

The Influence of Safety Climate, Motivation, and Knowledge on Worker Compliance and Participation: An Empirical Study of Indonesian SMEs

La influencia del clima, la motivación y el conocimiento de seguridades en el cumplimiento y la participación de los trabajadores: un estudio empírico de PyMEs en Indonesia

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ABSTRACT

In the workplace, safety behavior has been regarded as an important safety performance factor that is generally expressed based on the degree of safety compliance and worker participation. Previous studies have proposed several models for Small and Medium Enterprises (SMEs), but the human factor and situation-related matters seem yet to be included. This study aims to investigate the role of motivation and knowledge (as person-related constructs) and safety climate (as a situation-related construct) in SMEs' compliance and participation. Based on a more comprehensive model, a questionnaire was constructed and distributed to 23 Indonesian metal manufacturing SMEs. The results showed that safety climate positively influenced safety knowledge, motivation, compliance, and participation. Safety knowledge and motivation were found to mediate the relationship between safety climate and behavior (*i.e.*, compliance and participation). Safety knowledge only affected compliance, while motivation influenced compliance and participation. This study suggests that SMEs should consider situation-related constructs (safety climate) and person-related constructs (motivation and knowledge) to improve their safety behavior.

Keywords: safety compliance, safety motivation, safety participation, safety climate, safety knowledge, SMEs

RESUMEN

En el lugar de trabajo, el comportamiento de seguridad ha sido considerado como un factor importante del rendimiento de seguridad que se expresa generalmente en función del grado del cumplimiento de seguridad y de la participación de los trabajadores. Estudios anteriores han propuesto varios modelos del comportamiento de seguridad para las pequeñas y medianas empresas (PyMEs), pero el factor humano y los asuntos relacionados con la situación parecen no estar incluidos todavía. Este estudio tiene como objetivo investigar el papel de la motivación y del conocimiento (constructos relacionados con la persona) y el clima de seguridad (constructo relacionado con la situación) en el cumplimiento y la participación de las PyMEs. Basado en un modelo más integral, se construyó un cuestionario que se distribuyó a 23 PyMEs indonesias de fabricación de metales. Los resultados mostraron que el clima de seguridad influyó positivamente en el conocimiento, la motivación, el cumplimiento y la participación de seguridad. Se encontró que el conocimiento y la motivación de seguridad median en la relación entre el clima de seguridad y el comportamiento (es decir, cumplimiento y participación). El conocimiento de seguridad solo afectó el cumplimiento, mientras que la motivación influyó en el cumplimiento y la participación. Este estudio sugiere que las PyMEs tienen que considerar constructos relacionados con la situación (clima de seguridad) y constructos relacionados con la persona (motivación y conocimiento) para mejorar su comportamiento en materia de seguridad.

Palabras clave: cumplimiento de seguridad, motivación de seguridad, participación en seguridad, clima de seguridad, conocimiento de seguridad, PyMEs

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Introduction

According to Geller (2001), safety behavior is an important aspect of workplace safety. Al-Hemoud and Al-Asfoor (2006) reported that 80% of accidents are triggered by unsafe

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behaviors, while unsafe conditions cause the remaining 20%. Khandan, Maghsoudipour, Vosoughi, and Kavousi (2013) stated that approximately 86-96% of industrial workplace accidents occur due to unsafe behaviors. Therefore, adopting an appropriate safety behavior tends to reduce the number of accidents and lost work time (Seo, Lee, Kim, and Jee, 2015). Improving in this regard is required to prevent unexpected or undesirable events (Xu and Shi, 2017), so there is a noticeably negative relation between safety behavior and accidents (Wallace, 2016).

Safety behavior reflects the safe practices that workers need to embrace to evade accidents (Panuwatwanich, Al-Haadir, and Stewart, 2016). Safety participation and compliance are generally used to describe the adopted level or extent of safety behavior (Neal, Griffin, and Hart, 2000). Safety participation is based on worker involvement, efforts, programs, and initiatives to improve workplace safety. Safety compliance refers to the state of observing established safety procedures, standards, and regulations at workplace (Neal *et al.*, 2000).

Safety behavior can be improved by modifying its influencing factors, which are individual (person-related) and organizational (situation-related) (Christian, Bradley, Wallace, and Burke, 2009). Reports showed that organizational factors affect individual determinants, which impacts safety behavior (Neal *et al.*, 2000). Moreover, safety training and regulations, worker participation, and supervisor support are aspects of safety climate.

