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Role of Motivation in Improving Workplace Safety Culture in Telecom Industry: An Analysis

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Abstract:
The empirical verification of the structural relationship between risk factors, safety motivation, and safety behavior as perceived by telecom workers was the focus of this study. The following significant findings were obtained from an investigation that was carried out on field employees at Indian telecom companies. Personal, cultural, and institutional factors were found to have a significant positive effect on workers' safety motivation among the risk factors perceived by telecom workers. Second, employees' safety behavior was significantly improved by their safety motivation. Thirdly, workers' safety behavior was not significantly affected by personal, cultural, or institutional factors among the soft telecom companies' risk factors. Fourth, safety motivation affected all risk-causing factors perceived by workers, including personal, cultural, and institutional factors. This study examines the effects of risk-causing factors perceived by carrier worker safety motivation and behavior in order to prevent and mitigate industrial accidents.

Keywords:
Telecommunication workers, Perceived risk-causing factors, Safety motivation, Safety behavior

Introduction
A. Background and Purpose of the Research Risk factors at telecommunications workplaces are highlighted by the fact that, in comparison to other industries like general services, transportation, manufacturing, and distribution, the majority of accidents result in significant material and human loss [1]. Risk factors either directly or indirectly contribute to the various risks that telecom field workers face while carrying out their responsibilities [2]. In prior research, factors that jeopardize worker safety were merely referred to as accident causes, and their concepts were restricted to those that could be viewed as having a direct causal relationship with accidents. For instance, Moon and Kong (2020) [3] demonstrated that only a small number of facility-related factors may have a direct causal relationship with accidents. However, Hyun (2010) [2] suggested a more comprehensive strategy that took into account both direct and indirect factors that can lead to mistakes, such as personal experience and cultural or institutional factors that can lead to mistakes in judgment. In a nutshell, risk factors can be broadly defined as both internal and external factors that pose a threat to workers in telecommunications. Workers in telecommunications may disregard safety procedures and engage in careless behavior at work as a result of these risk factors, ultimately increasing the likelihood of accidents. In contrast, safety motivation is the factor that motivates individuals or organizations to recognize safety-related goals and values and work toward them. them [4]. It contributes to the creation of a safe working environment and safety culture by promoting healthy and safe behavioral practices, preventing accidents, and maintaining a safe working environment. Individual responsibility, teamwork, leadership, organizational culture, and

education all have an impact on safety motivation [5]; As a result, safety behavior can be improved by satisfying the motivational factor in telecommunications fieldworkers [6]. Safety motivation has been identified as a significant antecedent variable that influences safety behavior in previous studies [7-9]; Therefore, in order to raise the level of safety behavior among telecom field workers, it is essential to satisfy safety motivation factors. However, there is a lack of information regarding the causes of serious accidents that continue to occur at telecommunications worksites, such as industrial accidents, serious injuries, or worker deaths [1]. Focusing solely on post-accident cleanup results in a never-ending cycle of the same accident occurring again. Workers ultimately see risk factors as hindering job involvement and reducing productivity at work; as a result, treatments for these risk factors based on empirical evidence of their effects. Surveys of accident status and conditions or proposals for accident prevention measures have so far been the only forms of research on accidents at telecom work sites. The identification of risk factors for accident prevention and the possibility that certain risk factors can influence psychological factors, such as safety motivation and actual safety-related behavior, have not been the subject of any empirical research. Although Byun and Jung (2021) [1] investigated the connection between safety motivation and behavior and telecommunications safety management systems, their research was limited to identifying risk factors at tele-communications workplaces. As a result, it is important to conduct empirical research into how risk factors affect workers' safety motivation and behavior at telecom workplaces. This study sought to empirically verify the connection between telecommunications risk factors and workers' safety motivation and behavior as well as the level of risk factors, safety motivation, and safety behavior among telecommunications fieldworkers. By doing this, we hope to identify risk factors that should be addressed prior to accident prevention at telecommunications workplaces and offer suggestions for increasing worker safety compliance. The following are the specific goals of the study: First, we check to see how risk perceptions of telecom field workers affect safety motivation. Second, we examine the effect of telecom field workers' safety motivation on safety behavior. Thirdly, we confirm that telecom field workers' safety behaviors are influenced by the risk factors they perceive. Fourth, we confirm that safety motivation acts as a mediator between telecom field workers' perceptions of the risk and their safety actions.

