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Transformational Leadership and Safety Management in Malaysia Vocational Colleges

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Abstract: This study was an attempt to highlight the role of lecturers' transformational leadership in determining safety management within the context of Malaysian Vocational Colleges. The research is quantitative research design which the sample consists of 302 final year students from eight different Vocational Colleges in Malaysia. An adapted questionnaire was used for data collection and it contained 100 items purposely constructed to assess lecturers' transformational leadership and student's safety management. The collected data were analyzed using SPSS 22 software to measure the analysis of Pearson correlation, linear regression and multiple regression. Results of the analysis revealed that lecturers' transformational leadership is significantly and positively related to safety management. In addition, the study also revealed that student's safety management has been affected 48.2% by lecturers' transformational leadership practice. Overall, the research result can impact lecturers in the Vocational Colleges to review and enhance their leadership and provide a better understanding of transformational leadership behavior toward safety performance, safety training and safety climate that promote high-quality of safety management among students in future.

Keywords: Transformational leadership, safety management, vocational colleges, TVET

1. Introduction

As Malaysia progresses towards an industrialized economy, more people with technical and vocational skills are needed to build, drive and maintain the industrial production (Ibrahim et al., 2015). The government is very much aware that the future of the country does not solely depend on educated personnel, but on having a large pool of skilled workers that can handle the rapidly changing world of work. As such, Vocational Colleges are seen as a medium to supply the labor market with competency through courses, training and practical curriculum (Hanapi et al., 2016). As a result, the teaching and learning process for TVET has faced lots of transformation with the new emergence of machines, technical activities that introduced new hazards and challenges in a workplace (Makhtar et al., 2019). As mentioned by Mohamad and Basarudin (2018), human actions have dominantly contributed to a high-risk behaviours and accidents within TVET context with unsafe actions appear in respectively 65% of the total number of accidents during the years 2018-2020.

Recently, the daily newspaper continued to report many accident cases in the TVET education sector which indicates a lack of safety management (Makhtar et al., 2018). Awareness of safety management should not only be emphasized by TVET lecturers, but also for students during the learning and teaching process in the workshop. It is because, indirectly, students will be involved and exposed to the risk of accidents with various chemicals, sharp and hazardous equipment, electrical and mechanical equipment that require high safety procedures (Shafie et al., 2021a). In addition, previous study revealed that TVET students had a limited knowledge of how to prevent risks at work and lacked a systematic way to approach hazard control (Andersson et al., 2015). Thus, safety management practice among

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students should be supported both proactively and reactively by running a safe and healthy teaching and learning environment.

As a result, a considerable amount of research on students' safety management has been carried out. Literature review illustrates that relationship and communication between lecturer and student is the most successful way to reach safety goals (Adjekum, 2017; Vaismoradi et al., 2016; Zengin & Akan, 2019). Lecturers are required to embrace certain criteria such as leadership, which enable them to produce intelligent generation (Zulnaidi et al., 2020). Therefore, good leadership practices by the lecturers are necessary to improve students' safety management in an organization. Even though leadership is well-established predictor of safety management, but what is less known is the impact of transformational leadership practices on safety management (Clarke, 2013; Naranasamy & Abdullah, 2019; Shi, 2020; Wahad et al., 2012) especially in the context of Vocational Colleges (Makhtar et al., 2019). As suggested by Amiruddin (2018), transformational leadership is the appropriate leadership style that is related to management of safety in technical context. Wahab et al. (2012) explains that the transformational leadership approach helps a lot in reducing the most serious accidents, and then improves overall safety management in most of industrial sectors including TVET sector. Thus, this study aims to determine the answer to these specific research questions:

i. What is the level of measurement for lecturers' transformational leadership practice as seen by students in Vocational Colleges in Malaysia?
ii. What is the students' perception about safety management (safety performance, safety training and safety climate) in Vocational Colleges in Malaysia?
iii. What is the relationship between lecturers' transformational leadership practice dimensions (inspirational motivation, idealized influence, individualized consideration and intellectual stimulation) and safety management in Vocational Colleges in Malaysia?
iv. What is the effect of lecturers' transformational leadership practice dimensions (inspirational motivation, idealized influence, individualized consideration and intellectual stimulation) on safety management in Vocational Colleges in Malaysia?