There have been studies on safety behavior, but only few of them have comprehensively looked at person-related and situation-related factors in this context. Among the individual factors are safety motivation and knowledge, while organizational factors include safety climate. It should be noted that safety behavior has a direct impact on safety outcome (accidents, injury, etc.), which is influenced by both person-related and situation-related factors (Christian *et al.*, 2009). Safety motivation is defined as the workers' eagerness to adopt safety measures in work areas (Neal and Griffin, 2006). It is an individual-level variable that is expected to be widely shared within organizational units (Kopelman, Brief, and Guzzo, 1990). Meanwhile, safety knowledge shows the level of worker awareness related to practices involved in occupational safety (Vinodkumar and Bhasi, 2010). It improves job-specific and non-job-specific task proficiencies (Campbell, McCloy, Oppler, and Sager, 1993). Results from several similar studies reported that safety motivation positively influences safety behavior (Shin, Gwak, and Lee, 2015; Amponsah-Tawaih and Adu, 2016; Panuwatwanich *et al.*, 2016; Baser, Ture, Abubakirova, Sanlier, and Cil, 2017; Mohammadfam, Ghasemi, Kalatpour, and Moghimbeigi, 2017). Person-related factors were reported to be the key determinants that influence safety behavior.

Conversely, situation-related factors include safety climate and leadership (Christian *et al.*, 2009). According to Neal and Griffin (2006), a safety climate is a shared awareness of procedures, wisdom, and practices related to safety in the workplace. It is an individual-level variable expected to be widely shared within organizational units (Kopelman *et al.*,

1990). Several studies reported that safety climate influences safety behaviors (Shin *et al.*, 2015 and Panuwatwanich *et al.*, 2016) and is depicted by safety communication and systems, including training that influences safety behavior (Shin *et al.*, 2015). Panuwatwanich *et al.* (2016) reported that safety climate is described by management commitment and communication, competence, personal appraisal of risk, work pressure, safety rules, and procedures.

More specifically, regarding Small and Medium Enterprises (SMEs), several studies showed that the dimensions of safety climate (represented by management commitment, safety training, regulations, communication, and worker involvement) have a direct effect on safety behavior (Hong, Surlenty, and Hung, 2011; Saat, Subramaniam, and Shamsudin, 2016; Subramaniam, Shamsudin, Zin, Ramalu, and Hassan, 2016). This means that, in SMEs, these dimensions directly affect safety behavior. However, these studies did not include safety knowledge and motivation in their models.

SMEs have a unique safety climate, which is why their safety behavior characteristics may also be unique and influenced by the relationship between workers, as well as their relationships with their employers (owners), in order to avoid social hierarchy (Marlow and Patton, 2002; Sørensen, Hasle, and Bach, 2007; Croucher, Stumbitz, Quinlan, and Vickers, 2013), since the nature of the interaction between workers and employers during operational activities (Legg, Olsen, Laird, and Hasle, 2015) and any firm-related cordial relationships among them lead to a paternalistic culture in safety management (Croucher *et al.*, 2013). The owners are the manager, regardless of their experiences or educational background (Croucher *et al.*, 2013). Therefore, the safety climate that describes the workers' shared perceptions regarding a safe atmosphere is highly influenced by the owner's subjectivity. Subsequently, safety practices tend to be compromised (Kheni, Gibb, and Dainty, 2010), irrespective of whether the workers have adequate knowledge and motivation.

As a developing country, the number of accidents in Indonesia is still high, and increases have been reported during the last three years, which seems to be related to poor safety measures (Huda, Sukmawati, and Sumertajaya, 2016). In this study, we focused on metal manufacturing SMEs, which were selected due to their significant contribution to the nation's economic growth (Harncharoen, Isahak, Kaewboonchoo, Low, and Ratanasiripong, 2016). Additionally, the number of accidents that occur in this industry is quite high (Suprianto and Evendi, 2015; Ansori, Widyanti, and Sitalaksana, 2018), which is mostly due to a lack of safety behavior of the workers' part.

