

The Investigation of Safety Behavior in Logistic Companies of Malaysia

IMRAN Muhammad ^{1, a *}, ZULKIFLY Syazwan Syah bin ^{2, b}
and KOT Sebastian ^{3, c}

¹School of Business Management, Universiti Utara Malaysia, Kedah, Malaysia & Department of Project and Operation Management, The Islamia University of Bahawalpur, Pakistan

² School of Business Management, Universiti Utara Malaysia, Kedah, Malaysia

³ The Management Faculty, Czestochowa University of Technology, Czestochowa, Poland and North-West University, Faculty of Economics and Management Sciences, South Africa

^amuhammad.imran@uum.edu.my, ^b syazwan.syah@uum.edu.my, ^c sebastian.kot@pcz.pl

Keywords: Safety Leadership, Supervisor Safety Roles, Safety Behavior, Logistics, Malaysia

Abstract. In Malaysia, industrialization and population growth have both contributed to an increase in workplace occupational injuries. The most recent statistics on reported accidents show that out of 10,000 employees, 99 have been directly involved in work-related accidents. Accidents do not occur by chance, thus there are multiple factors which are contributing to workplace accidents. It is important to spread safety awareness to employees inside the organization. The main objective of the current study is to investigate the relationship between safety leadership, supervisor safety roles and safety behavior in logistics companies of Malaysia. The study respondents included 160 employees from logistics companies of Malaysia. A partial least square equation modeling “Higher Order Two-Stage Approach” analysis was performed to assess the measurement and structural model involving variables of safety leadership, supervisor safety roles and safety behavior to draw the results. The results of the study revealed that safety leadership roles imposed by the managers have a significant effect on safety behavior, mediated by supervisors’ safety roles. Therefore, the findings of the study suggest that safety leadership and supervisor safety roles be implemented in logistics companies. These make employees more inclined to take part in safety initiatives which can make the workplace safer.

Introduction

Positive safety behavior at the workplace is one of the most essential elements that cannot be taken lightly in an organization [1]. The negligence of positive safety behavior could lead into high accident case at workplace [2, 3]. Accident, even if minor, can cause serious adverse effect to the organization [4]. Kamardeen [5] also affirmed that workplace accident inflicts direct and indirect costs on a business. The direct costs include investigation cost, equipment loss, legal fine, and property damages, while the indirect costs are skillful manpower loss, medical cost, and others [6].

The workplace accidents are possibly caused by behavior of taking shortcuts and bypassing the standard operating procedures [4]. Other than that, safety behavior is among the critical factors of safety performance that contributes towards work-related accidents [7]. Accident at workplaces has also recently become main issue in Malaysia. Based on the data shown in the Social Security Organization (SOCISO), the average number for industrial accidents in Malaysia for the period between 2014 and 2018 were reported at 35,791 cases per year. In other words, it is equivalent to 98 cases per day. More particularly, the numbers of accident storage and transportation sector in Malaysia recorded from 3,600 cases to 4,200 cases, which is alarming [8]. Anyway, hit by flying objects while performing loading-unloading activity, struck by moving loader vehicle while

walking, and paper cut injury while performing packaging task are the common types of accidents in logistics companies [9].

However, the factors which cause accidents in the workplace need to be seriously addressed. Henceforth, the researcher decided to embark on studying the contributing factors such as safety leadership and supervisor safety management roles to safety performance such as safety behavior [2, 10]. However, the primary cause of accident has been identified as safety behavior [11-13]. Therefore, factors towards safety behavior had been intensively studied [14-16], where most of the studies measured safety performance by safety behavior. Furthermore, past studies have also proven that crucial role of supervisors in terms of safety has significant influence on safety performance (safety behavior) and supervisors in safety management has a significant effect on safety performance concerning accident and injury reduction [17-19].

