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# An Explicit Investigation of Occupational Stress and Safety Behavior on the relationships between Supportive Leadership and Safety Compliance in Sewerage Industry

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***Abstract*---**This study aims to examine the influence of supportive leadership on occupational stress, safety behaviour and safety compliance of workers working in Indah Water Konsortium Sdn. Bhd. (IWK) Malaysia. Moreover, the study intends to investigate the mediational role of occupational stress and safety behaviour. Supportive leadership negatively influence occupational stress while positively influencing safety behaviour. Occupational stress put a negative effect on safety behaviour and safety compliance, while safety behaviour has a positive effect on safety compliance. Supportive leadership positively influences safety compliance. Occupational stress and safety behaviour partially mediate the relationship between supportive leadership and safety compliance. The outcomes of this study offer significant insights into the management of Indah Water Konsortium Sdn. Bhd. (IWK) to reduce occupational stress, encourage


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safety behaviour, and improve safety compliance by providing supportive leadership to the workers. Unlike other industries, the sewerage operation industry (in Malaysia) is under an intensive work burden and work pressure that eventually causes occupational stress, lack of safety compliance and ignorance of safety behaviours among workers. The link of supportive leadership with safety compliance is scared with the mediating role of occupational stress and safety behaviour, especially in the sewerage industry particularly in developing countries such as Malaysia.

***Keywords*---**Indah Water Konsortium, occupational stress, safety behaviour, safety compliance, supportive leadership.

## Introduction

Indah Water Konsortium Sdn. Bhd. (IWK) is established in 1994 and accredited as a national sewerage utility company to handle the by-products. The IWK play a significant role in maintaining hygiene standards by managing waste and by-products of peninsular Malaysia (Department of Statistics, 2020). During the outbreak of the COVID-19 pandemic, Malaysia and all other countries around the globe emphasise practising health and safety protection measures to their workers to protect them when carrying out their duties because this epidemic terrifyingly contributed to a high rate of mortality and infection (International Labour Organization, 2020). Although, with other safety measures, employee behaviour in an un-conducive work environment also plays a role in contributing to accidents and also contributing to infectious diseases in the workplace (Jonathan & Mbogo, 2016; International Labor Organization, 2020).

Employees' workplace safety behaviour and safety compliance have captured the central focus of behavioural researchers. Work environment and workplace interactions predominantly contribute to workers' health, wellbeing and safety (Mattson, 2015). Leaders' role and support to ensure workers' safety compliance is the notion about which workers themselves are getting more aware. When it comes to safety, leaders and organizations become more concerned regarding the wellbeing of workers to avoid hazards in a risky work environment (International Labour Organization, 2020). The realization of leadership remains a focus of previous researchers with the belief that leader support has great potential to induce certain behaviours among employees (Khuwaja et al., 2020). Supportive leadership encompasses holistic tactics that are more relevant with a multi-faceted focus; to improve the physical workplace environment and emphasize employee planning, attitudes, beliefs and behaviours in ways that encourage safety compliance. Prior literature revealed that supportive leadership had significantly placed a positive influence on workers' safety behaviour which ultimately reduces accident rates (Li et al., 2020). Supportive leadership is a group-level factor that influences individual safety performance by discussing safety issues and depicting valuable directions (Shen et al., 2017). Leaders 'proactive support for safety in the workplace drives increased employee safety compliance by encouraging them to participate in safety training and compliance with safety rules (Hardison et al., 2014).

Moreover, in recent decades, occupational stress has been recognized as a global phenomenon with significant psychological effects on worker well-being in developed and developing countries (Wang et al., 2018). Leaders' support to endorse a conducive workplace environment for workers' safety, physical and psychological health is evident from the literature (Wang et al., 2017; American Institute of Stress, 2020). From a psychological and social learning perspective, safety behaviour is defined as practices or conducts undertaken to decrease potential accidents and the risk of harmful uncertainties. Individuals' characteristics, personality traits and coping behaviours develop their perceptions about stress. Some situations are maybe intensely stressful for some individuals while not for others (Vedder-Weiss et al., 2020). While the role of an individuals' personality traits should not be overlooked, ample evidence indicated that certain workplace conditions cause occupational stress to most workers. This idea led to the development of prevention strategies to facilitate employees in coping with challenging job demands and, in this perspective, supportive leadership known as a considerate behaviour of leaders who show attention to the needs and development of subordinates in addition to supporting them in job performance (Fries et al., 2021).

The occupational, safety and health Act (1994) accredited a legislative system to execute safety behaviour and implement safety compliance activities to ensure workers' health and safety. Yet, some unresponsive employer and employee behaviour have raised the issues of non -compliance and safety behaviour. Employees' or employers' non-compliance to legislation and safety behaviours may arise due to mistrusting the stated processes, lack of task-based interactions with customers, low sense of belonging, perceptions of getting through the situation by neglecting it, wish to experience innovative adventures, lack of training, disengagement, and process complexity (Zin & Ismail, 2012). The relationship between safety behaviour, compliance and its predictors was appeared feeble in prior literature.