Safety behavior model for metal-mechanical companies was proposed by Paolillo, Silva, and Pasini (2016). Unfortunately, the study was carried out in large-scale industries. Their model showed that safety motivation mediates the relationship between safety climate and participation. Previously, Sinclair, Martin, and Sears (2008) stated that safety motivation and knowledge are the

intervening factors that mediate the influence of safety climate on safety behavior. Therefore, we argue that there is an opportunity for further development of the safety behavior model, specifically for SMEs in metal manufacture. The purposes of this study were to investigate the effect of safety climate, motivation, and knowledge on safety compliance and participation in Indonesian metal manufacturing SMEs.

Conceptual Model

This study adopted the model by Neal *et al.* (2000), as shown in Figure 1. The model states that safety climate influences knowledge, motivation, and participation. On the other hand, it has an indirect influence on safety compliance. It should be noted that this model was developed based on a large-scale industry in Australia, and an adjustment should be made for the field under study. We hypothesized that there should be a direct effect on safety compliance, which is due to the differences between the safety climate characteristics of large industries and SMEs. Informal and personal working conditions in SMEs might lead to individual work climate (Hasle and Limborg, 2006; Perrini, Russo, and Tencati, 2007; Martin, 2012). Subsequently, the implementation of safety measures may be difficult due to the extreme flexibility of work rules (Mihail, 2004; Rothenberg *et al.*, 2016).

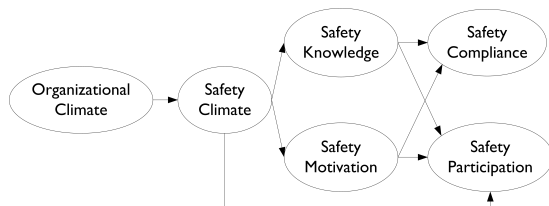


Figure 1. Safety behavior model.

Source: Neal *et al.* (2000)

Conversely, work climate is influenced by the subjectivity of workers, colleagues, and superiors or employers. Therefore, we proposed that safety climate may directly influence safety behavior in SMEs, as shown in Figure 2, which is consistent with previous studies (Hong *et al.*, 2011; Saat *et al.*, 2016; Subramaniam *et al.*, 2016). The model was also adjusted based on the consideration that the cordial relationship between workers, and between them and their superiors leads to a lack of social hierarchy in SMEs (Marlow and Patton, 2002; Sørensen *et al.*, 2007; Croucher *et al.*, 2013). This is consistent with the study carried out by Turner, Stride, Carter, McCaughey, and Carroll (2012), which stated that safety climate (namely, decision latitude and social support) directly affects safety behavior.

Previous studies on safety behavior in SMEs indicated varying results for the effects of safety climate on compliance and participation (Subramaniam *et al.*, 2016, Saat *et al.*, 2016, Neal *et al.* 2000). We hypothesized that there should be direct effects of safety climate on safety behaviors, which is based on a study on safety behavior in small-scale industries carried out by Guo, Yiu, and Gonzalez (2018), where safety climate is represented by social support and production pressure.

The integration of person and situation-related factors in SMEs needs to be carried out due to their unique characteristics. Mihail (2004) and Rothenberg *et al.* (2016) stated that the safety climate of SMEs is relatively informal and personal. Subsequently, it is difficult to objectively implement safety measures, given the excessive flexibility of work rules. Furthermore, the commitment of SME management is generally based on the personality, beliefs, or values of owners-managers in order to ensure that most decisions regarding effective working conditions are their responsibility (Croucher, *et al.*, 2013). The high level of cordial relations tends to compromise safety rules and procedures, which, in turn, can compromise occupational safety and health (OSH) implementation (Croucher, *et al.*, 2013). Therefore, the proposed model aims to examine the direct impact of safety climates on compliance and participation.

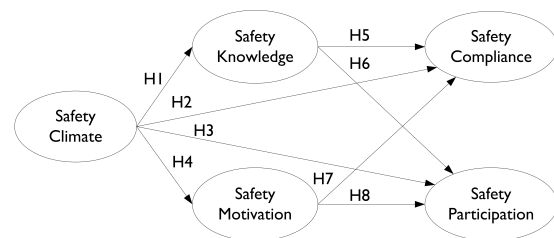


Figure 2. Proposed Conceptual Model.