Theoretical Baseline

A. Risk-Causing Factors

At work sites, risk can be defined in a variety of ways, including perspective, attitude, and experience. It can also be measured as the likelihood, intensity, and exposure of all disasters in a specific activity, or as a combination of the likelihood and risk size of a particular event, or as the entire process of predicting risk size and determining risk tolerance for risk assessment [10-12]. The telecommunications industry's activities can all be impacted by risk. While the broad definition of risk factors at telecommunications facilities is understandable, the specific definition is hazy and difficult to evaluate or quantify. As a result, the perspectives of the researchers also influence the risk factors that have been identified by previous research. Work management, machine management, site conditions, the work environment, safety management, and human management were identified as safety accident risk factors by Eun (2017) [13]. Hyun (2010) [2] identified institutional, cultural, and personal experiences as risk factors. Education and the work environment are examples of institutional factors; Performance-related and consumption-related cultures are examples of cultural factors; Personal accident experience also includes incidents involving oneself and coworkers,

as well as those involving other organizational members and victims in general. These unfavorable risk perceptions reduce employee engagement and productivity at work [14]. Therefore, empirical evidence of their impact must be used to develop risk factor solutions.

B. Safety Motivation Campbell, McCloy, Oppeler, and Sage (1993)[15] used performance theory to explain that behavior is influenced by motivational characteristics and acts as a deterrent, determining its direction, magnitude, and duration. Safety motivation has a direct impact on compliance and participation behaviors as determinants of safe behavior [16], and antecedents like perceived risk can influence safe behavior through the mediation of safety motivation [17,18]. Both of these factors are important in the field of safety. The motivational factors that make people aware of and strive to achieve safety-related goals and values are referred to as workers' safety motivation. It is important in preventing accidents, keeping the workplace safe, and encouraging safe and healthy behaviors [7]. Safety motivation has been shown in previous studies to regulate relationships. workers' safety attitude is influenced by a variety of factors, including safety education, teamwork, leadership, and organizational culture, and contributes to the creation of a safe working environment and safety culture [18]. between organizational climate and job behavior and is a predictor of safe behavior[7,20,21]. Additionally, the accident rate decreases with a higher safety motivation, thereby improving the organization's overall performance.

C. **Safety Behavior**

In industrial settings, safety refers to a state in which defects are absent in order to reach a safer state. In other words, safety refers to a state without the risk of accidents or disasters. Safety is defined as the actions that workers take to ensure and maintain their own safety while on the job [22], and it has a particular connection to the work processes that are carried out at workplaces. According to Neal and Griffin (2006) [7], safety culture is connected to safety behavior and can reduce or prevent accidents. Additionally, they stated that safety values influence safety behaviors and the safety of workplaces. To put it another way, the environment and safety values are both efforts to promote safety behavior and can ultimately result in safety behavior. Additionally, Xia et al. In their study on workers' perceptions of risk and safety behavior, [14] demonstrated that emotional risk perception has a greater impact than rational risk calculation and suggested new strategies for enhancing safety behavior. According to these findings, safety behavior is closely linked to safety culture, safety values, the atmosphere of the workplace, and workers' perceptions of risk. As a result, workers will make more efforts toward safety behavior if the values and atmosphere of safety are strengthened. This can ultimately result in the creation of a safe working environment and the reduction or avoidance of accidents. Additionally, considering that emotional risk perception has been shown to have a greater impact than rational risk calculation, new approaches must be investigated.