1.1 Transformational Leadership and Safety Management

The development of literature studies has indicated that transformational leadership is divided into four main dimensions namely ideal influence, inspirational motivation, intellectual stimulation, and individual consideration (Boamah et al., 2018). First, the dimension of ideal influence refers to a leader who is admired, respected, trusted, and charismatic by their employees (Jin et al., 2016). Besides sharing risks with their employees, transformational leaders who have this dimension demonstrate high ethical standards and moral behaviour. Second, inspirational motivation which emphasizes the aspects of attractive confidence as well as high team spirit (Khalili, 2016). Numerous past studies showed that inspirational motivation is important and has a greater impact on organizational success and employee trust. Third, intellectual stimulation is related to a leader who actively encourages their employees to be innovative, rearranges a problem into a new perspective, and performs tasks through a new approach (Mittal & Dhar Rajib, 2015). The final dimension is an individual consideration where leaders pay special attention to each employee who is needed for achievement and growth through support, encouragement, good communication, and guidance (Mullen et al., 2017) in making sure each individual feels appreciated and valued by the organization.

Through these dimensions, transformational leaders are believed to be able to communicate effectively regarding high safety standards and can motivate others in applying security goals. A study by Lee et al. (2017) stated that individuals' perceptions regarding the influence of transformational leadership will be able to influence their actions towards a dangerous and risky work environment. Furthermore, transformational leadership is seen to be able to convey effective safety management information to others through exemplary and safe work patterns (Ariyabuddhiphongs & Kahn, 2017). Moreover, according to Jaiswal and Dhar (2015), transformational leadership can motivate other individuals regarding safety by giving priority to individual needs as well as promoting positive change and prioritizing employee well-being rather than focusing on organizational goals only.

2. Methodology

This study is descriptive research aligned with the quantitative approach. A cross-sectional questionnaire employed to measure respondents' self-reported perceptions of lecturers' transformational leadership behaviour and its relationship with safety management. This type of research design is more structured and formal, based on large and representative samples and has a high degree of generalizability.

2.1 Population and Sampling

This study population comprises the final year students from eight vocational colleges, located in the Peninsular of Malaysia (Northern Malaysia, Southern Malaysia, East Coast Malaysia and Central of Malaysia). The information regarding total number of final year student's population for each of selected vocational colleges are obtained from the

college's administration staff. The total population is 1400 final year students from industrial courses (automotive technology, electrical and electronic technology, welding technology, construction technology, cooling and air conditioning technology and industrial machining technology). The details of the population based on the Vocational Colleges is shown in table 1.

Table 1 - The fraction of population by vocational college

Region of Malaysia	Vocational College	Total number of the population
Northern	Arau Vocational College	150
	Kangar Vocational College	147
Southern	Datuk Seri Mohd Zin Vocational College	190
	Melaka Tengah Vocational College	214
East Coast	Pengkalan Chepa Vocational College	160
	Kuala Krai Vocational College	175
Central	Setapak Vocational College	172
	Klang Vocational College	192
Overall total		1400

Samples were chosen using a simple random sampling method, by referring to the Krejcie and Morgan Table. Based on this table, for a population of 1400 students, the sample size needed is 302 students. Questionnaires were distributed to 302 students; however, researchers have only managed to collect 300 sets of questionnaires. A total of 2 sets of questionnaires were not included due to incomplete responses.

2.2 Instrument

The study uses the closed-ended items questionnaires that are based on the Likert scale. Ethically, the data collected anonymously and confidentiality. Adapted questionnaires for transformational leadership and safety management were used to collect data from the respondents to determine the level of perception of each element available. The instrument consisted of three sections - Section A (Demographic Background), Section B (Transformational Leadership Practice) and Section C (Safety Management). Section A focused on the respondents' demographic characteristics such as gender, age, ethnic group, type of Vocational College and academic qualifications. Section B focused on the lecturers' transformational leadership practice adapted from The Multifactor Leadership Questionnaire (MLQ5X). The questionnaire consisted of four sub dimensions, namely, intellectual stimulation (4 items), idealized influence (8 items), inspirational motivation (4 items) and individual consideration (4 items). Respondents responded to Likert scale five-point (0 = not at all; 1 = occasionally; 2 = sometimes; 3 = often and 4 = frequently, if not always).