Source: Adapted from Neal *et al.* (2000)

In short, we proposed eight hypotheses, as shown in in Figure 2, namely:

- *H1:* Safety climate positively influences safety knowledge.
- *H2:* Safety climate positively influences safety compliance.
- *H3:* Safety climate positively influences safety participation.
- *H4:* Safety climate positively influences safety motivation.
- *H5:* Safety knowledge positively influences safety compliance.
- *H6:* Safety knowledge positively influences safety participation.
- *H7:* Safety motivation positively influences safety compliance.
- *H8:* Safety motivation positively influences safety participation.

Method

Respondents

This study involved 100 respondents from 23 metal SMEs with voluntary participations (mean age = 35, 40 years,

SD = 7,76 years and average experience = 10,96 years, SD = 7,03 years). The sample size was considered to be sufficient according to Hair, Hult, Ringle, and Sarstedt (2017), based on the number of independent and latent variables. The demographic data of the respondents are shown in Table 1.

Table 1. Demographic data of respondents

Description	N	%	Total (%)
<i>Age group (year)</i>			
16-29	24	(24)	
30-39	43	(43)	
40-49	30	(30)	
50-59	3	(3)	
60-69	0	(0)	
			(100)
<i>Work experience (year)</i>			
Less than 3	15	(15)	
3 to 7	19	(19)	
More than 7	66	(66)	
			(100)
<i>Education</i>			
No Formal Education	0	(0)	
Elementary School	12	(12)	
High School (Junior)	17	(17)	
High School (Senior)	56	(56)	
University/College	15	(15)	
			(100)
<i>Relationship with the owner</i>			
Family	21	(21)	
Neighbor	10	(10)	
Friend	6	(6)	
Other	63	(63)	
			(100)

Source: Authors

Questionnaire

A questionnaire was developed based on previous studies, consisting of 3 questions on safety climate (Neal *et al.*, 2000; Neal and Griffin, 2006), 6 questions on safety knowledge (Guo, Yiu, and Gonzalez, 2016; Mohammadfam *et al.*, 2017; Guo *et al.*, 2018), 5 questions on safety motivation (Neal and Griffin, 2006; Vinodkumar and Bhasi, 2010; Guo *et al.*, 2016, 2018), 7 questions on safety compliance (Guo *et al.*, 2016; Lu and Kuo, 2016; Subramaniam *et al.*, 2016; Guo *et al.*, 2018), and 5 questions on safety participation (Guo *et al.*, 2016; Subramaniam *et al.*, 2016; Guo *et al.*, 2018). The question items were constructed using a modified Likert scale, starting from 1 (strongly disagree) to 5 (strongly agree), as well as from 1 (never) to 6 (always), respectively, as shown in Table 2.

Table 2. The item in the questionnaire

Constructs	Question Item	Reference
Safety Climate (SCI)	3	Neal <i>et al.</i> (2000), Neal and Griffin (2006)
Safety Motivation (SM)	5	Neal and Griffin (2006), Vinodkumar and Bhasi (2010), Guo <i>et al.</i> (2016), Guo <i>et al.</i> (2018)
Safety Knowledge (SK)	6	Guo <i>et al.</i> (2016), Mohammadfam <i>et al.</i> (2017), Guo <i>et al.</i> (2018)
Safety Compliance (SC)	7	Guo <i>et al.</i> (2016), Lu and Kuo (2016), Subramaniam <i>et al.</i> (2016), Guo <i>et al.</i> (2018)
Safety Participation (SP)	5	Subramaniam <i>et al.</i> (2016), Guo <i>et al.</i> (2016), Guo <i>et al.</i> (2018)

Source: Authors

The questionnaire was formatted in Bahasa (Indonesian language) using a back-translation procedure, which involved three bilinguals who translated the original version to English. A comparison between the original and back-translated versions was applied to test the validity of the translation. The descriptive items or questions for each factor in the developed model are shown in Table 3.