Although the role of supportive leadership to encourage safe behaviour and reduce occupational stress is perceived as significant, there is scarce literature regarding the interactive influence of supportive leadership and workers' safety behaviour, safety compliance participation and safety attitude (General Organization for Social Insurance, 2018). Barely studies investigated the workers' safety behaviour and compliance affected by the supportive leadership (Basahel, 2021). Ample of prior studies discussed workplace accidents, but the role of leaders' support to reduce workplace stress, encourage safety behaviour, and safety compliance is an under-investigated matter which warrants further attention (Beus et al., 2016; Panuwatwanich et al., 2017; Mosly et al., 2020). Moreover, although safety research has acknowledged the antecedent of safety in the workplace, not much is known about the sequential mechanisms that how the influencing factors interact to promote safety and security behaviours in the workplace (Kao et al., 2019). Thus a gap has been observed in the literature which, this study intends to bridge. This study aims to examine the influence of supportive leadership on employee safety behaviours, occupational stress and safety compliance in the Indah Water Konsortium (IWK). Kines et al. (2010), stated that it is essential to understand predictors and outcomes of workers' safety behaviour to develop interventions and promote safety compliance.

Besides conferring the gaps and recommendations in the previous literature, this study wants to examine the relationship between supportive leadership, occupational stress, safety behaviour and safety compliance in the context of the Malaysian sewerage sector. This study suggests supportive leadership reduces occupational stress and improves safety behaviour that consequently enhances safety compliance. The study also intends to investigate the mediational effect of occupational stress and safety behaviour in the relationship between supportive leadership and safety compliance. To summarize, the current research focuses on factors of Supportive Leadership behaviour as the significant cause to encourage workers behaviour towards safety compliance to occupational, safety and health improvement in the sewerage sector in this country (Feber & Christover, 2021; Cuaresma-Escobar, 2021).

## Theoretical Framework

### The relationship between supportive leadership and occupational stress

Over the past few decades, leadership researchers have emphasized investigating the roles and outcomes of supportive leadership (Shin et al., 2016). Supportive leadership is a leader' that emotionally sympathetic and compassionate behaviours with employees, hence indicating leaders' consideration of employees' needs and wholesomeness (Kim, 2017). Occupational stress is a physiological state that arises when workers severely feel prejudiced and attacked at the workplace. Some jobs or workplace characteristics produce poor psychological or mental health and ultimately harm the workers' behaviours and outcomes (Giao et al., 2020). Occupational stress of workers is a challenging situation for leaders. Although occupational stress might arise due to different reasons, the way leaders interact and collaborate during task assignments and work processes is essential to reduce the stress level of workers (Chew Abdullah, & Balakrishnan, 2016). Empirical studies generally indicated positive ramifications of supportive leadership on workers' commitment, satisfaction, career inevitability and shielding impact on occupational stress (Kuvaas et al., 2012). Associated with the strong connotation between supportive leadership workers' attitudes, the role of supportive leadership to reduce occupational stress is equivocal (Shin et al., 2016). Oluseyi & Ayo (2009), believe that role, abilities and, support by the leaders towards employees to complete their tasks can ease the occupational stress in the workplace. Supportive leadership reduce workers' anxiety, stress and depression and improve their performance and behavioural conduct.

Supportive leadership, a sub-dimension of transformational leadership, has a high level of individual consideration for their employees (Khalid et al., 2018). Many workplace factors such as extended work schedule, lack of social support, inadequate work acknowledgement and less belongingness contribute to occupational stress, while leaders' support facilitates workers to cope with that stress (Lee, 2014). Since leaders' roles affect workers, the emotional feelings of subordinates aligned and up to a maximum depends upon leaders' support. When leaders make decisions on a sincere basis, based upon impartial analyses, workers trusted them and, sense of eustress (Kim & Cho, 2020). Conferring this literature support it is hypothesized that:

*H1: Supportive Leadership has significant negative effects on Occupational Stress.*

**The relationship between occupational stress and safety behaviour**

The prevalence and magnitude of occupational stress will result in damage to the health and wholesomeness of workers, which is an assertion that stress has a negative impact on the working population worldwide in terms of psychological risk factors at the international and national levels (ILO, 2016) occupational stress and its associated destructive factors' cost reflect the significant impact on workers' safety, health, wellbeing and performance (HSE, 2017). Accordingly, the phenomena of occupational stress cannot be considered in isolation but instead observed as a cohesive matter, with substantial implications for workers' safety, wellbeing and behavioural compliance (Kaveri & Prabakaran, 2013).

All occupational stress management strategies have a focus to prevent stress for individual-level safety interventions. However, given the magnitude of this problem, a comprehensive approach is needed to understand how to prevent occupational stress and get to know its negative implications for employee safety behaviour (Grawitch et al., 2015). Organizations devoted increased attention to control workers' safety behaviour and wellbeing through evaluation and prevention of occupational stress by conceptualizing the safety policies, approaches and legislation (ILO, 2016). The increased proliferation of this research demonstrates the magnitude of national and international level organizations that focus very hard to improve employee safety behaviours by reducing occupational stress. Strengthening workers' awareness and implication of safety behaviours to address the workplace risks increase their productivity and establish a safe and healthy workplace environment (Davidson, 2018). Prior literature unveiled a significant correlation among workers' perceived less occupational stress, burnout, anxiety, depression, along with their safety behaviours. As workers perceive a higher level of occupational stress, hence their safety behaviour is negatively influenced. Occupational stress reduces workers' safety behaviour, vice versa, favourable workplace perception of workers tends to enhance their safety behaviours (Bronkhorst et al., 2015). Considering the references and findings of previous studies, it is hypothesized that:

*H2: Occupational Stress has has significant negative effects on Safety Behaviour.*

**The relationship between supportive leadership and safety behaviour**

Despite all the emphasized advancements and precautions about workers' safety, in 2017 approximately, 3552 fatal occupational accidents and 3.3 million injuries occurred at the workplace were recorded in Europe. Even though this tendency is downward, this substantial amount of lethal accidents highlighted the need to be addressed for workers' safety and the need to be recognized the factors affecting safety behaviours to reduce the level of accidents and workplace injuries (Jiménez et al., 2019). Previously safety was often considered as a circumstantial concern, despite numerous calls of needs, now organizations are emphasizing to develop a safe workplace from both an occupational health perspective and overall workers' health perspective (Schulte et al., 2013). Researchers argued that decreasing

unsafe behaviours and enhancing safety conduct is one of the prioritized focuses of organizations (Curcuruto & Griffi, 2016).