However, in Malaysian settings, supervisor safety roles is found to have insignificant effect towards safety performance in terms of accident and injury reduction [20]. On one hand, Khoo, Surlenty and Selamat [21] determined a significant relationship between supervisor's support on safety and safety behavior in manufacturing sector. In realizing this empirical gap, this study proposes to examine the effect of safety management practices including supervisor safety roles towards safety performance. The variables for safety leadership consisting the safety concern, and safety motivation dimensions which adapted from Shang, Yang and Lu [10] study. However, based on the consideration of the most proactive approach, safety behavior is selected to be the measurement of safety performance for this study [2, 22] and consisting two dimensions such as safety compliance and safety participation, which is different from the measurement used by Shang, Yang and Lu [10], Zulkifly, Baharudin, Mahadi, Ismail and Hasan [23]. Safety behavior is found to be the leading factor in industrial accidents. Thus, it is vital for this research to study the level of safety behavior and its predictors to overcome accident issues in Logistic sector of Malaysia.

Literature Review

Safety Behavior. Generally speaking, safety performance is the degree of safety as determined by workplace mistakes, injuries, and fatalities [24]. The several earlier researchers promoted the proactive method of measuring safety performance by measuring safety behavior [25-27]. Furthermore, researchers have recently used four dimensions to evaluate the safety performance such as perceived accident reduction, perceived equipment failure, perceived goods defect & damage, and reported personal injury reduction [28].

In respect of Malaysia's transportation sector is performing poorly in terms of safety [29]. According to Malaysian industrial accident statistics, 60–70% ratio of accidents are recorded in manufacturing and transport sector simultaneously [30]. The purpose of this research is to investigate how safety management techniques improve safety performance. More specifically, the logistics companies working to enhance their workplace safety and control the accidents rations actively [31, 32]. In this regard, the current research is to investigate that how safety leadership and supervisor roles can affect positively the safety performance (behavior safety) in logistics sector of Malaysia.

Safety leadership, supervisor safety roles and safety behavior. As per past studies, most of researchers are agreed that safety management practices played the important role to ensuring the effective safety performance [33, 34]. Currently, a few important studies have been conducted to look at how safety management practices affect safety performance considering safety concern, and safety motivation factors. For instance, in order to predict the safety behavior, Shang, Yang and Lu [10] evaluated the relationship between safety concern, safety motivation as the major practices of safety management and safety behavior. Further, he suggested that effective safety

management such as safety leadership (safety motivation and safety concern) could reduce the accidents, injuries, product loss value, and equipment failure value in logistics sector.

Furthermore, the importance of the supervisor's role in occupational safety and health is also investigated [35]. Moreover, the Noe [36] stated that supervisors are the first management level where they are given key duties and obligations to establish and direct workgroups in organizations to guarantee that the workforce satisfies all corporate objectives including safe workplace [37]. According to Vinodkumar and Bhasi [2] that supervisor has a positive role to build the positive working relationship between management and employees, this could bring the higher safety awareness and effective implementation of safety practices at workplace which also can boost the safety behavior. Hence, Subramaniam, Shamsudin and Alshuaibi [38] recommended that supervisors play a significant role in improving the safety behavior which can improve the safety performance more specifically in Malaysian context. Hence, proposed the following hypothesis:

H₁: safety leadership has a significant positive effect on safety behavior.

H₂: safety leadership has significant positive effect on supervisor safety roles.

Furthermore, Shang, Yang and Lu [39] found the strong link between supervisor safety roles and safety behavior. Moreover, Yanar, Lay and Smith [40] revealed that missing link of supervisor between management and safety implementation can decrease the safety performance which also can increase the injury rate up to 3.5 percent. Additionally, some studies also found the partial impact of employers' and supervisors' safety management on safety performance, particularly in the transportation industry. Besides, there is very little research that has been noticed in the transportation sector as well. Hence, it's very important to evaluate the intervening role of supervisor safety role between leadership safety and safety behavior.

H₃: supervisor safety roles mediated the effect of safety leadership and safety behavior.