Table 3. Descriptive analysis

Constructs/Associated Items	Initial	Mean	Standard Deviation
<i>Safety Climate</i>	SCI	3,70	1,28
1 The SME emphasizes the implementation of health and safety in the work area	SCI1	3,62	1,35
2 Safety is treated high priority by the SME	SCI2	4,01	1,17
3 The SME sees safety as something important	SCI3	3,47	1,33
<i>Safety Motivation</i>	SM	3,66	1,23
1 I enjoy work when working safely at work	SM1	3,92	1,15
2 I feel uncomfortable when it does not work safely	SM2	3,66	1,26
3 I feel guilty when I do not work safely	SM3	3,57	1,21
4 I feel the need to make efforts to reduce accidents and incidents at work	SM4	3,48	1,26
5 I find it useful when maintaining or enhancing my safety	SM5	3,69	1,28
<i>Safety Knowledge</i>	SK	4,00	0,82
1 I know how to use work tools and machinery in a safe manner	SK1	4,10	0,73
2 I know how to maintain or improve health and safety at work	SK2	4,16	0,68
3 I know how to reduce the risk of accidents and incidents at work	SK3	4,11	0,69

	Constructs/Associated Items	Initial	Mean	Standard Deviation
4	I am aware of the hazard precautions when doing work	SK4	4,13	0,77
5	I understand the safety rules of my job	SK5	3,54	1,25
6	I understand my job safety procedures	SK6	3,50	1,24
	<i>Safety Compliance</i>	SC	3,73	1,86
1	How often do I wear a safety helmet in the designated areas?	SC1	3,26	2,25
2	How often do I wear eye protection in the designated areas?	SC2	3,74	1,91
3	How often do I wear the right PPE (e.g., gloves, safety shoes) when working on or near the electricity?	SC3	4,44	1,57
4	How often do I wear PPE (e.g., safety belt) when working at height?	SC4	3,05	2,17
5	How often do I follow the correct safety rules when doing work?	SC5	3,99	1,77
6	How often do I follow the correct safety procedures while doing work?	SC6	3,93	1,74
7	How often do I not neglect safety even when I am in a hurry?	SC7	3,67	1,65
	<i>Safety Participation</i>	SP	4,09	1,30
1	How often do I talk and encourage colleagues to become involved in resolving safety issues?	SP1	4,18	1,18
2	How often do I try to change the way of work to make it safer?	SP2	3,90	1,38
3	How often do I take action to stop a safety breach to protect the safety of my coworkers?	SP3	3,77	1,38
4	How often do I report to the SMEs' manager when there are safety-related problems?	SP4	4,31	1,24
5	How often do I volunteer to carry out work or activities to help improve safety in the workplace?	SP5	4,29	1,30

Source: Authors

Procedure

After obtaining permission from the owners of the SMEs, the workers were requested to answer the questionnaires. Informed consent was obtained before the respondents filled out the questionnaire, and they were assisted when they encountered any difficulties.

Data analysis

First, the validity and reliability analyses were carried out to ensure the quality of the model. Its validity was assessed using factor loading, in which the value of 0,7 or higher indicated that it was good. Second, the confirmatory factor analysis (CFA) was carried out using the Partial Least Squares Structural Equation Modeling (PLS-SEM) to ensure that the related items were grouped in a construct, in accordance with the path relation to determine their significant influences. Third,

the variance inflation factor (VIF) was applied to ascertain whether there was no common method bias in the construct's collinearity statistics. Finally, the model's goodness of fit was assessed using the chi-square, and the Standardized Root Mean Square Residual (SRMR). The PLS-SEM was used to analyze the data obtained by using Smart-PLS.3 to detect abnormal distribution.

Results and Discussion

This study was aimed to evaluate the effect of situation (safety climate) and person-related factors (safety motivation and knowledge) on safety behavior (safety compliance and participation). Additionally, person-related factors served as a mediator between safety climate and behavior. The results of this study showed that safety climate was affected by safety knowledge, motivation, compliance, and participation. Subsequently, safety knowledge and motivation mediated the relationship between safety climate and behavior. Safety knowledge only affected compliance, whereas motivation tended to affect both compliance and participation. There was no common method bias among all the constructs.

The validity of our test results refers to a measurement model that was evaluated based on the loading factor shown in Table 4. Statistically, the loading factor conforms to the validity test when the outer loading has a minimum of 0,7 (Hair *et al.*, 2017). However, most of the values obtained were greater than 0,7, which showed that the model was extremely valid. The CFA (*i.e.*, greater than 0,757) showed that the constructs, namely safety climate, motivation, knowledge, compliance, and participation, were properly explained by the indicators.

