FACTORS INFLUENCING SAFETY COMPLIANCE BEHAVIOR AMONG FOOD DELIVERY RIDERS – AN APPLICATION OF SAFETY CLIMATE MODEL

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(Received: March 24, 2023; Revised: April 23, 2023; Accepted: April 24, 2023)

Abstract - The increasing of road traffic accidents is threatening the well-being of road users worldwide and a high number of people died or become disabled. Several studies have shown that risky riding is prevalent among motorcyclists, consisting of traditional and new commercial ones, especially in the middle-income–countries (MICs) and low–income–countries (LICs). Griffin and Neal's [1] safety climate model was used to point out the link between safety climate and safety knowledge and safety compliance; the effect of safety knowledge on safety compliance is also considered as the result of this research. Structural equation modeling (SEM) was used to analyze these relationships among latent constructs. Data was collected from 433 base-app motorcyclists. The results show that the safety knowledge of motorcyclists plays a mediate role in safety compliance and safety climate. The results are useful for developing measures that aim to reduce risky riding behaviors among food delivery riders.

Key words – Food delivery riders; accidents; risky driving; safety climate; safety compliance.

1. Introduction

The growing recognition of road traffic accidents as a significant public health concern is attributable to their substantial impact on human resources [2]. This issue is currently ranked as the eighth leading cause of death globally and the primary cause of mortality among individuals aged 5 to 29 years [3]. According to [3], road traffic accidents result in over 1.35 million fatalities and up to 50 million injuries annually. Particularly alarming is the mortality rate of 20.7 per 100,000 population in Southeast Asia [3].

An individual employed as a delivery driver in the context of an application-based delivery system is charged with the responsibility of transporting merchandise from the parent company to the end consumer through a digital platform. In recent years, the utilization of motorbikes as a mode of transportation within the domain of such services has witnessed a marked surge in popularity and prevalence, particularly in developing nations [4]. This trend is anticipated to continue its exponential growth, effecting a comprehensive transformation of the food and beverage service industry. In Vietnam, the business models of a considerable number of wholesalers and retailers have been adapted to pivot towards online retail channels, supplemented with delivery services (such as Nowfood and Loship) to cater to the evolving consumer demands [5]. The proliferation and evolution of such service motorbikes have both directly and indirectly contributed to the escalation of motorcycle-related traffic accidents, rendering the situation increasingly intricate and challenging to manage, thereby posing a potential hazard to both riders and vehicles.

In recent times, there has been a growing apprehension regarding the safety of delivery drivers on the road. In previous studies, a significant portion of the research was focused on comprehending and examining the safety measures adopted by drivers during the delivery process [6-13]. However, the question of ensuring a safe working environment and promoting driver awareness of safety has not been adequately comprehended. Against this backdrop, this study endeavors to explore the role of company management and driver behavior in fostering workplace safety during the course of delivery operations.

2. Theoretical modeling and hypothesis development

2.1. Safety climate

The Safety Climate Model presents a theoretical framework that facilitates the assessment and enhancement of safety culture within organizations [14]. This model centers around two central dimensions, namely the overall perceptions, and attitudes that employees hold towards safety in their workplace. It posits that the employees' recognition of the significance of safety, along with their attitudes towards safety, wield a substantial influence over their behavior and decision-making concerning safety matters [15, 16].

The safety climate model proposed by Neal, et al. [16] conceptualizes safety climate as a comprehensive construct composed of four distinct components, namely manager values, safety communication, safety practices, and safety equipment. The manager values dimension comprises items that measure management's perception of safety-related values. The safety practices component evaluates the organization's implementation of safety practices. The safety communication category assesses how safety-related information is disseminated within the organization. Finally, the safety equipment dimension examines the adequacy of safety equipment supplied by the organization.

2.2. Safety knowledge

The term "safety knowledge" encompasses an individual's comprehension of the potential hazards and associated risks pertaining to a specific activity or work setting, in addition to the ability to prevent accidents and injuries [1]. This includes familiarity with safety-related policies, procedures, regulations, and the capacity to identify and mitigate potential hazards. According to Neal, et al. [1], a safe climate is regarded as a predictor of safety performance, whereas safety knowledge is deemed a determinant of safety performance.