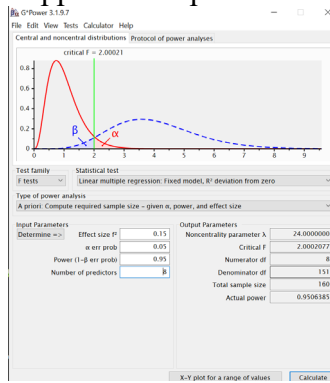
Methodology

The respondents of this study were middle management staff from the logistics companies of Malaysia. Furthermore, they should have enough knowledge about safety management, and they are also responsible directly and indirectly for the implementation of safety practices inside the organization. The thirty-four major logistics companies were identified from the website of stock exchange of Malaysia. Sampling is a statistical analysis procedure in which a preset number of observations are collected from a wider population or in which a suitable number of elements are chosen from the population by choosing the appropriate sample. Anyway, purposive sampling techniques have been used to approach the respondents. Basically, purposive sampling is defined as a sampling that is limited to people/employees who can give the necessary information, in other words, those are only person who keeping the required information. However, the questionnaire has been distributed among the middle management of logistics companies.

We have given one month to respondents to respond to the questionnaire as per their convenience. At the same time, questionnaires were also sent to respondents through e-mail and google survey, because some of respondents requested online surveys. A 5-point Likert scale was used in the questionnaire to get the response. However, the 300 questionnaires were distributed among the middle management of logistics companies of Malaysia, the only 160 out of 300 questionnaires have received, most of companies from Knag Valley participated in the survey. Only 162 of the 300 surveys that were sent out were returned. The response rate of study is recorded 53.33% and other 46.66 % refused to participate in current study, maybe due to busy schedule and reluctance to give the answer.

Furthermore, the current study makes sure that the 160-sample size is enough to justify the population and secondly is this enough to run the analysis. In this regard, we calculate the sample size using G*Power software (Fig.1). The minimum 160 respondents are needed for the present

study to draw the results, you may see the sample calculation in the figure below. The snowball sampling technique has been used to approach respondents.



*Fig.1. Evaluation of sample size with G*Power software*

Measurement

In this study, safety leadership comprise two dimensions: safety concern and safety motivation [26, 41]. Basically, the items are adapted the questions from [10]. Anyway, safety motivation and safety concern are measured with 3 and 5 items respectively. On one hand, supervisor safety roles are measured through three items which are adapted from previous research [10]. The current study, the safety behavior scale has two dimensions such as safety compliance and safety participation which is adopted from the study of Vinodkumar and Bhasi [2], Griffin and Neal [42]. The safety behavior has two dimensions such as safety compliance behavior and safety participation behavior. However, the safety compliance is measured with 7 items in this study. On the other side, safety participation is measured with 5 items. The current study scale used the 5-point Likert Scale (1 = strongly disagree, 5 = strongly agree) [43].

Analysis

Measurement Model. This study assessed the two-stage higher order technique. First, the reliability, convergent validity, and discriminant validity of the first order reflective measurement model were evaluated. If the loadings are more than 0.5, it is possible to determine the convergent validity [44]. As mentioned in Table 1, composite dependability is established when the average variance extracted (AVE) is at least 0.5 [45] and the values are larger than 0.7 [46].

Subsequently, the discriminant validity test was performed using the evaluation of the Heterotrait-Monotrait (HTMT) ratio of correlations [47]. At this stage, the researcher needs to compare it to a predefined threshold [48, 49]. Hence, if the value of the HTMT is greater than its predefined threshold, the researcher can conclude that there is the non-existence of discriminant validity. This study used the lenient threshold of 0.90 [50] as stated in Table 2.