Safety research has revealed that the utmost essential influence of workers' safety behaviour is leadership and managerial conduct (Grill et al., 2019). Leadership behaviour and decision making styles significantly influenced the safety behaviours of their subordinates (Willis et al., 2017). Different leadership styles can leverage more sustainable safety behaviours of workers', but, as for supportive leadership, it has been acknowledged most effective in the context of employees' safety behaviour (Clarke & Taylor, 2018). Supportive leaders demonstrate care, consideration and empathy as a priority for subordinates who face danger at the workplace by mitigating the perceptions of hazards and encourage the implications of safety behaviour. Thus safety researchers examined the impact of leaders' support in safety-related environments to develop safety conduct and reduce the potential of dangerous occurrences (Grill et al., 2017). Supportive forms of leadership, including transformational leadership styles, were recognized as predictors of safety outcomes by inspiring and motivating workers' behaviours (Sawhney & Cigularov, 2019). Supportive and constructive leadership styles entailed the activities of monitoring, vigilance and blunder corrections. There is evidence that supportive leaders foster safety behaviours and safety compliance (Curcuruto et al., 2020). However, in contradiction, destructive and unsupportive leadership behaviours have the potential to exert a negative influence on safety behaviours despite devastating outcomes for workers and organizations as a whole. Based on these empirical findings, it is hypothesized that:

*H3: Supportive Leadership has significant positive effects on Safety Behaviour.*

**The relationship between supportive leadership and safety compliance**

Considerable evidence in literature asserted that leadership style, behaviour and support influences employees' compliance with safety policies. However, the supportive leadership style categorized by the relative emphasis on promoting workplace safety compliance has been rarely addressed yet (Molnar et al., 2019). Safety compliance at the workplace depends upon different influences. Nevertheless, lavish studies stated that organizational leaders play an essential role to influence workers' safety compliance, safety attitude and conduct (Mattson, 2015). All leadership styles in general, and supportive leadership in particular, have been frequently acknowledged as effective for safety compliance and outcomes in the occupational context (Shin et al., 2016). In supportive leadership, leaders execute idealized influence, inspirational motivation, individualized consideration and intellectual stimulation to demonstrate care, empathy and concern for workers' wellbeing and safety needs. Supportive leadership is categorized to exert a positive influence on workers' occupational safety compliance. This association leads to reduce harmful outcomes and decrease injury rates (Kim & Cho, 2020). This leadership style engages workers in extra-role behaviours by encouraging and facilitating subordinates to execute safety compliance practices, providing suggestions to improve safety and raising voice for detected non-safe compliances. Moreover, regarding safety compliance conduct, safety-specific leaders accentuate to acquiescence safety regulations and

taking protective equipment (Zin, & Ismail, 2012). The absence of a link between supportive leadership and compliance is thought to be due to the nature of this leadership style, which involves actions like encouraging employees to take initiative and indirectly allowing them more authority in decision-making. Individuals may select for themselves whether or not to follow existing organizational policies, such as safety protocols, resulting in variability in safety compliance. Although supportive leadership is the most researched leadership style, some say that the notion should be questioned due to the ambiguities in the description, as well as the challenges of achieving it (Tyas & Utami, 2020). Therefore, it is hypothesized that:

*H4: Supportive Leadership has significant positive effects on Safety Compliance.*

**The relationship between occupational stress and safety compliance**

Safety compliance usually contains safety performance and safety participation. The preceding refers to the core actions that employees must conduct in order to ensure workplace safety, such as correctly wearing personal protective equipment. Individuals' voluntary acts that contribute to the development of a safety-supportive atmosphere rather than directly ensuring personal safety, such as helping coworkers, are referred to as the latter (Smith et al., 2019). However, the debates about which component has a stronger association with safety results stem from these previous studies. Occupational stress is a psychological syndrome that affects employees and is defined as a sustained reaction to chronic emotional and interpersonal stressors at work. It is generally defined as a three-dimensional psychological syndrome: fatigue, cynicism, and a lack of professional efficacy are all symptoms of burnout (Han et al., 2020). According to Neal & Griffin's (1997), model of safety performance, compliance and involvement are two elements of safety performance. Instead of intellect, both compliance and participation are behaviours. Occupational stress can influence safety compliance; thus, the prediction is that occupational stress moderates the association between the related components and safety outcomes. Furthermore, occupational stress has a significant impact on the mental and physical health of the employees, which can easily lead to the behaviour as a cause of an accident, and other hazards that are at risk (Tong et al., 2019). Given the involvement of safety compliance, it has a significant influence on occupational stress that can detrimentally impact safety results, thus it is hypothesized that:

*H5: Occupational Stress has significant negative effects on Safety Compliance.*

**The relationship between safety behaviour and safety compliance**

At the organizational level, elements like safety culture, policy, leadership, job characteristics, and individual behaviour toward safety including, knowledge and competency, play a vital role in the workplace environment. As a result, safety in the workplace becomes a feature of organizational work systems related to personal injury, property damage, and environmental hazards. (General Organization for Social Insurance, 2018). Safety compliance refers to safely executing duties to ensure workplace safety, such as wearing personal protection equipment and following safety guidelines. Attending regular safety meetings,

creating safety near-miss reports, and exchanging shifts are examples of discretionary attitudes that help to preserve workplace safety and are usually considered an indirect variable (Beus et al., 2016). To clarify and determine the behaviours that affect workplace safety compliance, researchers have developed and tested a number of workplace safety models. These models will aid in the development of safety knowledge (Panuwatwanich et al., 2017). Safety-related work behaviour (safe or unsafe) is one of the markers of workplace safety compliance. As a result, safety-related behaviour is a proactive way of reducing future workplace accidents. Unsafe work conduct might be intentional or unintentional, but it demonstrates a lack of safety conditions. Accidents in the workplace, on the other hand, indicate safety vulnerabilities has occurred. As a result, it is considered a determinant of a preceding accident. Hence, safety-related work behaviour is a proximal indication of the incidents (Yang et al., 2021). Accidents and safety-related behaviours are two markers of workplace safety in construction projects. Safety-related behaviours are more informative and can assist in identifying a lack of workplace safety before an incident or damage occurs. Safety compliance and involvement are indicators of safety behaviours (Xia et al., 2020). As a result, the current research study examines safety-related behaviour characteristics in Indah Water Konsortium (IWK) project as a predictor of workplace safety and as a precursor to avoid accidents and confirm safety compliance. Thus is hypothesized that:

*H6: Safety Behaviour has significant positive effects on Safety Compliance.*
*H7: Occupational stress mediates the relationship between supportive leadership and safety compliance.*
*H8: Safety behaviour mediates the relationship between supportive leadership and safety compliance.*
*H9: Safety behaviour partially mediate the relationship between occupational stress and safety compliance.*

**Methodology**

A constructive worldview will be the basis of this study. Hence, quantitative research design, deductive research approach and explanatory in nature. A study aims to examine the influence of supportive leadership on safety compliance at Indah Water Konsortium (IWK) in peninsular Malaysia mediate by occupational stress and safety behaviour among sewerage operation workers (Diantari & Riana, 2019; Lestariasih & Dewi, 2021). The sewerage workers are the population for the study, and the appropriate unit of analysis was the management of IWK. A stratified proportionate sampling technique was applied to collect data from workers as the official indicated that IWK employed 2494 workers in peninsular Malaysia under the IWK payslips. Therefore, a self-administrated survey questionnaire was adapted to collect data, and the distribution of 400 questionnaires have taken place. However, the number of correctly filled questionnaires was 390 forms, after elimination cases with missing values as incomplete questionnaires. After deposition, the non-response and incomplete questionnaires, then data set being analyzed for multivariate outliers. Eradication of eight cases have taken place, and ultimately 384 final questionnaires were retained in the data set for multivariate data analysis. The validation for

Structural Equation Modelling employed for data analysis being process and, the following steps also take place:

- The first stage is the measurement model for each latent construct via pooled confirmatory factor analysis.
- And the second stage is the regression coefficient of determination and the measurement of causal relationship among the construct.

Furthermore, mediate checked with Maximum Likelihood Estimation (MLE) bootstrapping technique. With a 95% confidence interval.

**Demographic profile**

Data was collected from Indah Water Konsortium (IWK) sewerage operation workers. As presented in Table 1, out of 384 majorities was male and 163 female workers, about 296 which 27.1% workers were married and 77 i.e. 20.1% were single workers those not married yet. 85.9% of workers have Malay ethnicity, 8.9% Indian and 5.2% are Chinese. About 74.7% of workers have more than 6 years of work experience. It is also examined that 98.2% workers' salaries greater RM 1000. Lastly, more than 75% of workers were diplomas and degree holders whereas 8.6% had master degrees and 1.8 workers have PhD.

Table 1
Demographic profile of respondents

| No. | Demographic | Frequency | Percentage |
|---|---|---|---|
| | Gender | | |
| | Male | 221 | 57.6 |
| | Female | 163 | 42.4 |
| | Total | 384 | 100 |
| | Marital Status | | |
| | Single | 77 | 20.1 |
| | Married | 296 | 77.1 |
| | Divorced | 11 | 2.9 |
| | Total | 384 | 100 |
| | Ethnicity | | |
| | Malay | 330 | 85.9 |
| | Chinese | 20 | 5.2 |
| | Indian | 34 | 8.9 |
| | Total | 384 | 100 |
| | Work Experience | | |
| | 1-5 years | 97 | 25.3 |
| | 6-10 years | 103 | 29.5 |
| | 11-15 years | 62 | 16.1 |
| | 16 years & above | 122 | 31.8 |
| | Total | 384 | 100 |
| | Basic Income | | |
| | Less than 1000 RM | 7 | 1.8 |
| | RM 1000-RM 3000 | 147 | 38.3 |
| | RM 3001-RM 5000 | 150 | 39.1 |

| | | |
|---|---|---|
| RM5001-RM 8000 | 80 | 20.8 |
| Total | 384 | 100 |
| Education Level | | |
| SPM/MCE | 35 | 9.1 |
| Certificate | 24 | 6.3 |
| Diploma | 99 | 25.8 |
| Degree | 190 | 49.5 |
| Master Degree | 29 | 7.6 |
| PhD | 7 | 1.8 |
| Total | 384 | 100 |

**Data analysis**

This study follows the two-stage procedure for analyzing the structural model as suggested by Afthanorhan et al. (2018, 2019); Mohamad et al. (2017, 2018, 2019); Awang et al. (2018). In the first stage, the Confirmatory Factor Analysis (CFA) was employed to validate the measurement model of latent constructs, and in the second stage, the Structural Equation Modeling (SEM) was employed to estimate the parameters of the structural model and test the hypotheses. The validation procedure through CFA would assess the unidimensionality, validity and reliability of the constructs (Awang et al., 2018; Rahlin et al., 2020; Mahfouz et al., 2019, 2020; Raza & Awang, 2020).