In the meantime, Section C inquired about safety management questionnaires. The safety management questionnaire had 80 items covered three sub dimensions namely safety performance (29 items) (Wu et al., 2007), safety training (10 items) (Wu et al., 2008) and safety climate (41 items) (Wu et al., 2008) with the choices "Strongly Disagree" to "Strongly Agree" ranging between 1-5 Likert scale.

To ensure its reliability for use with the sample, the pilot study was deployed to 30 students from one of the vocational colleges (excluded in the actual study). The reliability of the items was tested using Cronbach's Alpha.

Table 2 - Reliability test for instrument variable

Variables	Cronbach's Alpha	Decision
Transformational Leadership	0.780	All items are accepted/reliable
Safety Management	0.700	All items are accepted/reliable

2.3 Data Analysis

Data gathered were analysed using descriptive and inferential analysis. Mean and standard deviation (descriptive analysis) were used to determine the lecturers' level of transformational leadership practice and students' safety management. Meanwhile, Pearson Correlation, Linear Regression and Multiple Regression (inferential analysis) were used to determine the relationship and the level of prediction between independent variable and dependent variable of the research. A total of 300 sets of responses were analysed for its reliability and validity to validate the research hypotheses.

3. Research Findings

3.1 Reliability and Validity

To find out the quality of research study, the test of reliability and validity are needed. To find the reliability of the collected responses, an accurate tool is used that is Cronbach Alpha. Through reliability, consistency of results across items from collected answers given by individuals who respond to surveys is tested through reliability. Finding showed that transformational leadership has greater accuracy with a value of alpha $\alpha = 0.837$. Whereas safety management has contributed about $\alpha = 0.789$ for its reliability.

Exploratory Factor Analysis was done on all study variables covering transformational leadership and safety management. Finding showed that all the constructs in the variable transformational leadership comprising of individual stimulation, idealized influence, inspirational motivation and individual consideration, all the constructs in the variable safety management comprising of safety performance, safety training and safety climate are statistically valid with all the items with factor loading ≥ 0.4 and all items are used for further analysis.

3.2 Level of Measurement for Lecturers' Transformational Leadership Practice

Descriptive statistics were used to analyse the data. The results as shown in table 3.

Table 3 - Level of measurement for lecturers' transformational leadership practice

Dimension	Mean	Standard Deviation	Level of measurement
Individual Consideration	2.31	0.76	Fairly often
Inspirational Motivation	2.74	0.87	Fairly often
Idealized Influence	2.81	0.80	Fairly often
Intellectual Stimulation	2.62	0.83	Fairly often
Lecturers' Transformational Leadership Practice	2.63	0.78	Fairly often

As shown in Table 3, based on students' perception, data analysis indicated that most of the students were answered often for the level of measurement for their lecturers' transformational leadership practice with mean value of 2.63 (SD=0.78). This could be interpreted as the lecturers not so frequently practicing transformational leadership in Vocational College in Malaysia. The results of the analysis for each lecturers' transformational leadership practice dimension indicated that three out of the four transformational leadership dimensions showed a higher mean than the overall mean value. These dimensions are inspirational motivation (M=2.74, SD=0.87), followed by idealized influence (M=2.81, SD=0.80) and intellectual stimulation (M=2.62, SD=0.83).

3.3 Students' Perception about Safety Management

The analysis indicated that the mean and standard deviation obtained for three components of safety management tested. Based on students' perception, they strongly disagree with the current application of safety management in vocational colleges. The highest mean score was 2.33 while the lowest mean score was 2.20. From the three components, safety performance displayed the highest mean score for strongly disagree perception (M=2.33) and the lowest mean score of strongly disagree was for safety training (M=2.20). Overall, final year students were strongly disagreeing about the safety management practices in Malaysia Vocational Colleges employed a low level of practices among them. Table 4 shows the responses to the question on students' perception about safety management in vocational colleges in Malaysia.