The results from the reliability test are shown in Table 5. The Cronbach's alpha needed to be greater than 0,6, while the average variance extracted (AVE) needed to be more than 0,5, and the composite reliability had to be a minimum of 0,7 (Hair *et al.*, 2017). All parameters met the stipulated requirements.

The empirical model is shown in Figure 3, while the results are shown in Table 6. A coefficient of determination (R^2) of 0,696 and 0,483 showed that the variance in safety compliance and participation is moderately explained by the independent variables, namely, safety climate, knowledge, and motivation.

We found that safety climate had a positive influence on both compliance and participation. This result is consistent with the studies carried out by Seo *et al.* (2015), Shin *et al.* (2015), and Panuwatwanich *et al.* (2016). The positive effect proves that an improved safe atmosphere in SMEs tends to increase the workers' compliance and participation. These results are in line with the studies carried out on SMEs in several countries, such as in Malaysia and China (Liu, Mei, and Shen, 2010; Saat *et al.*, 2016; Subramaniam *et al.*, 2016). Subramaniam *et al.* (2016) carried out detailed research on the safety climate construct based on management commitment, training, and safety regulations. Conversely, Saat *et al.* (2016) defined it as a form of worker involvement, training, management commitment,

Table 4. Outer loading of indicators

Indicators	Constructs				
	Safety Climate (SCI)	Safety Motivation (SM)	Safety Knowledge (SK)	Safety Compliance (SC)	Safety Participation (SP)
SCI1	0,946				
SCI2	0,915				
SCI3	0,932				
SM1		0,861			
SM2		0,834			
SM3		0,954			
SM4		0,935			
SM5		0,907			
SK1			0,757		
SK2			0,815		
SK3			0,778		
SK4			0,766		
SK5			0,898		
SK6			0,906		
SC1				0,950	
SC2				0,914	
SC3				0,802	
SC4				0,899	
SC5				0,962	
SC6				0,963	
SC7				0,780	
SP1					0,782
SP2					0,905
SP3					0,894
SP4					0,778
SP5					0,861

Source: Authors

Table 5. Reliability of factors

Factors	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Safety Climate (SCI)	0,924	0,951	0,867
Safety Motivation (SM)	0,940	0,955	0,808
Safety Knowledge (SK)	0,905	0,926	0,676
Safety Compliance (SC)	0,959	0,967	0,807
Safety Participation (SP)	0,901	0,926	0,716

Source: Authors

and communication. On the contrary, Liu *et al.* (2010) reported that it generally affects safety behavior. Additionally, Saat *et al.* (2016) and Liu *et al.* (2010) elaborated a systematic review of safety behavior in SME studies in Malaysia and China. Subramaniam *et al.* (2016) carried out an empirical study based on SME behavior in Malaysia. However, because China and Malaysia are developing countries, there is a possibility that the characteristics of their SMEs are similar to those in Indonesia. Therefore, the result from this research enriches literature centered on SMEs in developing countries.

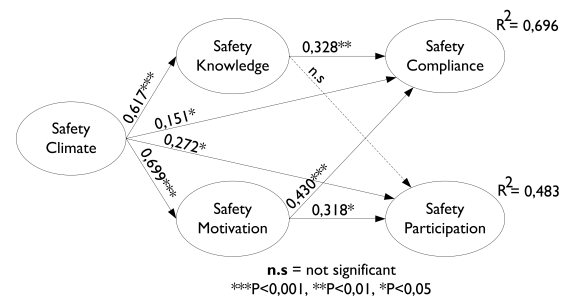


Figure 3. Empirical model.

Source: Authors

Safety climate has a positive influence on both knowledge and motivation. This confirms that shared perceptions regarding safety procedures, policies, and practices in SMEs positively impact knowledge and motivation. This finding is consistent with the research carried out by Guo *et al.* (2018) regarding small-scale industries, which stated that social support and production pressure influence both knowledge and motivation as aspects of safety climate.