**The Confirmatory Factor Analysis (CFA)**

Awang et al. (2018), stressed the pooled-CFA for all constructs (as opposed to separate construct) is more effecient, accurate and able solve the issue of model identification especially when few items are measuring a construct. Thus, this study combined all constructs in the model namely supporative leadership, occupational stress, safety behaviour and safety compliance to be asessed simultaneously as shown in Figure 1.

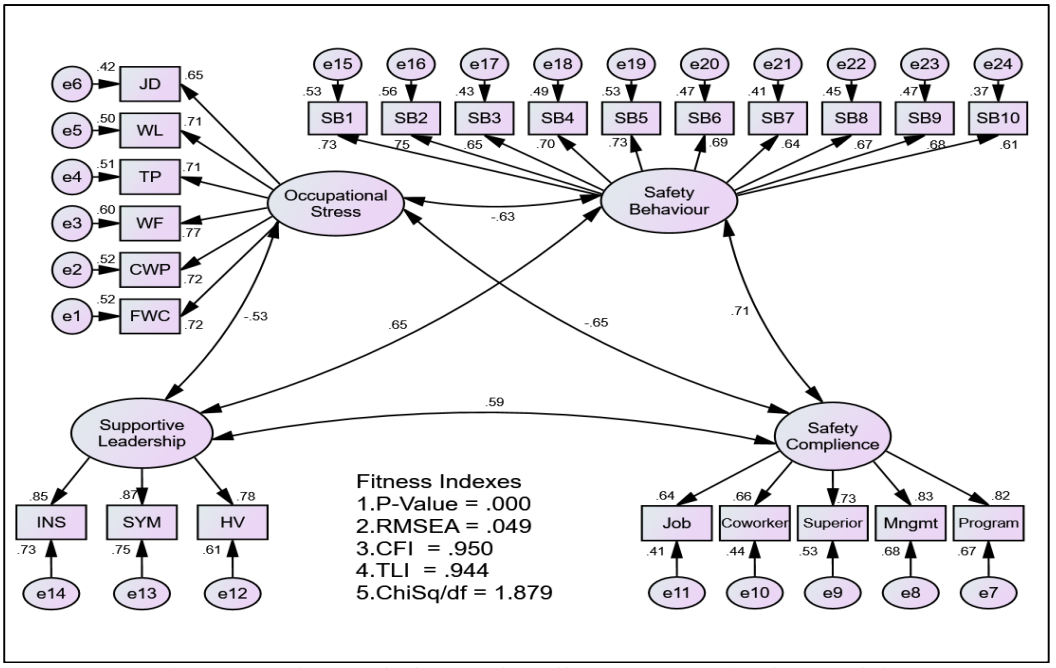


Figure 1. The pooled-CFA for all constructs in the model.

The exgonoues construct supporative leaderhsip is second order construct based with three components and occupational stress also a second order construct with six component. The mediator safety behaviour is a first order construct measured with 10 items. And the endogenous construct safety compliance is a second order construct with 5 components. The pooled-CFA would assess all constructs for contruct validity, convergent and discriminant validity (Awang et al., 2015, 2018; Aimran et al., 2017; Ismail & Saudin, 2014; Afthanorhan et al., 2017, 2018, 2019; Asnawi et al., 2019; Mahfouz et al., 2019, 2020). Furthermore, the study would also assess the Composite Reliability (CR) to replace the traditional measure of reliability with Cronbach Alpha for multivariate data analysis using SEM (Chen et al., 2017; Noor, 2015; Ismail & Saudin, 2014; Yusof et al., 2017; Mohamad et al., 2016, 2017, 2018, 2019; Shkeer & Awang, 2019; Rahlin et al., 2020). It has been suggested that the measurement model achieve the construct validity when all the three model fitness indexes surpassed the required value. The result of fitness indexes in Figure 1 has been summarized in Table2 below.

Table 2
The three categories of model fit and their level of acceptance

| Name of category | Name of index | Level of acceptance | Generated Value | Construct Validity |
|---|---|---|---|---|
| Absolute Fit Category | RMSEA | RMSEA < 0.10 and ideal if < 0.08 | 0.049 | Achieved |
| Incremental Fit Category | CFI | CFI > 0.85 and | 0.950 | Achieved |

| | | | | |
|---|---|---|---|---|
| | | ideal if it is > 0.90 | | |
| | TLI | TLI > 0.85 and ideal if it is > 0.90 | 0.944 | Achieved |
| Parsimonious Fit Category | Chisq/df | ChiSq/df < 5.0 and ideal if < 3.0 | 1.879 | Achieved |

***The indexes in bold are recommended since they are frequently reported in the literature

Source: Awang (2015); Awang et al. (2018).

Based on the results in Table 2, the measurement model of all four latent constructs has achieved construct validity (Awang, 2015; Awang et al., 2018; Shkeer & Awang, 2019; Rahlin et al., 2019, 2020; Mahfouz et al., 2019, 2020; Raza & Awang, 2020). The Convergent Validity and Composite Reliability were assessed in Table 3.