Table 4 - Students' perception about safety management

Dimension	Mean	Standard Deviation	Students' Perception
Safety Performance	2.33	0.54	Strongly Disagree
Safety Training	2.20	0.69	Strongly Disagree
Safety Climate	2.28	0.72	Strongly Disagree
Students' Safety Management	2.27	0.63	Strongly Disagree

3.4 Relationships between Lecturers' Transformational Leadership Practice and Student's Safety Management

Relationship between lecturers' transformational leadership and safety management was tested using the Pearson correlation analysis. The result: it can be concluded that the relationship between transformational leadership style of lecturer and student safety management in vocational colleges is significant (r=.680) (see table 5). The correlation index indicates a positive and strong correlation coefficient, indicating that the lecturers practice transformational leadership and safety management among students has positively increased. In addition, further analysis was performed to test the correlation for each of lecturers' transformational leadership's dimension with students' safety management, the results are presented as in table 5.

Table 5 - Correlation analysis for variables in the study

Variables	(Y1)	(Y2)	(Y3)	(Y4)	(Y5)	(Y6)
Safety Management (Y1)	1	.771**	.648**	.634**	.596**	.680**
Intellectual Stimulation (Y2)	.771**	1	.668**	.602**	.634**	.701**
Idealized Influence (Y3)	.648**	.668**	1	.597**	.553**	.684**
Inspirational Motivation (Y4)	.634**	.602**	.597**	1	.728**	.556**
Individual Consideration (Y5)	.596**	.634**	.553**	.728**	1	.673**
Transformational Leadership (Y6)	.680**	.701**	.684**	.556**	.673**	1

Note: **. Correlation is significant at the 0.01 level (2 tailed)

Pearson correlation was deployed to assess the linear relationship. Based on the analysis test, the correlation coefficient value (r) indicates that there is a high positive correlation ($r=0.77$, $p<0.01$) between intellectual stimulation of transformational leadership and students' safety management. This result gives the impression that the effectiveness of students in managing their safety is closely related to the role played by the lecturers who always solicit students' ideas and encourage students to think creatively. In addition, for idealized influence of transformational leadership, this dimension also found high positively and significantly correlated with students' safety management ($r=0.64$, $p<0.01$). The findings showed that if intellectual stimulation and idealized influence of transformational leadership were increased, the safety management would increase highly.

Additionally, if intellectual stimulation and idealized influence decreased, the safety management would also decrease highly because of the high relationship among the variables. It is believed that when a lecturer is willing to follow a core set of values and ethical principles in safety issues, he/she can build trust with his/her students and develop confidence in their leader. In another two dimensions of transformational leadership which are inspirational motivation and individual consideration, its findings have found the matrix result to be ($r=0.63$, $p<0.01$) and ($r=0.59$, $p<0.01$) respectively. The result, as shown in Table 4, illustrates that there was a moderate positive correlation between safety management and inspirational motivation, and safety management and individual consideration. This indicates that both dimensions have a positive and significant relationship with students' safety management as well. Basically, a lecturer with inspirational motivation can inspire positive changes in students' safety awareness, followed by keeping lines of open communication with individual consideration so that students feel free to share problems and ideas for better

improvement especially in safety management context. The findings as of now lead to the answer for research objective 3.

3.5 The Effects of Lecturers' Transformational Leadership Practice on Student's Safety Management

To analyse the effect of lecturers' transformational leadership on student's safety management, Linear Regression was used. In this regression the value of safety management considering transformational leadership was determined based on a linear equation. Considering Table 6, a significant regression equation was found ($F(1,14) = 25.925$, $p<0.001$), with an R^2 .426. Students' safety management increased about 42.6% by lecturers' transformational leadership in Vocational Colleges context. In other words, this study shows that when a lecturer applies transformational leadership, students are affected about 42.6% in their safety management. It is assumed that transformational leadership is one of the factors in affecting safety management among Vocational Colleges students.

