

Investigating the Connection between Safety Culture, Affective Commitment, and Organizational Performance in Manufacturing Industry

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ABSTRACT

The manufacturing industry is known as one of the most hazardous industries, which not only requires occupational solid laws and regulations but also demands the commitment of all employees. Shared commitment and value on safety are essential factors in developing an organizational strategy, leading to economic effectiveness and resource utilization. The study is designed to determine the role of affective commitment as a mediator in affecting the correlation between safety culture and organizational performance. Data (n = 200) was gathered from employees of Honda Manufacturing Malacca. The research model is analyzed using the Structural Equation Modeling (SEM) method. The results discovered that safety culture and affective commitment significantly influence organizational performance. Besides, affective commitment partially intermediates safety culture and organizational performance relationships. This result implies that a psychological construction has implications for individual decisions to continue their membership, adhere to safety procedures, and perform their duties for the organization.

Keywords: *affective commitment, mediation analysis, organizational performance, safety culture*

INTRODUCTION

The number of private organizations in Malaysia has continued to increase, with 1,529,549 registered local companies, 9,124,174 registered businesses, and 37,460 registered limited liability partnerships in 2023 (Companies Commission Malaysia, 2024). The private sector is essential in ensuring the Malaysian economy remains strong in the long run. In Malaysia, the manufacturing sector is one of the crucial private sector entities. For the manufacturing industry, safety in the workplace is the most critical aspect of creating an environment free from the risk of an accident (Singh & Verma, 2020). Ignorance of occupational safety and health aspects can affect the performance of employees and organizations (Sorensen et al., 2021). Safety culture focuses on meeting safety standards in the workplace, such as following safety procedures and using personal protective equipment (PPE; Pedrosa & Guedes, 2022). Wu (2021) defined safety culture as policies, regulations and procedures,

incentives, training, communication, employee involvement, and attitudes and behaviors toward organizational safety.

In Malaysia, the Occupational Safety and Health Act (OSHA) 1994 or Act 514 has been established to provide the statutory framework for the Malaysian workforce. The Department of Occupational Safety and Health (DOSH) is responsible for safety promotion and law enforcement on occupational safety. OSHA's objective is to ensure workers' safety, health, and wellbeing. Safety at work is a shared responsibility between employees and employers (Pedrosa & Guedes, 2022). Legal compliance by employers and employees can guarantee a safe and healthy environment, thus achieving the objective of the national agenda of reducing the rate of accidents at work (Madsen et al., 2020; Pedrosa & Guedes, 2022). Occupational health and safety aspects need to be given particular focus by organizations because both aspects involve direct and indirect costs (Zambrano & Mendoza, 2021). Direct costs include the cost of sick leave, the cost of payment for the inability to work, the cost of replacement for workers who die or are injured due to work accidents, and the payment of compensation to workers, while indirect costs include diminished organizational productivity (Sorensen et al., 2021).

Despite instituting safety rules and regulations, the safety culture in Malaysia still needs to be improved (Wu, 2021; Yeow et al., 2020). Moreira et al. (2024) noted that most accident cases in the construction industry involve human behavior, unsafe work culture, and poor procedures in managing dangerous machinery and equipment. Moreover, manufacturing sector workers are exposed to various hazards in the workplace, such as health problems, accidents, emotional problems, absenteeism, and psychosocial problems (Bautista-Bernal et al., 2024; Chee, 2024; Yeow et al., 2020). Data from DOSH disclose that the manufacturing sector tops the list of occupational accidents (refer to Table 1).

Table 1: Occupational Accident Statistics by Sector January- October 2023 (Reported to DOSH Only)

Sector	Non-Permanent Disability	Permanent Disability	Death	Total
Hotel and Restaurant	176	0	0	176
Utilities (Electricity, Gas, Water, and Sanitary Service)	147	0	4	151
Finance, Insurance, Real Estate, and Business Services	554	15	15	584
Construction	106	8	45	159
Transport, Storage, and Communication	326	7	9	342
Manufacturing	3961	175	45	4181
Wholesale and Retail Trade	145	2	0	147
Public Services and Statutory Authorities	117	2	0	119
Mining and Quarrying	23	1	4	28
Agriculture, Forestry, and Fishery	1020	25	19	1064
Total	6575	235	141	6951