Table 1. Composite Reliability [Prepared by the authors]

Construct	Items	Loadings	AVE	CR	Cronbach's Alpha
Safety Concern	SC1	0.900	0.804	0.966	0.959
	SC2	0.915			
	SC3	0.887			
	SC4	0.887			
	SC5	0.873			
Safety Motivation	SM1	0.913	0.797	0.951	0.936
	SM2	0.958			
	SM3	0.928			
Supervisor Safety Role	SS1	0.881	0.871	0.953	0.926
	SS2	0.939			
	SS3	0.948			
	SS4	0.889			
Safety Compliance	SCB1	0.896	0.699	0.921	0.892
	SCB2	0.920			
	SCB3	0.886			
	SCB4	0.894			
	SCB5	0.884			
	SCB6	0.895			
	SCB7	0.901			
Safety Participation	SPB1	0.824	0.837	0.953	0.935
	SPB2	0.797			
	SPB3	0.779			
	SPB4	0.894			
	SPB5	0.881			

Note: CR=Composite Reliability, AVE=Average Variance Extracted

Table 2. Discriminant Validity of Constructs [Prepared by the authors]

Constructs	Safety Compliance	Safety Concern	Safety Motivation	Safety Participation	Supervisor Safety
Safety Compliance					
Safety Concern	0.768				
Safety Motivation	0.806	0.835			
Safety Participation	0.875	0.831	0.871		
Supervisor Safety	0.791	0.798	0.876	0.842	

Notes: SCB = Safety Compliance Behavior, SPB = Safety Participation Behavior, SM = Safety Motivation, SC = Safety Concern, SS = Supervisor Safety.

Structural Model. Subsequently, the structural model was tested by conducting bootstrapping of 5,000 resamples to determine the path coefficient values and the *t* values. Therefore, looking at each structural path, safety leadership has a significant effect on safety behavior ($\beta = 0.609, p < 0.05$). Furthermore, supervisor safety roles ($\beta = 0.289, p < 0.05$) was also significantly affecting to safety behavior in this research. In addition, the results also revealed that safety leadership has a significant effect on supervisor safety roles ($\beta = 0.830, p < 0.05$). The results are presented in table 3.

Table 3. Path Coefficient [Prepared by the authors]

Hypothesis	Standard Beta	Standard Error	T Values	P Values
Supervisor Safety -> Safety Behavior	0.289	0.071	4.108	0.000
Safety leadership -> Safety Behavior	0.609	0.066	9.245	0.000
Safety leadership -> Supervisor Safety	0.830	0.039	21.232	0.000

Notes: **p* = 5 per cent (based on one tail test with 5,000 bootstrapping).

Moreover, this study found the significant mediation role of supervisor safety roles between safety leadership and safety behavior. The results can be seen in table 4.

Table 4. Indirect Effect (Mediation results) [Prepared by the authors]

Hypothesis	Standard Beta	Standard Error	T Values	P Values
Safety leadership -> Supervisor Safety -> Safety Behavior	0.240	0.060	4.014	0.000

Notes: **p* = 5 per cent (based on one tail test with 5,000 bootstrapping).

Furthermore, The *R*² is 0.725, which carries the meaning that 72.5% of the variance in safety performance was explained by safety leadership (safety motivation, safety concern), and supervisor safety roles.

Discussion

The path coefficient analysis was conducted to test the effect of safety leadership and supervisor safety management on workers safety behavior. The current study findings supported all proposed hypotheses, confirming the roles of safety management by the employer and supervisors has a significant effect on workers safety behavior. These results revealed that high safety management roles by the employer and supervisors affect workers safety performance behavior. The present study findings are consisted with studies of Vinodkumar and Bhasi [2], Yang, Wang, Chang, Guo and Huang [26], Subramaniam, Mohd Shamsudin, Mohd Zin, Sri Ramalu and Hassan [51].

Overall, this study's findings suggest that logistics organisations can employ safety management practices to improve safety performance and lower the accident rates [10]. Additionally, safety management practices such as safety motivation, safety concern and supervisor safety roles not only enhance working conditions but also have a favourable impact on worker attitudes and behaviors about safety, which lowers workplace accidents. Additionally, it is advised that Malaysian logistics company owners and managers implement ongoing safety management procedures at workplace. First, a clear direction of safety policies and goals must be established and communicated to both employees and managers [39].