Table 6 - Regression coefficients for lecturers' transformational leadership and students' safety management

Variable						
		B	***B* SE**	**β**	***t***	***p***
	(Constant)	0.432	0.269		5.271	0.000
	Transformational Leadership	0.558	0.082	0.611	5.446	0.000

Note. $R^2 = .426$, $F(1,14) = 25.925$, $p < 0.001$

3.6 Components Effects on Lecturers' Transformational Leadership on Student's Safety Management

Meanwhile, this part provides more specific findings on multiple regression to measure the effect for each of lecturers' transformational leadership components on students' safety management.

Table 7 - Multiple regression estimates for lecturers' transformational leadership and students' safety management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.506	0.493	0.488	0.447

a. Predictors: (Constant), Intellectual Stimulation, Idealized Influence, Inspirational Motivation, Individual Consideration

Table 8 - Coefficients for lecturers' transformational leadership and students' safety management

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig
		B	**Std. Error**	**Beta**		
	(Constant)	1.547	0.319		6.019	0.000
	Intellectual Stimulation	0.144	0.228	0.173	1.605	0.024
	Idealized Influence	0.108	0.251	0.248	1.285	0.237
	Inspirational Motivation	0.092	0.237	0.225	2.266	0.048
	Individual Consideration	0.411	0.216	0.456	2.165	0.375

a. Dependent Variable: Students' Safety Management

Multiple regression analysis was used to test if each of transformational leadership components significantly predicted students' safety management. The value presented in Table 8 of the regression coefficient (r^2) is 0.493 (0.493x100 = 49.3%), which indicates the degree of variance in the safety management is explained by the intellectual stimulation, idealized influence, inspirational motivation and individual consideration. It also means that intellectual stimulation, idealized influence, inspirational motivation and individual consideration explains 49.3% of the variance in safety management. With F = 25.925 at 99 degrees of freedom, the test is very significant.

The result of the regression indicated the components of lecturers' transformational leadership explained 50.6% of the variance R^2.506. (F (1,14) = 25.925, p<0.000). The standardized coefficient (Beta) value is 0.173 and 0.225 for intellectual stimulation, inspirational motivation. It was found that intellectual stimulation (β .173, p<0.000) significantly predicted students' safety management, as did inspirational motivation (β .225 , p<0.000). The transformational leadership component contributing most towards students' safety management in Vocational Colleges are the lecturers' intellectual stimulation and inspirational motivation as compared to other two components of lecturers' transformational leadership practices. If the intellectual stimulation and inspirational motivation of transformational leadership have been increased one unit, the safety management will increase 17.3% and 22.5% respectively.

4. Discussion and Conclusion

This study identified that TVET lecturers often practice transformational leadership as perceived by final years' students. It can be concluded that this kind of leadership style is not the main leadership style applied by the lecturers. In essence, this result is aligned with a past research by Omar et al. (2019) which found that the level of transformational leadership practice among TVET institutions' lecturers are just in a moderate application. This finding supports Ahmad (2015) statement, who stated that transformational leadership is less practiced in TVET context probably because TVET lecturers are more inclined to practice other leadership approaches that are more concerned with complete control by the leader while conducting teaching and learning. Complete control and discipline control approaches such as application of autocratic leadership style is believed as an important approach to ensure the students follow safety rules to avoid potentially serious accidents (Razak et al., 2015) that always happens when it comes to heavy industrial courses. Besides, transformational leadership style among TVET lecturers also were believed not developed and trained well (Rahman & Rashid, 2018). This is due to the lack of training and mentoring provided by the organizations and organizations that did not have a formal leadership strategy (Makhtar et al., 2019) make them feel more comfortable to practice the current leadership style such as democratic leadership.