Table 6. Result of structural model

Hypothesis	Path	β	T Statistics	P Values	Sig.
H1	Safety Climate -> Safety Knowledge	0,617	8,499	0,000	***
H2	Safety Climate -> Safety Compliance	0,151	2,004	0,045	*
H3	Safety Climate -> Safety Participation	0,272	2,285	0,022	*
H4	Safety Climate -> Safety Motivation	0,699	10,656	0,000	***
H5	Safety Knowledge -> Safety Compliance	0,328	3,481	0,001	**
H6	Safety Knowledge -> Safety Participation	0,182	1,448	0,148	n.s
H7	Safety Motivation -> Safety Compliance	0,430	4,292	0,000	***
H8	Safety Motivation -> Safety Participation	0,318	1,963	0,050	*

Note: β = path coefficient, ***P < 0,001, **P < 0,01, *P < 0,05, n.s = not significant

Source: Authors

Furthermore, we found that safety knowledge has a positive influence on compliance. This is consistent with the studies carried out by Amponsah-Tawaih and Adu (2016) and Guo *et al.* (2016, 2018). However, safety knowledge did not influence safety participation. This result is different from the one obtained from the initial model developed by Neal *et al.* (2000), which shows that an increased understanding of safety improves compliance with safety rules and work procedures, excluding participation or involvement.

Safety motivation has a positive effect on both compliance and participation. This result is consistent with the studies carried out by Vinodkumar and Bhasi (2010), Shin *et al.* (2015), and Mohammadfam *et al.* (2017). This implies that, when the workers are motivated, they tend to be consistent

with safety procedures and work settlement. Therefore, increased motivation triggers participation in terms of helping colleagues, promoting, and improving workplace safety initiatives.

Meanwhile, this study shows mediating constructs (namely, knowledge and motivation) from safety climate to safety behavior. This result is consistent with the research carried out by Sinclair *et al.* (2008), which stated that motivation and knowledge are the intervening factors that mediate the influence of safety climate on safety behavior.

In short, situation-related (safety climate) and person-related factors (motivation and knowledge) affect safety behavior (compliance and participation). The managerial implications of this research are to improve the safety behavior of SMEs workers through enhancing safety climate, safety motivation, and safety knowledge. Conversely, to improve safety behavior performance, SMEs need to consider the improvement all of them.

In the context of PLS-SEM, the common-method variance is detected through the full collinearity assessment approach (Kock, 2015). The variance inflation factor (VIF) shows the collinearity assessment. Its values need to be lower than 5. However, if it is higher, it implies a potential collinearity problem (Hair, Ringle, and Sarstedt, 2011). Table 7 shows the value of the VIF for all constructs, and all their correlation has a VIF value of less than 5, which indicates there is no common-method bias.

Table 7. The variance inflation factor (VIF)

Constructs	SCI	SC	SM	SP	SK
Safety Climate (SCI)		1,983	1,000	1,983	1,000
Safety Compliance (SC)					
Safety Motivation (SM)		3,618		3,618	
Safety Participation (SP)					
Safety Knowledge (SK)		2,984		2,984	

Source: Authors

Finally, the goodness of fit (GoF) for the model is shown in Table 8. The chi-square is 933,598, which implies a high level of fit. Based on the research carried out by Wetzels, Odekerken-Schröder, and Oppen (2009), the chi-square started from 0,25, which is either less than, equal to, or greater than 0,36, which is presumed to be large. The standardized root means square residual (SRMR) is 0,093. However, when the SRMR is $\leq 0,10$, the model is reported to have a good fit because Henseler *et al.* (2014) stated that it serves as a goodness of fit measure for PLS-SEM.

This study has certain limitations: firstly, it has a limited number of samples, which is due to restricted permits; second, the data collection was limited to the East Java province. Further study involving more samples is therefore needed. Irrespective of its limitations, this study generally offers a valuable novel contribution in field of SMEs, particularly those in Indonesia. Moreover, this study provides empirical data on safety climate, motivation, knowledge, and

relationships. The managerial implications are based on the fact that, to improve the safety behavior of SME workers, it is necessary to consider both situation-related and person-related factors.

Table 8. The goodness of fit (GoF)

GoF method	Value	Cut off value	Goodness
Chi-square	933,598	$\geq 0,36$ *)	Large
SRMR	0,093	$\leq 0,10$ **)	Good fit

Note: *) Based on Wetzels *et al.* (2009). **) Based on Henseler *et al.* (2014).

Source: Authors

Conclusions

Safety climate has a positive influence on knowledge, motivation, compliance, and participation. In addition, knowledge and motivation mediate the relationship between safety climate and behavior (namely, compliance and participation). Safety knowledge affects only compliance, whereas motivation affects both compliance and participation.

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