(Source: Department of Occupational Safety and Health (DOSH), 2024)

Therefore, the study's objective is to examine the influence of safety culture on organizational performance in the context of the Malaysian manufacturing industry. Many empirical studies concentrated on examining the determinants of safety culture and its components, which limit the knowledge on the effect of safety culture, rendering it to be appropriately addressed. This study also examines the mediating effect of affective commitment as a mediator. Empirical research has shown that affective commitment has the most determined influence on employees' behaviors and attitudes (Koo et al., 2020). Organizations can achieve objectives and profits when they care about the welfare of the employees (Amirah et al., 2024; Santana-Martins et al., 2024; Sharma & Gautam, 2024). The present study's findings shed light on appropriate intervention programs and strategies to foster a

safety culture in Malaysian manufacturing organizations. Research on the mediation factors that could affect organizational performance has been scarce, with most of it being correlational.

LITERATURE REVIEW

Maslow's Hierarchy of Needs

Maslow's theory of hierarchy of needs explains that the basics of human needs are categorized into five levels: basic needs, safety and self-assurance requirements, the need for belongingness, the need for self-esteem, and self-achievement (Rojas et al., 2023). The primary need is physiological, such as food, air, and other things. Second is the need for safety and security, such as protection in the workplace, insurance coverage, vaccination, and others. The third stage is a social need, which includes giving and receiving love. The fourth need is self-esteem, which means receiving appreciation from others. If these requirements can be met, one will be more confident. The fifth level is the need for self-achievement, which refers to the ability to be usefully self-potential and have talent. The theory explains that the needs of human beings are divided into external needs (physical) and internal needs (soul) (Rojas et al., 2023). Relating to this study, to achieve organizational performance, the management needs to ensure that the basic needs of their employees are met, i.e., to feel safe psychologically and physically in the work environment (Bautista-Bernal et al., 2024; Sorensen et al., 2021). Organizations can improve their performance by focusing on safety aspects through the interrelation of three parts: psychological (person), behavior (job), and system (organization). Safety culture comprises three aspects: employees, jobs, and organizations (Singh & Verma, 2020). Safety culture in the workplace can help minimize the chance of accidents due to mistakes/negligence by individuals, increase awareness of the dangers of making mistakes/negligence, and motivate employees to report any errors/deficiencies, including minor ones, as they occur to avoid accidents. In addition to safety culture, this study also proposed a second component of Maslow's theory: the need for belonging, which is affective commitment. Affective commitment positively influences promoting a safe climate, which results in better performance (Sharma & Gautam, 2024).

Safety Culture and Organizational Performance

Work safety culture refers to an organization's efforts to maintain safety and health in the work environment (Singh & Verma, 2020). Employee safety in the workplace is called Occupational Safety and Health Administration (OSHA). Under the Act, employers are responsible for ensuring workplace safety. These include safety helmets, gloves, eye protection, safety shoes, and respiratory protective equipment. The organization could employ some mechanisms in promoting safety culture, including 1) using safety equipment provided by the employer, 2) conducting safety training organized by the employer, 3) providing information about any risks or hazards they might encounter, 4) making sure employees wear safety helmets, gloves, respirators, and other required safety equipment, 5) ensuring protective equipment is in good condition and report any damage or deficiencies to the employer, 6) establishing internal standard operating procedures (SOPs), and 7) motivating employees to report any safety violations to the appropriate parties (Accou & Reniers, 2020; Kohn et al., 2023). Prioritizing safety in the workplace has several key benefits, including mitigating the risk of accidents or injuries by identifying and reducing workplace hazards (Pedrosa & Guedes, 2022). A conducive and safe work environment increases work efficiency and productivity because employees' health is guaranteed physically, mentally, and emotionally (Bautista-Bernal et al., 2024). Employees will work with minimal work pressure and feel content (Sorensen et al., 2021). The employee-employer relationship will also be more harmonious. Moreover, the employer can certainly reduce the cost of losses related to the management of accidents or injuries that are closely related to the cost of healthcare and rehabilitation, loss in productivity, the impact on employee wellbeing, and legal actions (Madsen et al., 2020; Zambrano & Mendoza, 2021). The failure to implement a safe

work system can lead to accidents or injuries. Every incident or accident that occurs in the workplace will have a negative impact due to decreased productivity because of the absence or loss of skilled labor, healthcare, and rehabilitation costs, effects on the emotional and well-being of employees, and the possibility of legal action as provided existing deed (Singh & Verma, 2020; Wu, 2021). Therefore, this study proposes the following hypothesis:

H1: Safety culture significantly influences organizational performance.