2.3. Safety compliance

Safety compliance refers to the adherence of an individual or organization to safety rules, regulations,

policies, and procedures [1]. It entails the application of established safety guidelines to identify and mitigate potential hazards and risks. Compliance plays a crucial role in upholding safety climate and averting accidents and injuries. This may encompass the implementation of safety protocols for personal protective equipment, the reporting of safety incidents or hazards, attendance at safety training sessions, and adherence to regulatory agencies' safety standards and regulations.

2.4. Hypothesis development

The present study aims to investigate the safety climate in corporate environments and its impact on the job performance of delivery drivers, with a particular focus on four safety climate dimensions. Previous research has explored the relationship between safety climate and employees' safety awareness within companies. For instance, Braunger, et al. [17] found that all four dimensions of safety climate significantly influenced employees' safety knowledge. This study further demonstrates a positive correlation between the organization's safety climate and employees' safe behavior. In addition, previous studies have indicated that several environmental factors, including safety training and safety communication, can predict employees' safety knowledge [18-20]. Building on these findings, we hypothesize that:

H1: Manager values have a positive influence on safety knowledge.

H2: Safety communication has a positive influence on safety knowledge.

H3: Safety practices have a positive influence on safety knowledge.

H4: Safety equipment has a positive influence on safety knowledge.

Pilbeam, et al. [21] examined several facets of safety compliance, encompassing the provision and upkeep of plant and work systems, safe implementation of processes and practices, dissemination of information, guidance, and training, maintenance of safety climate, and the provision of required safety equipment to ensure safe working environment. Zin and Ismail [22] contended that the values of managers and the provision of safety equipment are factors that positively influence workers' awareness of safety compliance in the construction industry. Furthermore, studies have shown that a positive safety climate enhances employees' compliance with safety regulations. These findings reinforce the notion that a robust safety environment is crucial in reducing the likelihood of risky behaviors [23, 24].

H5: Manager values have a positive influence on safety compliance.

H6: Safety communication has a positive influence on safety compliance.

H7: Safety practices has a positive influence on safety compliance.

H8: Safety equipment has a positive influence on safety compliance.

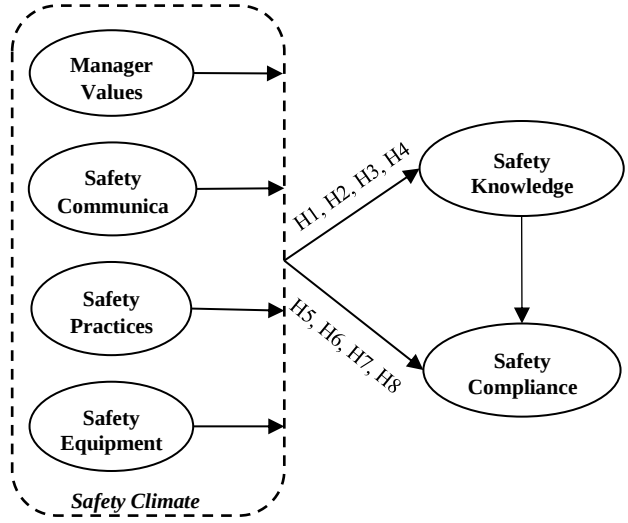

Figure 1. *Proposed conceptual model*

The investigations conducted by Vinodkumar and Bhasi [19] and Okoye, et al. [25] reveal a statistically significant positive correlation between safety knowledge and safety compliance. Moreover, knowledge exchange systems and the extent of knowledge exchange within an organization, both intra- and inter-unit, have a bearing on workers' adherence to safety regulations [26]. These findings suggest that an essential precondition for workers to comply with safety protocols is to possess a sound understanding of rules and procedures before commencing work [27].

H9: Safety knowledge has a positive influence on safety compliance.