A. Survey Subjects and Survey

In this study, field workers in the telecom industry were chosen as the sample group, and 300 questionnaires were distributed over the course of approximately four weeks, from the first week of January 2021 to the fourth week. After excluding questionnaires with missing responses for some items, the final statistical analysis utilized 196 valid survey responses. The self-administered questionnaire was completed by the survey participants after adequate explanation and consent were obtained from them. Table 1 depicts the survey's contents.

Table 1.Out lines of the investigation

Population	Workers at national telecommunications construction sites
Sample group	205 workers (A communication company) - 71 supervisors, 104 field workers, and 30 safety managers
Analysis	Out of 300 copies, 196 were valid questionnaires
Investigation method	Self-written method (Field distribution)

A. Research Model

In this study, we designed the risk factors of telecommunications as independent variables and the safety behavior variables of workers as dependent variables. There are several risk factors perceived by workers at telecommunications work sites; as these risk factors are perceived, motivation is provided to perform safe work, and this motivation for safety ultimately leads to behavior that seeks to comply with safety. In this study, we sub-factored risk factors at telecommunications worksites into three sub-factors, personal, cultural, and institutional, by referring to Eun (2017) and Hyun (2010). We designed a research model by single-factorizing worker safety motivations and behaviors.

B. Hypotheses of the Study

The following hypotheses were derived on the basis of the model of this study and the aforementioned studies:

H1. The apparent gamble variables of media communications laborers emphatically influence wellbeing inspiration.

H1-1. Safety motivation is positively influenced by workers' perceived personal factors.

H1-2. Safety motivation is positively influenced by workers' perceptions of cultural factors.

H1-3. Safety motivation is positively influenced by workers' perceptions of institutional factors.

H2. Safety behavior is positively influenced by telecom workers' safety motivation.

H3. Safety behavior is positively influenced by telecom workers' perceived risk factors.

H3-1. Safety behavior is positively influenced by the telecommunications workers' perceived personal factors.

H3-2. Safety behavior is positively influenced by the telecommunications workers' perceived cultural factors.

H3-3. Workers in telecommunications' perceptions of institutional factors have a positive impact on their safety behavior.

H4. The relationship between telecom workers' safety behavior and their perceptions of risk factors is mediated by safety motivation.

H4-1. The relationship between telecom workers' safety behavior and their perceptions of personal factors is mediated by safety motivation.

H4-2. The relationship between telecom workers' safety practices and their perceptions of cultural factors is mediated by safety motivation.

H4-3. The relationship between perceived institutional factors and the safety behavior of telecom workers is mediated by safety motivation.

D. Research Measurement Tool

1) Telecommunications Risk Factors: Three sub-factors were used to measure the risk factors that telecommunications field workers perceived: cultural, institutional, and personal In this review, we made study inquiries by alluding to Eun (2017) and Hyun (2010), mea-suredeachsub-factorusinga5-pointLikertscaleandassigned scores from 1 point for 'not the slightest bit' to 5 focuses for 'verymuch,' with higher complete scores demonstrating more significant levels of individual, social, and institutional gamble factors apparent by media communications field laborers.

2) Worker Safety Motivation: In this study, we compiled survey questions by referring to Jeong et al. () to measure the safety motivation of telecom field workers. 2015), used a 5-point Likert scale to evaluate each subfactor and gave scores ranging from one point for "not at all" to five points for "very much." Higher total scores indicate increased safety management among telecom field workers.

3) Worker Safety Behavior: In this study, we referred to Kim (2019) for survey questions, measured each subfactor using a 5-point Likert scale, and gave scores ranging from one point for "not at all" to five points for "very much." The safety behavior of telecom field workers was measured using one factor. Higher total scores indicate better safety conduct among telecom field employees.