Safety Culture and Affective Commitment

One of the biggest problems faced by employers is related to the welfare and health of employees. Poor employee management can affect productivity and commitment, further hindering the company's development. Therefore, many companies focus on caring for employees' well-being, welfare, and health. Various techniques, practices, and strategies can be adopted to improve employee morale and safety and ensure the company remains on the proper development path (Singh & Verma, 2020). Every employee has the right to work in a place free from danger and risk. Employers must ensure that all safety measures are taken, including providing PPE and ensuring a safe workspace. Employees can work in a safer and healthier environment by understanding their rights and responsibilities under OSHA. Organizations must use a combination of safety training and protocols and promote a safety culture to prevent employee injuries (Zhang et al., 2020). Accidents, poisoning, and occupational diseases that occur in the workplace affect the workers involved and organizational image, and the organization must bear the cost of direct losses such as medical fees and compensation and indirect costs such as lost productivity, costs of hiring new employees (Madsen et al., 2020). It also impacts the economy and national productivity (Smeak, 2020). A safe, healthy, and conducive workplace environment is essential to avoid or reduce occupational accidents and improve employee loyalty and commitment (Amirah et al., 2024; Zambrano & Mendoza, 2021). Hence, this study proposes the following hypothesis:

H2: Safety culture significantly influences affective commitment.

Mediating Effect of Affective Commitment

Affective commitment depicts a significant association with organizational performance, and poor affective commitment is a major contributor to absenteeism, low morale, declining quality of work, and the desire to leave work (Koo et al., 2020). Santana-Martins et al. (2024) revealed that affective commitment toward the organization enhances employees' passion and motivation. Employees with a high identification stage can increase their feelings of belonging to the organization and are more psychologically attached. The empirical research found that a strong commitment in the employee to the organization will lead to desired outcomes, such as achieving common goals, values, and culture, as well as the desire to carry out the organization's mission (Sharma & Gautam, 2024). This study also proposes the mediation effect of affective commitment. Many studies have examined the mediating effect of affective commitment (e.g., Duarte et al., 2021; Kaur et al., 2020; Ribeiro et al., 2020). Mediation variables or intermediary variables are variables that appear between independent and dependent variables in statistical analysis. This variable indirectly connects independent and dependent variables, thus influencing the relationship between the two. By knowing the intervening variable, we can better understand the relationship between safety culture and organizational performance. In some cases, intervening variables can explain why the relationship between independent and dependent variables occurs or does not occur. Sometimes, the relationship between independent and dependent variables may be complex and challenging. With intervening variables, we can break the relationship into stages that are easier to understand and analyze. Highly committed employees are associated with good work results, increased productivity, job satisfaction,

and stability (Li et al., 2021). The employees who are highly committed to the organization find it easier to provide additional contributions. An organization with a strong culture of organizational commitment will have a smooth-running organizational performance (Bautista-Bernal et al., 2024). Supporting this notion, Ye et al. (2020) found that affective commitment can increase productivity. When members have a high level of commitment, they will focus on working to achieve the organization's goals, indirectly boosting their productivity. Therefore, this study proposes the following hypothesis:

H3: Affective commitment mediates the relationship between safety culture and organizational performance.

Figure 1 shows the conceptual model of this study.