3. Method

3.1. Survey questionnaire and measures

Drawing upon the theoretical foundations and development models expounded above, a three-part questionnaire was developed in a self-administered format, synthesizing the existing literature to assess and appraise the research hypotheses. The first section briefly outlines the purpose of the questionnaire. The second section comprises 15 questions that measure six factors, with all scales employed in this segment adhering to the Likert 7 format (ranging from 1 = "strongly disagree" to 7 = "strongly agree"). The final section of the questionnaire pertains to the participants' demographic information, such as age, gender, occupation, education, income, and information about their trips (e.g., the time of daily motorcycle use, usage level). The questionnaire was initially developed in English and later translated and adapted to Vietnamese. Before conducting the survey, the questionnaire was revised and rectified for errors (e.g., spelling errors, unclear sentences, and the average response time of the questionnaire) following a pilot survey conducted among 30 students at Danang University of Technology.

3.2. Data collection

In this study, the self-report survey method was employed using convenience sampling, as defined by Tanner, et al. [28]. Despite the limitations of this technique in terms of representativeness and bias, it was deemed appropriate as the population size of the study population was unknown.

The survey was conducted over two weeks, from August 15 to August 28, 2022, in Da Nang city. A survey team comprising two trained university students conducted face-to-face interviews with delivery drivers affiliated with platform firms. The surveyors remained nearby to assist the respondents, as needed. Completed questionnaires were collected by the surveyors. A total of 433 completed questionnaires were collected. In order to minimize bias in the data collected from the survey, a data-cleaning process was implemented. Firstly, potential "skimmers" who completed the survey much quicker than expected were identified and their responses were scrutinized. Secondly, data that did not have any significant value for the important outcome variables were excluded from further analysis. Thirdly, respondents who provided the same answer for all questions on the Likert scale were considered as "skimming" and were removed from the final data set. Finally, a boxplot was utilized to filter out responses that were significantly different from the rest, also known as outliers. After removing these outliers, the final sample size was reduced to 356 usable responses.

In this study, the partial least squares method based on the Partial least square Structural Equation Model (PLS-SEM) was conducted to evaluate the model developed by Smart-PLS4.

4. Results

4.1. Assess measurement model

Table 1. *Measurement and model evaluation*

Latent variables	Loadings	CA	CR	AVE
Manager Values (MAV)		0.892	0.905	0.902
MAV1	0.957			
MAV2	0.943			
Safety Communication (SAC)		0.854	0.856	0.774
SAC1	0.871			
SAC2	0.903			
SAC3	0.865			
Safety practices (SAP)		0.830	0.849	0.854
SAP1	0.940			
SAP2	0.908			
Safety Equipment (SAE)		0.715	0.717	0.778
SAE1	0.874			
SAE2	0.891			
Safety Knowledge (SAK)		0.748	0.748	0.798
SAK1	0.889			
SAK2	0.896			
Safety Compliance (SCP)		0.789	0.793	0.613
SCP1	0.734			
SCP2	0.852			
SCP3	0.795			
SCP4	0.746			

Initially, the internal consistency reliability was tested in this study through Cronbach's alpha coefficient and composite reliability (CR). The CR values presented in Table 1 ranged from 0.717 to 0.905, both exceeding the suggested value of 0.7, as proposed by Hair Jr, et al. [29]. Secondly, the indicators in the measurement model exceeded the allowable threshold, ranging from 0.734 to 0.957. Therefore, all indicators were kept for internal model evaluation. Moreover, Table 2 presents the average variance extracted (AVE) values of six latent variables, which were utilized to evaluate the overall variance in a particular construct, resulting in a value analysis ranging from 0.613 to 0.902, higher than the recommended threshold of 0.5 proposed by Fornell and Larcker [30].

Table 2. *Heterotrait-monotrait ratio of correlations of the factor model*

	MAV	SCP	SAK	SAP	SAC	SAE
MAV						
SCP	0.408					
SAK	0.395	0.547				
SAP	0.849	0.362	0.332			
SAC	0.570	0.469	0.478	0.674		
SAE	0.539	0.458	0.800	0.577	0.604	

Subsequently, to assess the discriminant validity tested via the Heterotrait-Monotrait ratio on correlation, the HTMT values for the structure pairs are presented in Table 2, indicating a clear matrix format, with values below the threshold value of 0.85. This test establishes appropriate discriminability and proves to be significant.

