

# MAINTENANCE PERFORMANCE FRAMEWORK FOR NATIONAL RELIGIOUS SECONDARY SCHOOLS IN MALAYSIA

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## Abstract

School maintenance performance is very significant in achieving conducive school environment. This is particularly important as it requires public funds to ensure that every cents provided to the school meets the needs and demands of the school administrator for the purpose of maintaining the school. Various issues related to school maintenance are published in the newspaper and also refer to empirical studies on school building and maintenance. This deductive analysis was developed to carry out a six-constructed hypotheses test. A survey questionnaire was created and distributed to 300 respondents, covering academic and non-academic staff. Nevertheless, only 134 questionnaire were used for research purposes using smart-pls 3.0 software. The results show that only three constructs, behavior (bhv), leadership (led) and safety (saf), have a significant relationship with school maintenance performance towards a conducive school environment. Meanwhile complaint management (com), service delivery (ser) and islamic work ethic (iwe) are less significant in maintenance performance characteristics (mpcs) towards conducive school environment.

**Keywords:** Maintenance management, maintenance performance characteristics, school administrator, national religious secondary school.

## Introduction

Maintenance management is crucial in the development of property industries. Every completed building must be maintained to ensure it could well functioned as intended purpose. The definition of maintenance management keep on updating where recent scholars like Olanrewaju & Aziz (2015), have redefined maintenance management as a process and services undertaken to preserve, protect, enhance and care for the buildings' fabrics and services after completion, in accordance with the prevailing standards to enable the building and services to serve their intended functions throughout their entire life span without drastically upsetting their basic features and uses. The challenges of performing school buildings maintenance is not only limited to the developing countries like Malaysia. In fact the highlighted issues also facing by the developed nation like the US. As reported by Dickerson & Ackerman (2016), there are

approximately fourteen million students, across US, are required to attend the one-third of schools that have severe conditions of the building and its facilities and according to National Centre for Education Statistics (NCES) three-quarters of schools reported having facilities that were in fair or poor condition. Hence it becomes global issues of maintaining school buildings and at the same time not to jeopardise the intended purpose of the school to provide early education for every citizen.

The same situation occurred in Malaysia, where in year 2016, MOE has released the statistics with a total of 534 schools across Malaysia were involved in the dilapidated schools extension building project from year 2016 to 2018, with an allocation of RM1.8bil.(MOE, 2018). In relation to the above, this study covering NRSS in Malaysia, whereas at to date the number of NRSS stands at 60 schools. The schools are 7 schools in Sarawak, 9 in Sabah and 44 in Peninsular Malaysia. The main objectives of the establishment of the NRSS are to produce students of high moral character, to shape the generation of students as exemplary leaders, to produce students who are self-sufficient in the face of cultural challenges that conflict with Islamic values and provide students with can make an effective contribution to meet the needs of the nation and the Islamic community.This is further emphasized on the selection of NRSS as case study with having standard of building and facilities for teaching and learning. In accordance to the newly launched Malaysia Education Blue-print (2013-2025), the government through Islamic Education Division of MOE has outlined the importance to streamline the NRSS to cater for rising demand by the parents and students.In the next section, will further explain on the importance of building maintenance management towards conducive school environment. In the next section will be focusing on the overview of building maintenance management before further discussion on building maintenance management in Malaysia.

### **Issues And Problem of The Study**

The issue of school maintenance management is also evolving with the government and all stakeholders, where there have been many complaints in the official media and scholars discussing the level of maintenance services provided to the school, the maintenance of the building and its facilities. Lack of school maintenance is a factor that leads to poor building performance, since more than 5 million students and teachers have been attached to schools on a regular basis, as shown in Table 1, careful attention must be paid to the maintenance of schools in order to ensure that the teaching and learning process can be implemented in a conducive learning environment.In Malaysia, understanding of school maintenance performance is still very low at unsatisfactory levels. In fact, school building defects in Malaysia are common phenomena, resulting in negative impact on schools' learning atmosphere. In this regard, a number of complaints have emerged in the media and newspapers that consider school buildings in Malaysia

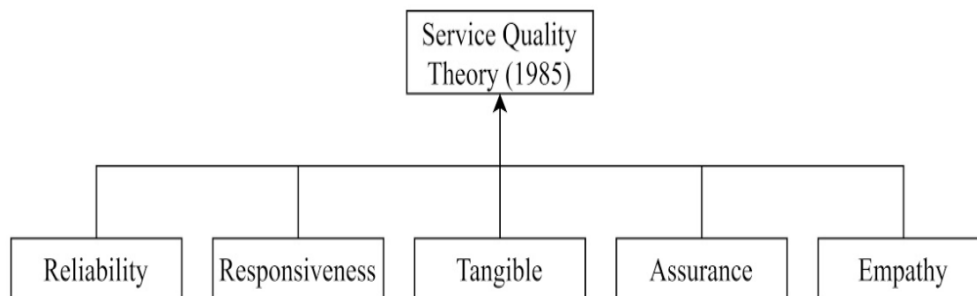
to be in a dilapidated state requiring immediate intervention by the school authorities(C.Y.Yong et al., 2015; Othuman et al., 2014). The latest list of dilapidated school conditions in Malaysia is shown in Table 1.