As this study indicated that safety motivation is the second major component, owner-managers must also instil this drive in their staff. In order to increase safety performance, it is proposed that owner-managers demonstrate concern or caring behavior for the safety of their employees [52]. The findings demonstrated how important owner-managers of logistics companies are to guaranteeing firm performance, particularly safety [53].

Managerial Implications

The findings of this study have several managerial implications. First, the safety management is very important for owner-managers of logistics firms. Second, safety leadership critical dimensions such as safety concern and safety motivation are very important for owner/managers of logistics firm to reduce the accident ratio and make the safe workplace. Third, by understanding the differences in safety leadership and supervisor safety management and their simultaneous effect on safety performance, the owner/managers of logistics companies can develop effective action plans to enhance their companies' safety performance and reduce the accidents. However, this study findings stated that the role of the owner-manager is vital in long-term safety success and safety concern, and safety motivation inspire workers to succeed in safety performance [32].

Limitations

There are still some limitations that need to be mentioned, despite the fact that this study offers practitioners useful contributions. First, only the chosen Malaysian logistic companies were included in the study's sample. As a result, the results are only loosely generalizable even though they presented significant empirical evidence about the relationship between safety management and safety performance.

Second, because this study is cross-sectional, it is impossible to prove causality between the variables when data are obtained at the same time [54]. Despite a cross-sectional study's inability to determine the direction of causality, this constraint can be somewhat overcome by using a theory to identify and explain the causal linkages between the variables [55]. Finally, since this study is only concerned with three factors—safety leadership, the role of the supervisor in terms of safety, and safety behavior—future studies would also cover other aspects of safety management like training, communication, rules and procedures, and worker involvement.

Conclusion

In conclusion, the result of this study indicated that there is a positive significant relationship between employer and supervisor safety management on workers safety performance in terms of safety compliance and safety participation behavior. The results confirmed that the employer and supervisors need to play their roles in inculcating safety behavior among workers to prevent accidents from happening at the workplace. The safety management roles by employer namely safety concern, safety motivation and safety policy have been proven as crucial variables in determining safety performance behavior. Besides, supervisor safety role has the strongest influence on workers safety performance behavior, hence, supervisor role in managing safety need to be given more focus by the researchers and practitioners in occupational safety and health field. Based on this conclusion, all related parties should apply this research findings for their managerial or academia purposes in benefiting occupational safety and health area.

References

- [1] T. Derenda, M. Zanne, M. Zoldy. Automatization in road transport: a review, *Prod. Eng. Arch.* 20 (2018) 3-7. <https://doi.org/10.30657/pea.2018.20.01>
- [2] M.N. Vinodkumar, M. Bhasi. Safety management practices and safety behavior: Assessing the mediating role of safety knowledge and motivation, *Accid. Anal. Prev.* 42 (2010) 2082-2093. <https://doi.org/10.1016/j.aap.2010.06.021>