Table 3
The Average Variance Extracted AVE) and Composite Reliability (CR)

| The Constructs | AVE (Average Variance Extracted) | CR (Composite Reliability) |
|---|---|---|
| Occupational Stress | 0.510 | 0.862 |
| Supportive Leadership | 0.701 | 0.875 |
| Safety Behaviour | 0.500 | 0.899 |
| Safety Compliance | 0.548 | 0.857 |

The Convergent Validity assessment in Table 3 has confirmed the convergent validity when the AVE for all constructs have achieved 0.5 (Awang et al., 2018). The model also achieved the Composite Reliability when all CR values have exceeded 0.60 (Awang et al., 2018).

The study assessed the discriminant validity of the constructs in Table 4. The diagonal values in bold were the square root of the AVE of each construct. The other values in a summary matrix are correlation coefficients between any pair of constructs in Figure 1. For the discriminant validity to achieve, the diagonal value (in bold) has to be higher than any other values in its row or column (Awang et al., 2018).

Table 4
The discriminant validity index summary for all constructs

| Construct | Supportive Leadership | Occupational Stress | Safety Behaviour | Safety Compliance |
|---|---|---|---|---|
| Supportive Leadership | 0.828 | | | |
| Occupational Stress | -0.53 | 0.754 | | |
| Safety Behaviour | 0.65 | -0.63 | 0.708 | |
| Safety Compliance | 0.59 | -0.65 | 0.71 | 0.734 |

**The Structural Equation Modeling (SEM)**

As discussed previously, the study used two-stage SEM for analyzing the inter-relationships among the constructs in the model. Once the CFA procedure has confirmed construct validity, convergent validity and discriminant validity, the study developed the structural model (Awang, 2015; Awang et al., 2018; Mohamad et al., 2016, 2017, 2018, 2019; Afthanorhan et al., 2017, 2018, 2019; Asnawi et al., 2019; Raza & Awang, 2020).

The structural model in Figure 2 presents the standardized regression path coefficient among the constructs namely, supportive leadership, occupational stress, safety behaviour and safety compliance. The text output from Figure 2 is presented in Table 4.

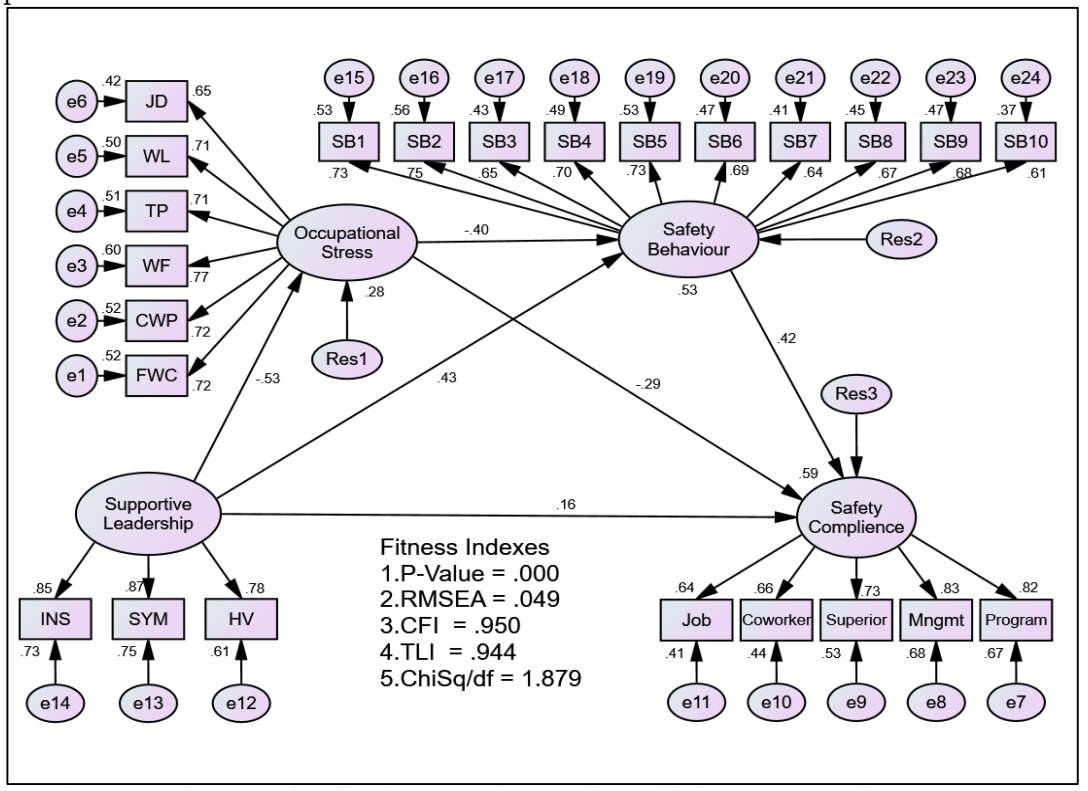


Figure 2. The standardized regression path coefficient among the constructs

Table 4
The coefficient of multiple determination or $R^2$ and its implication in this study

| Endogenous Construct | $R^2$ | The conclusion |
|---|---|---|
| Occupational Stress | 0.28 | The constuct Supportive Leadership manage to estimate about 28 per cent of the variation in Occupational Stress as far as the sewerage operation industry is concerned. |

| | | |
|---|---|---|
| Safety Behavior | 0.53 | The Two constuct Supportive Leadership and Occupational Stress manage to estimate about 53 per cent of the variation in Safety Behaviour as far as sewerage operation industry is concerned. |
| Safety Compliance | 0.59 | The Three constuct Supportive Leadership, Occupational Stress and Safety Compliance manage to estimate about 59 per cent of the variation in Safety Behaviour as far as sewerage operation industry is concerned |

Regression of co-efficient of multiple determination has been shown in above Table 4, the results examined that construct supportive leadership cause 28 percent variance in occupational stress of sewerage operation workers. Secondly, results found that constructs supportive leadership and occupational stress cause 53 per cent change in safety behaviour. Lastly, supportive leadership, occupational stress and safety behaviour caused 59 percent change in safety compliance of sewerage operation workers (Groce & Hoodkinson, 2019; Nyandra et al., 2018). Whereas, the causal relationship estimation of un-standardized regression shown in Table 5.