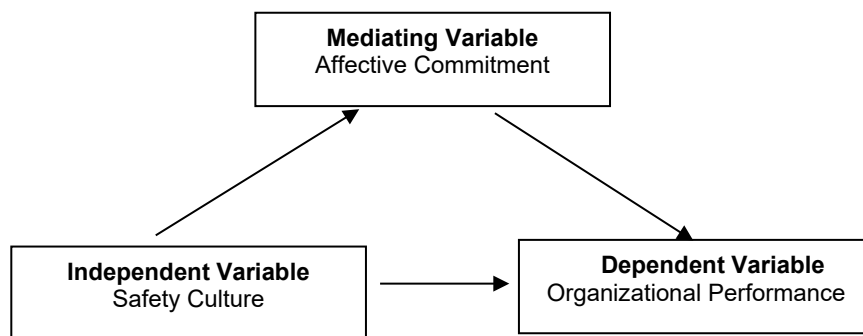


Figure 1: Conceptual Framework

METHODOLOGY

A quantitative survey and cross-sectional study were employed. The researchers employed purposive sampling techniques to select the sample from the population of first-line employees of Honda Malaysia Sdn. Bhd., Malacca. Determining the study sample size was based on the formula reported by Krejcie and Morgan (1970). Hence, 200 employees (n) of Honda Malaysia Sdn. Bhd. Malacca was selected for the study (N=400). Moreover, the minimum sample size required to reduce bias for structural equation modeling (SEM) estimates is 200 (Loehlin, 1998). The study only focuses on first-line manufacturing workers specializing in a specific part of the production process, such as painting, welding, or final inspection. Table 2 summarizes the profile of the respondents. Most respondents were male; 102 (51%) and 107 (53%) were 18-28. Most respondents' monthly salaries are within RM3001-RM4000 (n=107, 53.5%).

Table 2: Profile of Respondents

Profile		Frequency (n)	Percentage (%)
Gender	Male	102	51
	Female	98	49
Age	18-28	107	53.5
	29-39	28	29
	40-50	53	11.5
	51-61	12	6
Income Level	RM2000-RM3000	0	0
	RM3001-RM4000	107	53.5
	RM4001-RM5000	75	37.5
	>RM5000	18	9

In this study, the researchers adapted the survey items from past studies. These include safety culture (Abeje & Luo, 2023), affective commitment (Meyer & Allen, 1997), and organizational performance (Nor-Aishah et al., 2020). A five-point Likert scale is used for measuring variables ranging from 1 (strongly disagree) to 5 (strongly agree). Statistical tests in this research used Structural Equation Modeling (SEM), processed with Analysis of Moment Structure (AMOS) Software.

FINDINGS

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) tests or empirically confirm a measurement model. According to certain theoretical studies, The measurement model, the descriptive model, is the operationalization of latent variables or constructs into one or several indicators. Thus, CFA is not intended to produce a model but to test a measurement model developed based on certain theoretical studies. To determine the model fit, the value for Comparative Fit Index (CFI), Goodness Fit Index (GFI), and Tucker Lewis Index (TLI) is expected to be ≥ 0.90 (Hair et al., 2010). The Root Mean Square Error of Approximation (RMSEA) explains the residual found in the model, whereas if the value is in the range of $0.05 < \text{RMSEA} \leq 0.08$, the model can still be accepted as a good fit (Hair et al., 2010). The value of chi-square (χ^2/df) ≤ 3 is considered acceptable (Hair et al., 2010). The CFA results revealed that the model was acceptable ($\chi^2/\text{df} = 2.458$, $p < 0.001$, GFI = 0.920, TLI = 0.930, CFI = 0.940, and RMSEA = 0.045).

Convergent and Discriminant Validity

Convergent validity aims to determine the validity of indicators and constructs or latent variables. There are two types of validity, namely convergent validity and discriminant validity. Convergent validity means a set of indicators representing a latent variable and the underlying latent variable. The representation can be demonstrated through unidimensionality, expressed using the Composite Reliability (CR) and Average Variance Extracted (AVE). The CR and AVE values need to be at least 0.60 and 0.50, respectively (Hair et al., 2010). Cronbach's Alpha measures the level of correlation between items in a measurement instrument. Highly correlated items indicate that they measure the same aspect of the measured construct. The Cronbach Alpha coefficient ranges from 0 to 1, with higher values indicating higher reliability. Table 3 describes the Factor Loading, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha (α) for the study variables. Based on Table 3, the factor loading for each study item was more than 0.60, and AVE, CR, and Cronbach's Alpha values were within the acceptable range (Hair et al., 2010). The study then assesses the discriminant validity by looking at the diagonal value. In the Fornell-Larcker (1981) criterion test, discriminant validity can be said to be good if the square root of the AVE of the construct is higher compared to the correlation of the construct with other latent variables, while in the cross-loading test, it should show a higher indicator value of each construct compared to the indicators of other constructs (Sekaran & Bougie, 2016). Discriminant validity means that two conceptually different concepts must show sufficient differences. From Table 4, the discriminant validity is achieved as the square root of AVE values is greater than the correlation with other constructs, and it concluded that the latent construct is discriminately valid.