4) Method of Analysis: The SPSS 27.0 and AMOS 27.0 programs were used to analyze the study's data. In order to comprehend the level of risk factors, safety motivation, and safety behavior perceived by telecommunications field workers, descriptive statistical analysis (mean and standard deviation) was carried out. First, the graphic characteristics of the survey subjects (field workers in the telecommunications industry) were presented in terms of frequency and percentage. Second, Cronbach’s coefficient was calculated to verify reliability, and confirmatory factor analysis (CFA) was carried out to confirm the validity of the tools for measuring the risk factors, safety motivation, and safety behavior of telecommunications companies. Thirdly, structural equation modeling (SEM) was used to confirm the connection between telecommunications companies' risk factors, safety motivation, and safety behavior. Fourth, bootstrapping was used to confirm that safety motivation acts as a mediator between telecom companies' behavior toward safety and risk factors. At a p-value of 0.05, all analyses were considered statistically significant.

Results of the Empirical Analysis

A. Demographic Characteristics of Survey Subjects Table 2 presents the general characteristics of survey participants, telecommunications safety managers, supervisors, and general workers. They were split up among 96 workers, 71 supervisors, and 29 safety managers. First, there were 171 regular employees (87.2%), 17 non-regular employees (8.5%), and eight daily employees (4.1%), according to the type of employment. These were the ages that were distributed: 23 people in their 20s (11.7%), 56 people in their 30s (28.6%), 85 people in their 40s (43.4%), and 32 people who are 50 or older (16.3%) 51 people (26.0%) had accidents while working for telecommunications companies, while 145 people (74.0%) had none. This means that approximately three-quarters of the survey participants had never had an accident while working. There were 76 high school graduates (38.8%), 65 junior college graduates (33.2%), 51 four-year college graduates (26.0%), and one graduate or higher (0.5%), according to education level. In comparison, the average length of service was less than one year for 15 people and more than six months for four people (2.0 percent), people (7.5%), 36 people (184%) (more than one year to less than three years), 31 people (158%) (more than three years to less than five years), and 110 people (56.1%) (more than five years). Last but not least, the daily working hours were within eight hours for 84 people (42.9 percent), ten hours for 98 people (50.0 percent), twelve hours for nine people (4.6 percent), and others for five people (2.6 percent), indicating that more than half of the population, or 57.1 percent, worked more than eight hours per day.

The subjects in this study were divided into various job groups and further divided into groups based on their age, experience with safety incidents while working for a telecommunications company, education level, number of years in the industry, and daily working hours. Consequently, there were some instances in which specific items did not have any participants.

Verification of Validity and Reliability of Measurement Devices

A corroborative element examination was performed on the measurement model to confirm the merged and discriminant legitimacy of the exploration model factors, for example, the gamble factors perceived by telecommunications workers (personal, social, and institutional elements), wellbeing inspiration, and security conduct. The 2 statistic, standardized root mean square residual (SRMR), Tucker Lewis index (TLI), comparative fit index (CFI), and root mean square error or approximation (RMSEA) with confidence intervals were used in this study to evaluate model fit. A 2 statistic with $p > 0.05$ is generally regarded as a good fit, but it is dependent on sample size; Consequently, other fit indices ought to be taken into consideration first. TLI and CFI were generally regarded as good fits if they were greater than 0.90, SRMR was regarded as a good fit if it was less than 0.08, RMSEA was regarded as an excellent fit if it was less than 0.05, a good fit if it was less than 0.08, and an average fit if it was less than 0.10 [23].

We obtained the following values in light of the measurement model's fit, as shown in Table 2: Consequently, an overall good fit was obtained, and the measurement model was found to be appropriate. 2 = 4,334.177 (df = 2,045, p 0.001), SRMR = 0.044, TLI = 0.918, CFI = 0.924, and RMSEA(90%CI) =0.070 (0.068-0.072). In addition, all measurement variables for latent variables, such as safety motivation and safety behavior, as well as risk factors for telecommunications companies (personal, cultural, and institutional factors), were statistically significant (p 0.001) in