- [3] S.S. Zulkifly. Safety Leadership and its Effect on Safety Knowledge-Attitude-Behavior (KAB) of Malaysia Manufacturing Workers, *Solid State Technol.* 63 (2020) 218-229.
- [4] N.H. Zakaria, N. Mansor, Z. Abdullah. Workplace accident in malaysia: Most Common causes and solutions, *Business and Management Review* 2 (2012) 75-88.
- [5] I. Kamardeen, Strategic safety management information system for building projects in Singapore, *Eng. Constr. Archit. Manag.* 16 (2009) 8-25.
<https://doi.org/10.1108/09699980910927868>
- [6] A. Woźny. Selected problems of managing work safety-case study, *Prod. Eng. Arch.* 26 (2020) 99-103. <https://doi.org/10.30657/pea.2020.26.20>
- [7] M.S. Mashi, C. Subramaniam, J. Johari. The effect of management commitment to safety, and safety communication and feedback on safety behavior of nurses: the moderating role of consideration of future safety consequences, *Int. J. Hum. Resour. Manag.* (2018) 2565-2594.
<https://doi.org/10.1080/09585192.2018.1454491>
- [8] Malaysia O. Social Security, Annual report, 2022.
- [9] C.-S. Lu, C.-S. Yang. Safety leadership and safety behavior in container terminal operations, *Safety Sci.* 48 (2010) 123-134. <https://doi.org/10.1016/j.ssci.2009.05.003>
- [10] K.C. Shang, C.S. Yang, C.S. Lu. The effect of safety management on perceived safety performance in container stevedoring operations, *Int. J. Shipp. Transp. Logist.* 3 (2011) 323-341.
<https://doi.org/10.1504/IJSTL.2011.040801>
- [11] H. Abbasianjahromi, A. Etemadi. Applying social network analysis to identify the most effective persons according to their potential in causing accidents in construction projects, *Int. J. Constr. Manag.* 22 (2022) 1065-1078. <https://doi.org/10.1080/15623599.2019.1683688>
- [12] M.J.P. Bussier, H.-Y. Chong. Relationship between safety measures and human error in the construction industry: working at heights, *Int. J. Occup. Saf. Ergon.* 28 (2022) 162-173.
<https://doi.org/10.1080/10803548.2020.1760559>
- [13] A.M. Barakat Abuashour, Z. Hassan. A Conceptual Framework for Enhancing Safety Performance by Impact Cooperation Facilitation, *Safety Communication and Work Environment: Jordanian Hospitals*, *Sains Humanika* 11 (2019) 81-89.
<https://doi.org/10.11113/sh.v11n2-2.1659>
- [14] N. Ghodrati et al. Unintended consequences of productivity improvement strategies on safety behavior of construction labourers; a step toward the integration of safety and productivity, *Buildings* 12 (2022) art.317. <https://doi.org/10.3390/buildings12030317>
- [15] Z. Lyubykh et al. Shared transformational leadership and safety behaviors of employees, leaders, and teams: A multilevel investigation, *J. Occup. Organ. Psychol.* 95 (2022) 431-458.
<https://doi.org/10.1111/joop.12381>
- [16] M. Bayram, B. Arpat, Y. Ozkan. Safety priority, safety rules, safety participation and safety behavior: The mediating role of safety training, *Int. J. Occup. Saf. Ergon.* (2021) 2138-2148.
<https://doi.org/10.1080/10803548.2021.1959131>
- [17] B. Fernández-Muñiz, J.M. Montes-Peón, C.J. Vázquez-Ordás. Safety leadership, risk management and safety performance in Spanish firms, *Saf. Sci.* (2014) 295-307.
<https://doi.org/10.1016/j.ssci.2014.07.010>