Table 3: Value of Factor Loading, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha

Variable	Items	Item Loadings	AVE (≥ 0.50)	CR (≥ 0.60)	α (≥ 0.70)
Safety Culture	SC1	0.669	0.780	0.870	0.800
	SC2	0.699			

	SC3	0.728			
	SC4	0.715			
	SC5	0.709			
	SC6	0.710			
Affective Commitment	AC1	0.753	0.720	0.846	0.759
	AC2	0.769			
	AC3	0.777			
	AC4	0.680			
	AC5	0.658			
	AC6	0.679			
Organizational Performance	OP1	0.775	0.790	0.869	0.810
	OP2	0.789			
	OP3	0.820			
	OP4	0.830			

Table 4: Discrimination Validity

	1	2	3
Safety Culture	0.883		
Affective Commitment	0.688***	0.848	
Organizational Performance	0.570***	0.710***	0.888

Note: Values in the diagonal show the square root of AVE

Structural Model Analyses

The results of the direct path show that there was a significant and positive relationship between safety culture ($\beta=0.380$, $p<0.001$) and affective commitment ($\beta=0.420$, $p<0.001$) towards organizational performance. Thus, H1 and H2 were accepted. The direct influence of safety culture and affective commitment on organizational performance amounts to 0.380 and 0.420, meaning that with every increase of one unit of safety culture and affective commitment, organizational performance can increase by 38% and 42%, respectively. Next, safety culture also significantly influences affective commitment ($\beta =0.277$, $p<0.001$). Bootstrapping was performed to evaluate the statistical significance or level of significance of the value of direct effects, indirect effects, total effects, and coefficient of determination. If the Boot LLCI and Boot ULCI ranges do not include the value zero (0), then it can be concluded that the estimate is significant, and a mediation effect occurs. The results are shown in Table 5. The mediating effect is 0.116, and the 95% confidence interval is [0.020, 0.180], excluding 0. Thus, the mediating effect is significant. Therefore, H3 is accepted. The indirect influence of safety culture on organizational performance through affective commitment amounts to -0.116, which means that safety culture has a positive indirect influence on organizational performance through safety culture of 11.6%. This means that with every increase of one unit of safety culture, then organizational performance can increase indirectly through affective commitment by 11.6%. Total path/influence is the summation of direct and indirect influence ($\beta =0.496$, $p<0.001$).

Table 5: Structural Model Results

Path		B	Std. Error	t-value	Bootstrap (95% CI)	
Standardized Direct Effects					Lower control limit	Upper control limit
Safety Culture	→	Organizational Performance	0.380***	0.023	0.522	
Affective Commitment	→	Organizational Performance	0.420***	0.031	1.409	
Safety Culture	→	Affective Commitment	0.277***	0.016	0.178	
Standardized Indirect Effects (Mediation Effect via Affective Commitment)						
Safety Culture	→	Organizational	0.116**	0.007	-	0.020 0.180

		Performance					
Standardized Total Effects		(Direct Effect + Indirect Effect)					
Safety Culture	→	Organizational Performance	0.496***	0.018	-		

DISCUSSION

The results showed that safety culture and affective commitment affected organizational performance. Bautista-Bernal et al. (2024) and Singh and Verma (2020) determined that workplace safety led to some positive consequences for the sustainable development of an organization. For instance, using PPE reduces productive labor force injuries and occupational accidents, leading to sustainable organizational development. Second, the result showed an influence of safety culture on affective commitment. In other words, the findings indicate that safety culture can still affect organizational performance without affective commitment. However, this effect is small. By combining affective commitment as a mediating variable, the effect of safety culture on organizational performance will be enhanced and more significant. Amirah et al. (2024) revealed the significant influence of workplace safety management on affective commitment, and Santana-Martins et al. (2024) illustrate that affective commitment positively and significantly influences employees' performance. One of the basic needs of workers in the organization is assurance, security, and harmony in life. To meet the needs, the employees need to feel safe from the psychological and physical aspects of the employment environment so that employees can give an appropriate commitment to the organization (Singh & Verma, 2020). Security needs have a significant relationship with performance (Smeak, 2020). Many contemporary studies have shown encouragement in meeting employees' safety and security needs as a source of motivation to work productively (Amirah et al., 2024; Zambrano & Mendoza, 2021).