Table 2. Survey subjects' demographic characteristics

Categories		Safety manager		Supervisor		Workers		Totality	
		N	(%)	N	(%)	N	(%)	N	(%)
Employment type	Full-time	26	(89.7)	71	(100.0)	74	(77.1)	171	(87.2)
	Non-regular workers	3	(10.3)	0	(0.0)	14	(14.6)	17	(8.7)
	Daily work	0	(0.0)	0	(0.0)	8	(8.3)	8	(4.1)
Age	Twenty	6	(20.7)	6	(8.5)	11	(11.5)	23	(11.7)
	Thirty	6	(20.7)	25	(35.2)	25	(26.0)	56	(28.6)
	Forty	13	(44.8)	35	(49.3)	37	(38.5)	85	(43.4)
	Over 50s	4	(13.8)	5	(7.0)	23	(24.0)	32	(16.3)
Safety accident Experience or not	Experience	11	(37.9)	20	(28.2)	20	(20.8)	51	(26.0)
	No experience	18	(62.1)	51	(71.8)	76	(79.2)	145	(74.0)
Academic background	High school dropout	0	(0.0)	0	(0.0)	3	(3.1)	3	(1.5)
	High school graduate	11	(37.9)	18	(25.4)	47	(49.0)	76	(38.8)
	Junior college graduate	8	(27.6)	27	(38.0)	30	(31.3)	65	(33.2)
	University graduate	9	(31.0)	26	(36.6)	16	(16.7)	51	(26.0)
	Above Graduate school	1	(3.4)	0	(0.0)	0	(0.0)	1	(0.5)
Working years	Less than six months	1	(3.4)	1	(1.4)	2	(2.1)	4	(2.0)
	More than 6 months ~less than 1 year	0	(0.0)	7	(9.9)	8	(8.3)	15	(7.7)
	More than 1~less than 3 years	7	(24.1)	8	(11.3)	21	(21.9)	36	(18.4)
	More than 3~less than 5 years	5	(17.2)	10	(14.1)	16	(16.7)	31	(15.8)
	More than five years	16	(55.2)	45	(63.4)	49	(51.0)	110	(56.1)
One day working hours	Within 8 hours	9	(31.0)	25	(35.2)	50	(52.1)	84	(42.9)
	Within 10 hours	19	(65.5)	39	(54.9)	40	(41.7)	98	(50.0)
	Within 12 hours	1	(3.4)	4	(5.6)	4	(4.2)	9	(4.6)
	Etc.	0	(0.0)	3	(4.2)	2	(2.1)	5	(2.6)
	Sum	29	(100.0)	71	(100.0)	96	(100.0)	196	(100.0)

Table 3. Fit of measurement model

χ^2	df	*p*	χ^2/df	SRMR	TLI	CFI	RMSEA (90%CI)
4,334.177	2,045	.000	2.119	.044	.918	.924	.070(068-.072)

in terms of factor loading, and demonstrated high values greater than 0.50 in standardized factor loading.

The convergent validity of the latent variables was evaluated using construct reliability (CR) and average variance extracted (AVE). The degree of correlation between two or more measurement items for a single latent variable is referred to as convergent validity. In most cases, the convergent validity of latent variables is deemed sufficient if the construct reliability is greater than 0.70 and the average extracted variance is greater than 0.50. In the case of construct reliability (CR), all latent variables for telecommunications risk factors, including personal factors (0.912), cultural factors (0.876), institutional factors (0.859), safety motivation (0.887), and safety behavior (0.810), were above 0.70. The average variance extracted (AVE) also showed that all latent variables for telecommunications risk factors, including personal factors (0.798), cultural factors (0.711), institutional factors (0.699), safety motivation (0.714), and safety behavior (0.722), were Discriminant validity refers to how different one latent