4.2. Assess structural model

In this study, standardized root mean square residual (SRMR) was used to evaluate the fit of the model. The results indicated that the SRMR value was 0.065, which is lower than the recommended threshold of 0.08 suggested by Byrne [31]. As a result, the verified model fit is considered acceptable for testing hypotheses.

Table 3. *Results of direct effects among constructs*

Hypothesis: Path	Estimate	SD	t-value	p-values	Result
H1: MAV → SAK	0.138^{ns}	0.079	1.732	0.083	Reject
H2: SAC → SAK	0.155^{*}	0.076	2.035	0.042	Support
H3: SAP → SAK	-0.159^{ns}	0.087	1.828	0.068	Reject
H4: SAE → SAK	0.524^{***}	0.075	6.954	0.000	Support
H5: MAV → SCP	0.161^{**}	0.072	2.226	0.026	Support
H6: SAC → SCP	0.195^{***}	0.074	2.648	0.008	Support
H7: SAP → SCP	-0.013^{ns}	0.084	0.156	0.876	Reject
H8: SAE → SCP	0.027^{ns}	0.082	0.333	0.739	Reject
H9: SAK → SCP	0.285^{***}	0.071	4.031	0.000	Support

*Notes: ***p < 0.01, **p < 0.05, *p < 0.1, ^{ns} non significant*

In this study, a bootstrapping analysis was conducted to evaluate the hypothesized relationships of the structural model. The analysis was based on 550 cases and 5,000 re-samples, and it yielded six statistically supported hypotheses out of the nine suggested relationships between the examined constructs. Table 3 displays the results of the analysis. The findings reveal that safety equipment is considered to be the most predictive factor among the two factors that have a significant impact on safety knowledge ($\beta_{SAE \rightarrow SAK} = 0.524$, $t = 6.954$, $p < 0.001$). Similarly, safety communication caused the greatest

impact on safety compliance ($\beta_{SAC \rightarrow SCP}$ = 0.195, t = 2.648, p = 0.008). Moreover, the relationship between safety knowledge and safety compliance was found to be significant ($\beta_{SAK \rightarrow SCP}$ = 0.285, t = 4.031, p <0.001).

Table 4. *Results of indirect effects between each construct*

Indirect effect	Estimate	SD	t-value	p-value
MAV → SAK → SCP	0.039^{ns}	0.026	1.537	0,124
SAC → SAK → SCP	0.044^{ns}	0.027	1.656	0,098
SAP → SAK → SCP	-0.045^{ns}	0.029	1.593	0,111
SAE → SAK → SCP	0.149***	0.041	3.656	0,000