- [18] A. Mohammadi, M. Tavakolan, Y. Khosravi. Factors influencing safety performance on construction projects: A review, *Saf. Sci.* 109 (2018) 382-397.
<https://doi.org/10.1016/j.ssci.2018.06.017>
- [19] D. Ramos, P. Afonso, M.A. Rodrigues. Integrated management systems as a key facilitator of occupational health and safety risk management: A case study in a medium sized waste management firm, *J. Clean. Prod.* 262 (2020) art.121346.
<https://doi.org/10.1016/j.jclepro.2020.121346>
- [20] S.S. Zulkifly, M.R. Baharudin, N.H. Hasan. Safety leadership and safety knowledge-attitude-behavior (KAB) in Malaysia manufacturing SMEs : A higher order two-stage approach of PLS-SEM, *Preprints* (2021) 1-17. <https://doi.org/10.20944/preprints202106.0527.v1>
- [21] K.T. Hong, L. Surienty, M.N. Selamat. Safety training and safety behavior in the Malaysian SME, *J. Occup. Saf. Health* 13 (2016) 55-62.
- [22] P. Zhang, N. Li, D. Fang, H. Wu. Supervisor-focused behavior-based safety method for the construction industry: Case study in Hong Kong, *J. Constr. Eng. Manag.* 143 (2017) art. 05017009. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001294](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001294)
- [23] S.S. Zulkifly et al. Validation of a research instrument for safety leadership and safety knowledge-attitude-behavior (KAB) for Malaysia manufacturing set-up, *iRASD J. Manag.* 3 (2021) 22-34. <https://doi.org/10.52131/jom.2021.0301.0023>
- [24] J. Mullen, E.K. Kelloway, M. Teed. Employer safety obligations, transformational leadership and their interactive effects on employee safety performance, *Saf. Sci.* 91 (2017) 405-412. <https://doi.org/10.1016/j.ssci.2016.09.007>
- [25] S. Majid et al. The effect of safety risk management and airport personnel competency on aviation safety performance, *Uncertain Supply Chain Manag.* 10 (2022) 1509-1522.
<https://doi.org/10.5267/j.uscm.2022.6.004>
- [26] C.-C. Yang, Y.-S. Wang, S.-T. Chang, S.-E. Guo, M.-F. Huang. A study on the leadership behavior, safety culture, and safety performance of the healthcare industry, *WASET Int. J. Humanit. Soc. Sci.* 53 (2009) 1148-1155. <https://doi.org/10.5281/zenodo.1062282>
- [27] M. Imran, A.U. Haque, R. Rebilas. Performance appraisal politics and employees' performance in distinctive economies, *Pol. J. Manag. Stud.* 18 (2018) 135-150.
<https://doi.org/10.17512/pjms.2018.18.2.11>
- [28] S.S. Zulkifly et al. The Impact of Superior Roles in Safety Management on Safety Performance in SME Manufacturing in Malaysia, *Glob. Bus. Rev.* (2021) 1-16.
<https://doi.org/10.1177/09721509211049588>
- [29] B. Md Deros et al. Conformity to occupational safety and health regulations in Malaysian small and medium enterprises, *Am. J. Appl. Sci.* 11 (2014) 499-504.
<https://doi.org/10.3844/ajassp.2014.499.504>
- [30] A.A. Aziz et al. A preliminary study on accident rate in the workplace through occupational safety and health management in electricity service, *QUEST J. Res. Bus. Manag.* 2(12) (2015) 9-15.
- [31] S.S. Zulkifly et al. Workplace safety improvement in sme manufacturing: A government intervention, *Int. J. Sci. Technol.* 4 (2018) 29-39. <https://doi.org/10.20319/mijst.2018.42.2739>

- [32] Z. Hassan, R. Rahim. The Relationship between Supervisor Safety, Safety Management Practices, and Safety Compliance Behavior among Employees, *Sains Humanika* 11 (2019) 31-36. <http://doi.org/10.11113/sh.v11n2-2.1652>
- [33] C.M. Tam, I.W.H. Fung. Effectiveness of safety management strategies on safety performance in hong kong, *Constr. Manag. Econ.* 16 (1998) 49-55. <https://doi.org/10.1080/014461998372583>
- [34] R. Tong et al. Impact of safety management system on safety performance: the mediating role of safety responsibility, *Eng. Constr. Archit. Manag.* (2020) 3155-3170. <https://doi.org/10.1108/ECAM-03-2020-0197>
- [35] C.S. Lu, K.C. Shang. An empirical investigation of safety climate in container terminal operators, *J. Saf. Res.* 36 (2005) 297-308. <https://doi.org/10.1016/j.jsr.2005.05.002>
- [36] R.A. Noe. Employee training and development, 8th Edition. McGraw-Hill, New York, 2020. ISBN 978-1260043747
- [37] V. Holubová. Integrated safety management systems, *Pol. J. Manag. Stud.* 14 (2016) 106-118. <https://doi.org/10.17512/pjms.2016.14.1.10>
- [38] C. Subramaniam, F.M. Shamsudin. A.S.I. Alshuaibi. Investigating employee perceptions of workplace safety and safety compliance using pls-Sem among technical employees in Malaysia, *J. App. Struct. Equ. Modeling* 1 (2017) 44-61.
- [39] K.C. Shang, C.-S. Yang, C.-S. Lu. The effect of safety management on perceived safety performance in container stevedoring operations, *Int. J. Shipp. Transp. Logist.* 3 (2015) 323-341. <https://doi.org/10.1504/IJSTL.2011.040801>
- [40] B. Yanar, M. Lay, P.M. Smith. The Interplay Between Supervisor Safety Support and Occupational Health and Safety Vulnerability on Work Injury, *Saf Health Work* 10 (2019) 172-179. <https://doi.org/10.1016/j.shaw.2018.11.001>
- [41] S.S. Zulkifly, C. Subramaniam, N.H. Hasan. Examining the influence of safety leadership towards safety behavior in SME manufacturing, *Occupational Safety and Health* 14 (2017) 17-23.
- [42] M.A. Griffin, A. Neal. Perceptions of safety at work: A framework for linking safety climate to safety performance, knowledge, and motivation, *J. Occup. Health Psychol.* 5 (2000) 347-358. <https://doi.org/10.1037/1076-8998.5.3.347>
- [43] R. Likert. A technique for the measurement of attitudes, *Archives of Psychology* 22 (1932) 5-55.
- [44] J.F. Hair, W.C. Black, B.J. Babin, R.E. Anderson, *Multivariate data analysis*, 7th Edition, Pearson, New York, 2010. ISBN 978-0138132637
- [45] C. Fornell, D.F. Larcker. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error, *Journal of Marketing Research* 18(1) (1981) 39-50. <https://doi.org/10.2307/3151312>
- [46] D. Gefen, D. Straub, M.-C. Boudreau. Structural equation modeling and regression: Guidelines for research practice, *Communications of the Association for Information Systems* 4 (2000) art.7. <https://doi.org/10.17705/1CAIS.00407>