Table 4. Results of confirmatory factor analysis of risk-causing factors

Variables			Non-standardized Estimate	Standardized Estimate	Standard Error	t	CR	AVE
Personal Factor	→	PF1	1.000	0.931			0.912	0.798
	→	PF2	1.027	0.915	.051	23.504***		
	→	PF3	1.039	0.878	.049	21.130***		
	→	PF4	1.049	.0867	.7025	12.155***		
	→	PF5	1.090	.0865	.7224	13.371***		
	→	PF6	1.067	.0888	.6753	11.781***		
Cultural Factor	→	CF1	1.000	0.832			0.876	0.711
	→	CF2	.955	0.837	.065	14.508***		
	→	CF3	1.012	0.845	.069	14.516***		
	→	CF4	1.034	0.689	.095	12.919***		
	→	CF5	.8927	.0733	.6623	12.209***		
	→	CF6	.9702	.0791	.6626	12.209***		
	→	CF7	.9402	.0742	.6938	12.694***		
Institutional Factor	→	IF1	1.000	0.828			0.859	0.699
	→	IF2	.9485	0.837	0.065	14.478***		
	→	IF3	.8786	.0766	.6513	12.329***		
	→	IF4	.9446	.0788	.6336	12.446**		
	→	IF5	.9226	.0757	.6808	12.547***		
	→	IF6	1.234	0.880	0.070	15.166***		
	→	IF7	1.115	0.870	0.077	15.556***		
Safety Motivation	→	SM1	1.000	0.832			0.887	0.714
	→	SM2	1.150	.0798	.7541	14.482***		
	→	SM3	1.270	.0855	.7782	14.893***		
	→	SM4	1.175	.0813	.7514	14.427***		
	→	SM5	1.011	.0845	.6165	12.056***		
	→	SM6	.9366	.0525	.7816	18.051***		
	→	SM7	.7733	.0657	.5497	11.836***		
	→	SM8	.8862	.0562	.7003	15.726***		
	→	SM9	.8327	.0598	.6432	14.155***		
Safety Behavior	→	SB1	1.000	0.877			0.810	0.722
	→	SB2	0.933	0.912	0.060	17.881***		
	→	SB3	0.921	0.888	0.063	16.443***		
	→	SB4	0.973	0.829	0.066	16.338***		
	→	SB5	1.294	.1033	.7771	12.601***		
	→	SB6	1.492	.1147	.8353	13.131***		
	→	SB7	1.275	.1080	.7087	11.858 ***		

**p< .01, ***p< .001

is derived from another. Discriminant validity is generally considered to be present if the average variance extracted for each of the two latent variables is greater than the square of the correlation coefficient between them [24]. Table 5 shows the results of the discriminant validity test. The square of the highest correlation coefficient (0.413) between personal and cultural factors among the research variables was lower than the average variance extracted for all of the research variables, indicating that discriminant validity had been established. When the correlations between the research variables were looked at, it was found that the risk factors that telecom workers perceived had significant positive correlations with their safety motivation and safety behavior, as well as significant positive correlations between safety motivation and safety behavior.

Table 5. Correlation between study variables

Variables	Risk-causing Factor			Safety Motivation	Safety Behavior
	Personal Factor	Cultural Factor	Institutional Factor		
Personal Factor	.798				
Cultural Factor	.643***	.711			
Institutional Factor	.612***	.582***	.699		
Safety Motivation	.491***	.409***	.294**	.714	
Safety Behavior	.632***	.570***	.459***	.571***	.722

**p< .01, ***p< .001 (The diagonal values are the AVE values)

C. Verification of Research Hypotheses A structural equation modeling analysis was carried out with AMOS 27.0 in order to verify the research hypotheses for examining the structural causal relationship between personal, cultural, and institutional risk factors for telecommunications companies and worker safety motivation and behavior. The estimation of the parameters was done using the maximum likelihood (ML) method. First, the findings presented in Table 6 by the fit of the research model were as follows: 2=4,325,889 (df=2,297, p 0.001), SRMR=0.049, TLI=0.927, CFI=0.926, and RMSEA(90%CI)=0.073 (0.071- 0.075), confirming that the research findings were accepted without issue.