*Notes: ***p < 0.01, **p < 0.05, *p < 0.1, ^{ns} non significant*

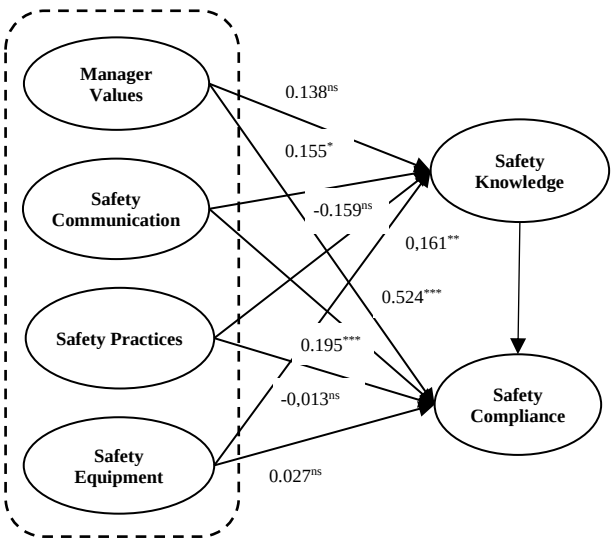

Figure 2. *Result model*

The study also assessed indirect effects between the constructs using the bootstrap method proposed by Zhao, et al. [32]. The significance of mediation associations between constructs was determined by examining t-values that exceeded the 1.65 thresholds at a 10% significance level. As shown in Table 4, all the relationships between the safety climate elements and safety compliance were evaluated through the mediating role of safety knowledge. The results indicated that safety knowledge played a mediating role in the causal relationship between safety equipment and safety compliance, with statistically significant effects ($\beta_{SAE \rightarrow SAK \rightarrow SCP}$ = 0.149, t = 3.656, p < 0.001). However, the remaining effects were found to be insignificant.

Table 5. *Results of total effects*

Total effect	Estimate	SD	t-value	p-value
MAV → SCP	0.200**	0.069	2.904	0.004
SAC → SCP	0.239**	0.078	3.056	0.002
SAP → SCP	-0.059^{ns}	0.081	0.722	0.470
SAE → SCP	0.177*	0.071	2.486	0.013

*Notes: ***p < 0.01, **p < 0.05, *p < 0.1, ^{ns} non significant*

Table 5 presents information regarding the total effects of the latent variables, encompassing both direct and indirect effects. The findings reveal that the total effects of safe communication and safe practices demonstrate a similar level of significance to that of the direct effects presented in Table 3. Nonetheless, a disparity is observed regarding the significant impact of safety equipment on safety compliance ($\beta_{SAE \rightarrow SCP}$ = 0.177, t = 2.486, p = 0.013). Furthermore, the aggregate effect of safe practices on safety compliance is found to be insignificant.

5. Discussion

The present research is an empirical investigation aimed at exploring the impact of safety climate on the work performance of food delivery drivers in Vietnam. Notably, this study represents the first application of the safety model to gain insight into the behavior of delivery drivers. Three primary theoretical contributions can be discussed:

Among the four elements of a safe environment examined in this study, only safety equipment and safe communication were found to have significant impacts on safety knowledge, indicating their potential role in promoting a better understanding of safe work practices and enhancing employee safety awareness. This finding is consistent with prior research conducted by Braunger, et al. [17]. Notably, the impact of safety equipment on safety knowledge was found to be greater than that of safe communication. This may be attributed to the provision of complete safety equipment and rigorous training programs offered by the company, which provide employees with an overview of the order fulfillment process. As a solution, it is suggested that specialized companies should provide delivery drivers with a comprehensive range of protective equipment (such as reflective vests and phone holders) and clear instructions on their proper use to ensure their safety and enhance their work productivity.

One of the study's findings is that safety equipment, safe communication, and management values have a significant influence on the safety compliance of delivery drivers. The results show that companies with strict safety management policies tend to have better safety compliance among their drivers. This finding is consistent with previous studies in the field [16, 17, 19, 23]. Among these three factors, safe communication is the most important predictor of safety compliance, indicating that delivery drivers are willing to contribute to the company's safety efforts. Therefore, the proposed solution is for specialized companies to regularly organize meetings between delivery drivers and management to foster a shared perspective on safety issues in the workplace.

Ultimately, this study discovered a substantial correlation between safety knowledge and safety compliance, which is consistent with previous research findings [19, 24, 26, 33]. This association implies that employees who possess comprehensive safety knowledge are more inclined to comply with safety protocols while performing their duties. Furthermore, safety knowledge acts as an intermediary between safety equipment and safety compliance. One could argue that management companies provide an overview of the potential hazards that employees may face during job execution, which in turn enhances safety in the workplace and promotes work efficiency.

6. Conclusion

The present study yields significant findings that offer valuable insights for authorities and policymakers regarding

the critical issue of ensuring the safety of delivery drivers while performing their duties. Specifically, the results suggest that by prioritizing the implementation of effective safety management practices, organizations can raise employee awareness regarding the significance of traffic safety [19]. This awareness can motivate delivery drivers to adhere to safe riding behaviors while executing their tasks. Overall, the study highlights that organizations that foster a positive safety climate are more likely to observe significant improvements in safety compliance, leading to tangible benefits in terms of employee well-being and overall organizational performance.