- [47] J. Henseler, C.M. Ringle, M. Sarstedt. A new criterion for assessing discriminant validity in variance-based structural equation modeling, *J. Acad. Mark. Sci.* 43 (2014) 115-135.
<https://doi.org/10.1007/s11747-014-0403-8>
- [48] Y.M. Yusoff, H.H. Abdullah, H. Hafinaz, Establishing the green human resource management practices model of SMEs in malaysia, *European Academic Research* 8(2) (2020) 493-504.
- [49] Y.M. Yusoff et al. Linking Green Human Resource Management Practices to Environmental Performance in Hotel Industry, *Glob. Bus. Rev.* 21 (2020) 663-680.
<https://doi.org/10.1177/0972150918779294>
- [50] T. Ramayah, J. Cheah, F. Chuah, H. Ting, M.A. Memon. Partial least squares structural equation modeling (PLS-SEM) using SmartPLS 3.0: An updated guide and practical guide to statistical analysis, Pearson, New York, 2018. ISBN 978-967-349-739-3
- [51] C. Subramaniam et al. The influence of safety management practices on safety behavior: A study among manufacturing smes in Malaysia, *Int. J. Supply Chain Manag.* 5 (2016) 148-160.
<https://doi.org/10.59160/ijscm.v5i4.1370>
- [52] J.L. Chua, S.R.A. Wahab. The effects of safety leadership on safety performance in Malaysia, *Saudi J. Bus. Manag. Stud.* 2 (2017) 12-18. <https://doi.org/10.21276/sjbms.2017.2.1.3>
- [53] S.S. Zulkifly, M.R. Baharudin, M.R. Mahadi, S.N.S. Ismail, N.H. Hasan. The effect of owner- manager's safety leadership and supervisor's safety role on safety performance in Malaysia's manufacturing SMEs, *J. Technol. Oper. Manag.* 16 (2021) 11-24.
<https://doi.org/10.32890/jtom2021.16.1.2>
- [54] U. Sekaran, R. Bougie. *Research Methods For Business: A Skill Building Approach*, 7th Edition, Wiley, Hoboken, 2016. ISBN 978-1119266846
- [55] J.F. Hair Jr., M. Sarstedt, L. Hopkins, V.G. Kuppelwieser, Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research, *Eur. Bus. Rev.* 26 (2014) 106-121. <https://doi.org/10.1108/EBR-10-2013-0128>