Practical Implications

The findings of this study have important practical implications for organizations. The results signify that employees are concerned about workplace safety, which could inculcate their commitment to perform better. Thus, the leader, manager, or supervisor must be willing to support the safety policies. The management needs to allocate financial resources to planning safety training and safety programs for their employees (Pedrosa & Guedes, 2022). Subsequently, employees must be notified of the safety and workplace incident prevention programs, and the implementation must be done comprehensively. Madsen et al. (2020) reported that perceived organizational support on four safety climate dimensions, i.e., organizational management values, management practices, communication, and labor involvement, can improve organizational safety climate. In particular, the top management needs to provide occupational safety and health policy and establish a safety and health committee for their organizations (Zhang et al., 2020). Moreover, they can hire or appoint a competent officer to act as the Safety and Health Officer for the organization. The organization must also be responsible for arranging the acquisition, use, handling, storage, safe transportation, and disposal of materials. Employee welfare facilities should be provided, such as restrooms for workers, suitable dining areas, and emergency facilities (Bautista-Bernal et al., 2024). In addition, the employees' role is equally important to the employer. A safety culture can be practiced with the cooperation and support of the employees. Employees must also cultivate an attitude of concern for safety aspects in any situation. This is because the occurrence of an accident at work involves reduced costs and the lives and records of the employees for life. Employees should also understand the safety training provided to ensure its implementation. Employers must create a workplace safety policy or policy as a written pledge to guarantee the safety and health of every employee and individual on the premises (Zhang et al., 2020). Employers are also responsible for providing appropriate PPE

requirements for all employees. Likewise, management members must constantly review and improve work systems to provide conducive and safe working conditions for their staff (Madsen et al., 2020).

CONCLUSION

This study has proved that the safety culture significantly influences organizational performance, and this relationship is mediated by affective commitment. Thus, the prevention of accidents, injuries, and occupational diseases not only reduces costs but also improves organizational performance. Healthy workers are more productive and produce better quality work, decreasing accidents and related health problems. An optimal work safety environment and employee commitment can increase productivity and quality and reduce workplace risk. This study has contributed to the current literature on workplace safety by providing new insight into the intervening effect of affective commitment. However, several limitations of this study should be noted. The first concerns a limited sample; this study will only be conducted in the manufacturing sector, Honda Malaysia, Melaka. Therefore, generalization could not be achieved. Future studies can include other industries, such as hospitality, tourism, food, construction, or other areas. Second, the common method variance problem is due to the single approach survey and cross-sectional limitation, which prevented the determination of the changes in the variables. Therefore, future studies are encouraged to utilize objective measures and longitudinal studies. Finally, the study model must be revised since the researcher only focuses on safety culture, affective commitment, and organizational effectiveness. Therefore, future studies should justify and develop our current model by including other significant variables such as leadership, personality, technology, demographic profile, and other aspects.

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AUTHORS' CONTRIBUTION

Muhammad Zulhilmi, I. and Nur Ashikin, J. conceived and planned the experiments. Muhammad Zulhilmi, I. and Nur Ashikin, J. contributed to interpreting the results. Nurul Hidayana, M. N. took the lead in writing the manuscript. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity, and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

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Appendix

Safety Culture (Abeje & Luo, 2023)

1. Perceived importance of safety rules.
2. Perceived importance of risk acceptance.
3. Perceived importance of management commitment.
4. Perceived effect of productivity pressure.
5. Perceived importance of employee involvement.
6. Perceived effect of individual responsibility.

Affective Commitment (Meyer & Allen, 1997)

1. I am glad to have chosen the company for which I work.
2. The company's complex problems are also my problems.
3. I belong to the company.
4. I see the company as my second home.
5. This is a family, and I am a member of it.
6. The company is of particular importance to me.

Organizational Performance (Nor-Aishah et al., 2020)

1. The company has improved its market share.
2. The company has improved its image.
3. The company has improved its position in the marketplace.
4. The company has increased its profits.