Furthermore, this study also identified that students strongly disagree with the current practice of safety management in Vocational College and thus needs further enhancement. This finding is the same as those conducted by Makhtar et al. (2019) and Nundkumar and Subban (2020) as they found that the respondents practiced the safety management in their research context. According to the current study, students were believed to be insufficient in safety management practice due to several factors which are unsatisfactory conditions for equipment and infrastructures, narrow learning space, incomplete working procedures and lack of safety training. Less practices in safety management will lead to physical injury, property damage, near accident and death (Shafie et al., 2021b). By providing an effective working environment and resources, it can play a more important role in the prevention of accidents and injuries, as well as in promoting safety and health in the context of vocational colleges (Huang, 2018). Awareness of safety practices in workshops should not only be emphasized by lecturers, but also for students during the learning and teaching process in the workshop.

In addition, lecturers' transformational leadership are found as a positive contributor to students' safety management in this study. The multiple regression findings identified that intellectual stimulation and inspirational motivation from the subscale of lecturers' transformational leadership practice as the significant predictors for students' safety management. However, idealized influence and individual consideration is not a significant predictor to all dimensions in students' safety management as shown in this study. Lecturers' intellectual stimulation is the most significant predictor of students' safety management with significant value .024. Basically, lecturers with higher intellectual stimulation can motivate their students with their knowledge expertise and also help students to actively engage in learning goals where students become more interested in learning, thus decreasing misbehaviours that can lead to safety issues.

Besides, these leaders also communicate high safety standards and motivate their students to accept safety goals (Mullen & Kelloway, 2009) in stimulating students' potential to perform their job safely. In line with Boamah et al. (2018) research, they believe that intellectual stimulation leaders' advice and actions are very powerful in influencing individual safety behaviors. Furthermore, inspirational motivation of transformational leadership is also one of the significant components in affecting students' safety management with significant value .048. This result is in line with a health-care sector study by Ugwu (2020) which indicates that individual safety management within a high risked work context was contributed by transformational leadership practices. According to this study, lecturers who practice transformational leadership often use a motivational role model approach in providing guidance on the use of hazardous devices. The teaching and learning process in workshops or laboratories by choosing relationship oriented helps to improve safety between the lecturer and students. In other words, lecturers with the inspirational motivation component of transformational leadership can help improve student safety by generating motivation to achieve positive change and

prioritizing student well-being (Inness et al., 2010). This type of leader always treats safety as a personal work value by proactively and visibly demonstrating its safety commitment daily (Shen et al., 2017).

Nonetheless, this research has successfully addressed transformational leadership practices among lecturers as the factors leading to students' safety management. As a summary, lecturers with a high level of transformational leadership will demonstrate their personal commitment to safety management as a core value by idealized influence. Continuing, this personal commitment will increase student confidence which can lead to improved overall safety performance. Besides, by using an intellectual stimulation component, transformational lecturers will encourage students to work together in addressing security issues through an information sharing approach between them. These approaches will create a positive learning culture where students become more aware, encourage innovativeness, calm and be disciplined when facing safety issues (Khalili, 2016) instead of taking reckless action that in turn results in more serious accidents or injuries to students. Furthermore, energized by inspirational motivational lecturers, students are likely to transcend their individual interests for the collective benefits (Jiang & Probst, 2016). Finally, transformational lecturers also emphasize individual consideration that focus on individual ability in carrying out a task. Therefore, safety practices can be improved if a student is given a task according to their suitability. This is because a person's efficiency in handling work operations can reduce injuries and accidents while working (Amiruddin & Azemi, 2018).

The results have several implications for educators practice and student practice as well. A training program which aims to enhance transformational leadership of educators may be a cost-effective way to create a positive safety management in Vocational Colleges. Interventions designed to create or improve safety management would be more effective if students treat their lecturers as models, mentors, and considerate friends, and feel free to raise safety issues. It is believed that training a small portion of organizational members (lecturers) has a significant impact on many individuals within the organization (TVET students). Besides, emphasizing the safety management curriculum that focuses on real-life experience that can produce students who can develop safety awareness and safety knowledge. This curriculum provides an opportunity for students to explore and to experience more details about safety operations through practical training or also known as active learning. A safety management curriculum or course needs to combine specific theoretical and practical elements to enrich students' knowledge, skills and values about safety. This curriculum also needs to be evaluated and improved from time to time to ensure its relevance and to make sure it is in line with the government's aspirations and standard procedures.

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