Acknowledgments: This research was funded by the PhD Scholarship Programme of Vingroup Innovation Foundation (VINIF), code VINIF.2022.TS088 [Mai Xuan Nhat].

REFERENCES

[1] A. Neal, M. A. Griffin, and P. M. Hart, "The impact of organizational climate on safety climate and individual behavior", *Safety Science*, vol. 34, no. 1-3, pp. 99-109, 2000.

[2] M. Touahmia, "Identification of risk factors influencing road traffic accidents", *Engineering, Technology & Applied Science Research*, vol. 8, no. 1, pp. 2417-2421, 2018.

[3] WHO, "*Global status report on road safety 2018*", Global report, 2018.

[4] J. Chu, H. Liu, and A. Salvo, "Air pollution as a determinant of food delivery and related plastic waste", *Nature Human Behaviour*, vol. 5, no. 2, pp. 212-220, 2021.

[5] N. B. T. Nguyen, G.-H. Lin, and T.-T. Dang, "Fuzzy multi-criteria decision-making approach for online food delivery (OFD) companies evaluation and selection: A case study in Vietnam", *Processes*, vol. 9, no. 8, p. 1274, 2021.

[6] C. L. I. Grisci, P. D. Scalco, and M. S. Janovik, "Modes of working and being of motoboys: contemporary space-time experience", *Psicologia: ciência e profissão*, vol. 27, no. 3, pp. 446-461, 2007.

[7] D. W. da Silva, S. M. d. Andrade, D. F. P. d. P. Soares, T. A. d. F. Mathias, T. Matsuo, and R. K. T. de Souza, "Factors associated with road accidents among Brazilian motorcycle couriers", *The Scientific World Journal*, vol. 2012, no. 4. Article ID 605480, 2012, https://doi.org/10.1100/2012/605480

[8] J. H. Byun, B. Y. Jeong, and M. H. Park, "Characteristics of motorcycle crashes of food delivery workers", *Journal of the Ergonomics Society of Korea*, vol. 36, no. 2, pp. 157-168, 2017.

[9] Y. Zheng, Y. Ma, L. Guo, J. Cheng, and Y. Zhang, "Crash involvement and risky riding behaviors among delivery riders in China: the role of working conditions", *Transportation Research Record*, vol. 2673, no. 4, pp. 1011-1022, 2019.

[10] J. H. Byun, M. H. Park, and B. Y. Jeong, "Effects of age and violations on occupational accidents among motorcyclists performing food delivery", *Work*, vol. 65, no. 1, pp. 53-61, 2020.

[11] V. Papakostopoulos and D. Nathanael, "The complex interrelationship of work-related factors underlying risky driving behavior of food delivery riders in Athens, Greece", *Safety and Health at Work*, vol. 12, no. 2, pp. 147-153, 2021.

[12] D. Q. Nguyen-Phuoc, L. N. T. Nguyen, D. N. Su, M. H. Nguyen, and O. Oviedo-Trespalacios, "Deadly meals: The influence of personal and job factors on burnout and risky riding behaviours of food delivery motorcyclists", *Safety Science*, vol. 159, pp. 106007, 2023.

[13] D. Q. Nguyen-Phuoc, N. A. N. Nguyen, M. H. Nguyen, L. N. T. Nguyen, and O. Oviedo-Trespalacios, "Factors influencing road safety compliance among food delivery riders: An extension of the job demands-resources (JD-R) model", *Transportation Research Part A: Policy and Practice*, vol. 166, pp. 541-556, 2022.

[14] Y.H. Huang, P. Y. Chen, and J. W. Grosch, "Safety climate: New developments in conceptualization, theory, and research", *Accident Analysis & Prevention*, vol. 42, pp. 1421-1422, 2010.

[15] D. M. DeJoy, B. S. Schaffer, M. G. Wilson, R. J. Vandenberg, and M. M. Butts, "Creating safer workplaces: assessing the determinants and role of safety climate", *Journal of Safety Research*, vol. 35, no. 1, pp. 81-90, 2004.