Table 6. Fit of Research Model

χ^2	df	p	χ^2/df	SRMR	TLI	CFI	RMSEA(90%CI)
4,385.889	2,297	.000	1.909	.049	.927	.926	.073(.071~.075)

Table 7. Research hypotheses verification results (H1, H2, H3)

Path			Non-standardized path coefficient	Standard Error	Standardized path coefficient	t(C.R)
Personal Factor	→	Safety Motivation	.322	.132	.263	2.457*
Cultural Factor	→	Safety Motivation	.344	.131	.282	2.660**
Institutional Factor	→	Safety Motivation	.271	.117	.237	2.356*
Safety Motivation	→	Safety Behavior	.310	.093	.423	3.355***
Personal Factor	→	Safety Behavior	.034	.110	.038	.313
Cultural Factor	→	Safety Behavior	.090	.093	.107	.950
Institutional Factor	→	Safety Behavior	.086	.067	.111	1.325

Table 7 displays the results of this study's hypotheses regarding the causal relationship between personal, cultural, and institutional risk factors for telecommunications companies and employees' safety motivation and behavior.

Personal factors (standardized path coefficient = 0.263, t = 2.457, p 0.05), cultural factors (standardized path coefficient = 0.282, t = 2.660, p 0.01), and institutional factors (standardized path coefficient = 0.237, t = 2.356, p 0.05) all had a significant positive impact on worker safety motivation when examining the results of verifying research hypothesis 1, which was set to have a positive impact on the risk factors perceived by According to these findings, telecommunications workers are more motivated to ensure their safety if they have a higher perception of personal, cultural, and institutional risk factors. To motivate workers to maintain safety during accident prevention, workers must be made aware of the risk factors that can occur at work. Particularly, as can be seen from the standardized coefficients, considering the relative influence of these factors in this study, cultural factors have the greatest influence among the risk factors.

Table 8. Research hypotheses verification results (H4)

Path	Indirect Effect		
	Standardized path coefficient	95%CI	p
Personal factor → Safety motivation → Safety behavior	.107	(.015~.295)	.026
Cultural factor → Safety motivation → Safety behavior	.084	(.002~.284)	.048
Institutional factor → Safety motivation → Safety behavior	.057	(.003~.169)	.042

*Bootstrap sampling 1,000 times.

boosting employee motivation for safety. As a consequence of this, the research hypotheses 1-1, 1-2, and 1-3 were accepted.

Next, taking into consideration the results of verifying research hypothesis 2 that worker safety motivation influences safety behavior, worker safety motivation had a significant positive effect on safety behavior (standardized path coefficient =...423, t = 3.355, p 0.001), indicating that the higher the worker safety motivation of telecom workers, the higher their safety behavior was. As a result, Hypothesis 2 was approved.

Taking into consideration the outcomes of confirming research hypothesis 3, the risk factor perceived by telecom workers will positively influence worker safety behavior; Worker safety behavior was unaffected by personal factors (standardized path coefficient = 0.038, t=0.313, p > 0.05), cultural factors (standardized path coefficient = 0.107, t = 0.950, p > 0.05), or institutional factors (standardized path coefficient = 0.111, t = 1.325, p > 0.05).

Bootstrapping was then used to test research hypothesis 4 that safety motivation mediates the relationship between worker safety behavior and risk factors perceived by telecom workers. When the population distribution is unknown, bootstrapping is used to estimate the distribution of parameters using sample data. At a significance level of 0.05, it is deemed significant when zero is not included in the 95% confidence interval (CI). Table 8 summarizes the analysis's findings.

The indirect effect of personal factor of safety motivation on worker safety behavior (standardized path coefficient = 0.107, 95% CI: 0.015-0.295, p 0.05), and the safety behavior path's indirect effect of safety consciousness (standardized path coefficient = 0.084, 95% CI: The indirect effect of the institutional factor on safety consciousness and behavior (standardized path coefficient=0.057, 95%CI:0.003-0.169, p 0.05) all had a value of 0 in the 95% confidence interval; Consequently, there was a significant mediating effect. Safety motivation has a complete mediating effect on the relationship between risk factors perceived by telecom workers and worker safety behavior, even though risk factors perceived by workers did not directly affect their safety behavior. However, telecommunications risk factors indirectly influenced worker safety behavior through worker safety motivation.