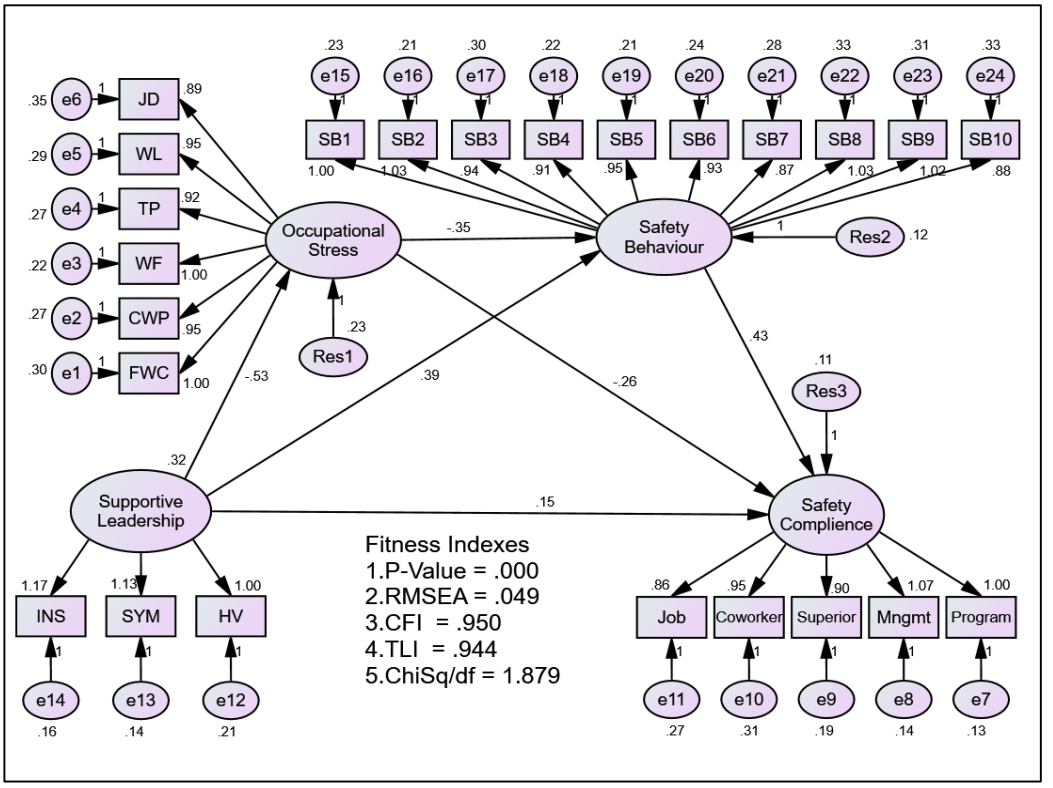


Figure 3. Un-standardized regression path coefficient

Table 5
Unstandardized regression estimation

| Endogenous | Path | Exogenous | Estimate | S.E. | C.R. | P | Result |
|---|---|---|---|---|---|---|---|
| Occupational Stress | ← | Supportive Leadership | -.530 | .064 | -8.294 | *** | Significant |
| Safety Behaviour | ← | Occupational Stress | -.354 | .056 | -6.372 | *** | Significant |
| Safety Behaviour | ← | Supportive Leadership | .388 | .055 | 7.026 | *** | Significant |
| Safety Compliance | ← | Supportive Leadership | .145 | .057 | 2.566 | .010 | Significant |
| Safety Compliance | ← | Occupational Stress | -.264 | .057 | -4.586 | *** | Significant |
| Safety Compliance | ← | Safety Behaviour | .427 | .074 | 5.787 | *** | Significant |

The causal relationship of each hypothesis is either to accept or reject of the structural model for every direct effect shown in Table 6. Moreover, hypothesis acceptance and rejection are shown in the Table below. The decision for support or un-support of each result was based on the decision of probability value (p-value). Hence hypotheses considered supportive have p-value greater than type error value (alpha) < 0.05.

Table 6
The hypothesis testing for direct effect hypotheses

| Hypotheses | P-value | Result |
|---|---|---|
| H1: Supportive Leadership has significant negative effects on Occupational Stress. | 0.000 | Supported |
| H2: Supportive Leadership has significant positive effects on Safety Behaviour. | 0.000 | Supported |
| H3: Occupational Stress has significant negative effects on Safety Behaviour. | 0.000 | Supported |
| H4: Supportive Leadership has significant positive effects on Safety Complience. | 0.010 | Supported |
| H5: Occupational Stress has significant negative effects on Safety Complience. | 0.000 | Supported |
| H6: Safety Behaviour has significant positive effects on Safety Complience. | 0.000 | Supported |