[16] S. Clarke and K. Ward, "The role of leader influence tactics and safety climate in engaging employees' safety participation", *Risk analysis*, vol. 26, no. 5, pp. 1175-1185, 2006.

[17] P. Braunger, C. Korunka, B. Kubicek, H. Frank, and M. Lueger, "The perspective of safety engineers on safety climate", *Human Factors and Ergonomics in Manufacturing & Service Industries*, vol. 25, no. 2, pp. 198-210, 2015.

[18] S. Clarke, "The relationship between safety climate and safety performance: a meta-analytic review", *Journal of occupational health psychology*, vol. 11, no. 4, p. 315, 2006.

[19] M. Vinodkumar and M. Bhasi, "Safety management practices and safety behaviour: Assessing the mediating role of safety knowledge and motivation", *Accident Analysis & Prevention*, vol. 42, no. 6, pp. 2082-2093, 2010.

[20] S. Keffane, "Communication's role in safety management and performance of the road safety practices", *Jordan Journal of Civil Engineering*, vol. 9, no. 2, pp 229-244, 2015.

[21] C. Pilbeam, N. Doherty, R. Davidson, and D. Denyer, "Safety leadership practices for organizational safety compliance: Developing a research agenda from a review of the literature", *Safety Science*, vol. 86, pp. 110-121, 2016.

[22] S. M. Zin and F. Ismail, "Employers' behavioural safety compliance factors toward occupational, safety and health improvement in the construction industry", *Procedia-Social and Behavioral Sciences*, vol. 36, pp. 742-751, 2012.

[23] E. Kapp, "The influence of supervisor leadership practices and perceived group safety climate on employee safety performance", *Safety Science*, vol. 50, no. 4, pp. 1119-1124, 2012.

[24] F. Ricci, C. Panari, and A. Pelosi, "Safety compliance in a sample of Italian mechanical companies: The role of knowledge and safety climate", *European Journal of Investigation in Health, Psychology and Education*, vol. 12, no. 3, pp. 281-294, 2022.

[25] P. U. Okoye, J. U. Ezeokonkwo, and F. O. Ezeokoli, "Building construction workers' health and safety knowledge and compliance on site", *Journal of Safety Engineering*, vol. 5, no. 1, pp. 17-26, 2016.

[26] L. J. Gressgård, "Knowledge management and safety compliance in a high-risk distributed organizational system", *Safety and Health at Work*, vol. 5, no. 2, pp. 53-59, 2014.

[27] Ø. Dahl, "Safety compliance in a highly regulated environment: A case study of workers' knowledge of rules and procedures within the petroleum industry", *Safety Science*, vol. 60, pp. 185-195, 2013.

[28] A. Tanner, B. McIntosh, D. Widdowson, and M. Tillotson, "The water Utility Adoption Model (wUAM): Understanding influences of organisational and procedural innovation in a UK water utility", *Journal of Cleaner Production*, vol. 171, pp. S86-S96, 2018.

[29] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications, 2021.

[30] C. Fornell and D. F. Larcker, "*Structural equation models with unobservable variables and measurement error: Algebra and statistics"*, ed: Sage Publications Sage CA: Los Angeles, CA, 1981.

[31] B. M. Byrne, *Structural equation modeling with EQS: Basic concepts, applications, and programming*. Routledge, 2013.

[32] X. Zhao, J. G. Lynch Jr, and Q. Chen, "Reconsidering Baron and Kenny: Myths and truths about mediation analysis", *Journal of Consumer Research*, vol. 37, no. 2, pp. 197-206, 2010.

[33] E. De Boeck, A. Mortier, L. Jacxsens, L. Dequidt, and P. Vlerick, "Towards an extended food safety culture model: Studying the moderating role of burnout and jobstress, the mediating role of food safety knowledge and motivation in the relation between food safety climate and food safety behavior", *Trends in Food Science & Technology*, vol. 62, pp. 202-214, 2017.