Discussion And Conclusions

In this study, we empirically confirmed the structural relationship between safety motivation, safety behavior, and risk factors perceived by telecommunication workers. The following are the main findings of the empirical analysis:

First, we looked at how telecom workers' perceptions of risk factors affected their motivation for safety. Worker safety motivation is significantly impacted by personal, cultural, and institutional risk factors that telecommunications workers perceive. These findings suggest that workers must first be able to perceive risk factors in order to motivate them to maintain

safety at work and prevent accidents. This suggests that workers' motivation for safety is inversely proportional to their level of risk perception.

Second, we looked at how worker safety motivation affects safety behavior. As a result, safety behavior was significantly improved by worker safety motivation. These findings suggest that worker safety motivation must be prioritized in order to increase worker safety behavior in order to prevent accidents. This is because workers' safety behavior is correlated with their safety motivation. To put it another way, safety motivation must come first before employees can voluntarily participate in safety activities like following safety procedures and encouraging their coworkers to be safe.

Thirdly, we looked at how telecom workers' perceptions of risk factors influenced their safety actions. Personal, cultural, and institutional factors had no significant impact on worker safety behavior among the perceived risk factors for telecom workers. According to these findings, employees' safety behaviors are correlated with their level of risk perception. As a result, workers must first recognize risk factors in order to take safety precautions. These findings suggest that workers are more likely to exhibit safety behaviors like complying with safety regulations or wearing safety gear when they have a better understanding of risk factors. This can be linked to workers' awareness of the importance of these behaviors to their own health and safety.

Fourth, the relationship between telecommuting workers' perceptions of risk factors and safe behavior was examined in terms of the mediating effect of safety motivation.

The fourth conclusion differs from the previous content in that it examines the relationship between the risk factors perceived by telecommunications workers and safe behavior when workers' safety motivation intervenes. This is in contrast to the third conclusion, which examined the relationship between the risk factors and safe behavior, or the relationship between the two variables. As a result, workers' perceptions of personal, cultural, and institutional risk factors all had an indirect impact on safe behavior through safety motivation. This result demonstrated a cascading effect in which workers' safety motivation increased proportionally with their perception of risk factors, ultimately influencing workers' safe behavior. This study confirmed that motivating workers for safety is a very important factor by demonstrating that the risk factors that telecommuting workers perceived did not have a direct impact on workers' safe behavior but did have a positive indirect effect on safe behavior through safety motivation.

However, a recent study by Byun and Jung (2021), which is similar to a previous study on the safe behavior of telecom workers, reported that by empirically analyzing the relationship between safety awareness and compliance behavior, telecom companies' safety management systems could improve workers' safety awareness and behavior. It has been demonstrated that workers' compliance with safety regulations rises in tandem with an increase in their safety awareness [25]. It is possible to confirm that workers' own safety awareness and safety motivation are very important factors in increasing the safety behavior of telecom workers when compared to the findings of this study.

By examining the risk factors that telecommunications workers perceive as affecting their safety motivation and behavior to prevent and mitigate industrial accidents in the workplace, this study provides basic, practical data to illustrate the significance of perceiving risk factors

in the workplace. In addition, this study has academic significance because it derived factors that can motivate workers for their own safety and affect their safety behavior by subdividing the various factors that can cause accidents among workers into personal, cultural, and institutional factors. Previous studies have primarily focused on analyzing the status of worker safety consciousness and safety behavior and analyzing safety behavior according to worker perception of safety.

However, this study had some limitations. By using 196 telecom workers from a domestic telecommunications company as the survey sample, the results were obtained. Therefore, there may be differences in the outcomes if research is carried out on telecommunications workers who were not surveyed. As a result, it may not be possible to apply the findings of this study to all Indian telecommunications companies in a generalized manner. Therefore, in subsequent studies, it will be necessary to conduct a comprehensive study that expands the sample of this study from one domestic telecommunications company to all three telecommunications companies in India in order to obtain more generalized results.

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