is how to apply social sustainbality indicators and principals to a specific industry or process. Developing a framework to assesss social sustainbility in context of a paticular industry is required to fill the gap among three pillars of sustainability i.e. economoic, environment and social [34]. Fairness, safe work practices, civility and equality are critical in creating sustainable organization culture, sustainable product and further supports the implementation of integrated management systems which result in profitability and sustainable development for the business [35].

It is imperative to adopt leadership approach to improve occupational health and safety to ensure employees's towards workplace safety is positive but OHSMS practices of an organization get affected by several factors though an organization must manage risks and hazards at workplace to ensure health and safety of workers. It is imperative for an organization to assess, analyse and respond to risk systematically still degree of success of an OHSMS varies from organization to organization depending upon commitment, knowledge, financial resources, processes, and procedures along with productivity and profitability. Most of the factors are inversely correspondent to the size of an organization. The company size, the safety practices and company performance are related with the standard of OHSMS but what is association of these factors with OHSMS practice in an organization is to be investigated [36], [37]. It is important to study alignment of stakeholders involved within and outside the organization, influencing safety performance and culture of the setup or project, hence an investigation is conducted to understand how study management practices vary in two settings i.e., inter-organizational and intra-organizational [38].

5. CONCLUSION

Organizations working in ICT space have adopted OHSMS to identify and manage occupational health and safety risks and hazards catering to their requirements. However, creating a safety culture and develop safety behavior for a successful OHSMS are the mandates however a much bigger challenge for such organizations. Safety culture and safety behavior are outcomes of continuous commitment, resources, participation, and acceptance across the levels. There are hazards present at every stage of ICT projects which may be known and unknown at the same time for people working there. Mediation effect of this study further strengthen the very foundation of a safety culture by affirming that a positive safety climate motivates employees to take up safety as a priority willingly and a negative safety climate effects employees' motivation conversely and perceived safety climate and safety motivation are linked to social exchange perspective as employees develop an inherent safety behavior if they consider that organization is concerned about their safety

and well-being. Employees operating in a positive safety climate are more inclined to be motivated to participate in safety practices and adopt safety behaviors in the long run. Another motivation for employees is safety compliance practices and willingly participate in safety practices are positive and effective results of these practices which are key contributors for a successful implementation of OHSMS.

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