**Testing the mediation**

The study employed the bootstrapping with maximum likelihood estimation (MLE) technique for testing the mediational effect of occupational stress and safety behaviour between the supportive leadership and safety compliance in this proposed research structural model (Awang et al., 2018; Chen et al., 2017; Afthanorhan et al., 2018; Mohamad et al., 2016, 2018; Azli et al., 2017; Yusof et

al., 2017; Asnawi et al., 2019). The study used bootstrapping technique to reconfirm the hypothesis testing for mediation. The study deployed Maximum Likelihood Estimation bootstrapping process using 1000 bootstrap sample both percentage confidence interval and the biased-corrected confidence interval are set for 0.95. The results of this study found occupational stress partially mediate the relationship between supportive leadership and safety compliance since both direct and indirect hypotheses were statistically significant (0.187, p-value = 0.000). Secondly, the study found safety behaviour partially mediate the relationship between occupational stress and safety compliance (-0.151, p-value = 0.000) both direct and indirect paths were statistically significant. Thirdly, safety behaviour partially mediates the relationship between supportive leadership and safety compliance (0.144, p-value = 0.000) because both direct and indirect were statistically significant

**Discussion**

This study attempted to examine the influence of supportive leadership on occupational stress, safety behaviour and safety compliance, the outcomes of this study are consistent with the previous studies, since supportive leadership significant negative effect on occupational stress, thus the hypothesis was supported. Empirical outcomes of this study revealed that supportive leadership in Indah Water Konsortium (IWK) tends to reduce occupational stress among workers. These outcomes are similar to the previous studies, as asserted by Shin et al. (2016), that strong association exist between supportive leadership and workers' occupational stress. Leaders' role, ability and support to get work done by workers are effective to reduce their occupational stress. Supportive leadership reduce workers' occupational stress and anxiety and improve their performance and behavioural conduct (Oluseyi & Ayo, 2009; Khalid et al., 2012). Second findings of this study demonstrated that supportive leadership has a positive influence on safety behaviour of workers'. These findings are strengthened by the outcomes of prior studies. Leaders' supportive behaviour and decision making styles significantly influenced the safety behaviours of their subordinates (Willis et al., 2017). Transformational leadership styles leverage more sustainable safety behaviours of workers', but specifically, supportive leadership has been acknowledged most effective in the context of employees' safety behaviour (Clarke & Taylor, 2018). Moreover, the outcome of this study indicated that occupational stress put a negative influence on workers' safety behaviour, with higher level of occupational stress and anxiety, employees tend to show non-caring behaviour towards safety at the workplace. Prior literature unveiled a significant correlation among workers' perceived less occupational stress, burnout, anxiety, depression and their safety behaviours. As workers perceive a higher level of occupational stress their safety behaviour would be negatively influenced. Occupational stress reduce workers' safety behaviour, vice versa, favorable workplace perception of workers tends to enhance their safety behaviours (Bronkhorst et al., 2015). Furthermore, it was hypothesized that occupational stress has a negative effect on safety compliance, safety behaviour has a positive effect on safety compliance, while supportive leadership positively influence safety compliance. Empirical outcomes demonstrated that all the proposed hypotheses were supported and these findings are similar to the work of prior researchers. Besides the direct association among latent constructs, the study measured the mediational role of

occupational stress and safety behaviour. Outcomes indicated that occupational stress partially mediates the relationship between supportive leadership and safety compliance since both direct and indirect hypotheses were statistically significant. Secondly, empirical findings revealed that safety behaviour partially mediates the relationship between occupational stress and safety compliance, as both direct and indirect paths were statistically significant. Thirdly, safety behaviour partially mediates the relationship between supportive leadership and safety compliance because both direct and indirect were statistically significant.

**Conclusion**

This study intends to examine the effect of supportive leadership on occupational stress, safety behaviour and safety compliance along with the mediational role of occupational stress and safety behaviour in the context of Indah Water Konsortium (IWK). Findings revealed that workers working in the sewerage operation sector in the case of IWK have a greater levels of occupational stress, thus supportive leadership is eventually effective to reduce their stress level. Whereas supportive leadership facilitate workers in implementing safety behaviours and safety compliance. When workers feel reduced occupational stress they tend to adopt safety behaviours as in-role and extra-role behaviours. Behavioural implications lead towards compliance with safety legislation and required safety precautions. When workers receive support from their leaders, their perception about occupational stress reduces, supportive leadership tend them to feel the capacity of dealing with a stressful situation that ultimately leads to develop their safety behaviours and safety compliance as a priority. Therefore, conferring the empirical outcomes of this study, if Indah Water Konsortium (IWK) Malaysia provide supportive leadership to the workers, their safety behaviours would tend to improve with the enhanced level of safety compliance and reduced level of occupational stress. Implications of these findings would not only ensure workers' safety at the workplace but also confirm their physical, mental health, wellbeing and personal protection in their individual lives.

**Limitations and Recommendation**

Like other management studies, this study also has some loopholes and limitations. First, this study is conducted in the context of Indah Water Konsortium Sdn Bhd (IWK) Malaysia. Mere emphasis on supportive leadership, occupational stress, safety behaviour and safety compliance in a specified context might narrow down the scope of study. For better generalizability, a similar model can be investigated across diversified industries as occupational stress is faced by workers in almost all sectors while safety behaviour and compliance is also top priority of organizations. Moreover, the survey questionnaires were distributed to respondents all over peninsular Malaysia. Hence, respondents of the peninsular region may not represent the respondents employed as sewerage operation workers in Sabah and Sarawak, Malaysia. Some workers were unapproachable and their responses could not be taken because they engage to solve the customer problems (Sewerage pipeline blockage) during data collection. So the future studies may cover these limitations for more generalizability of results.

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