**Table 1.** Summary of physical status of dilapidated schools in Malaysia as at 31<sup>st</sup> July 2019 (MOE, 2019c)

| No | Location    | Certificate of Practical Completion (CPC) | On-going projects | Total |
|----|-------------|---|-------------------|-------|
| 1  | Sarawak     | 121                                       | 45                | 166   |
| 2  | Sabah       | 105                                       | 45                | 150   |
| 3  | Semenanjung | 212                                       | 6                 | 218   |
| 4  | Jumlah      | 438                                       | 96                | 534   |

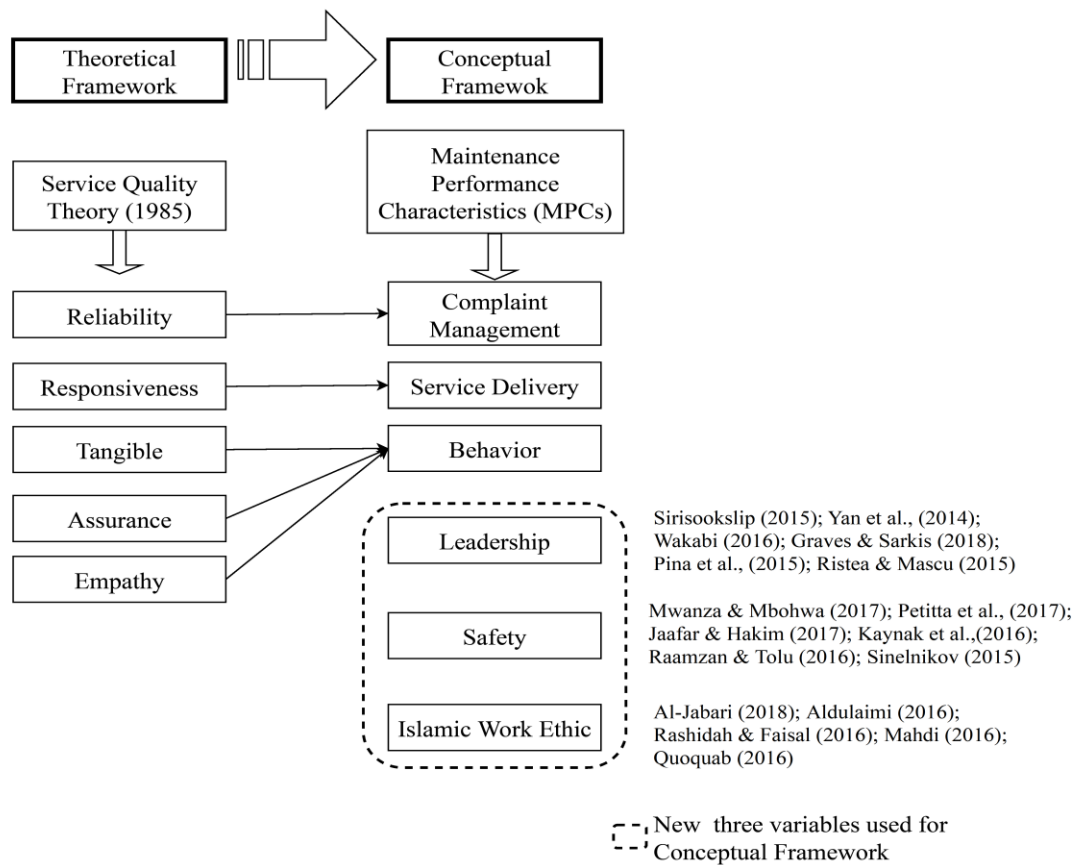
Table 1, shows a total of 534 schools currently classified as dilapidated schools in Sarawak, Sabah and Malaysia. From the statistical point of view, it is certainly essential for all stakeholders to start seriously considering the issue of school building management by maintaining the buildings and ensuring that scheduled maintenance can be carried out in accordance with the maintenance schedules. Recognizing this, efficient maintenance management activities will maintain an optimum atmosphere at school. At the same time, school authorities should ensure that buildings are kept in good working conditions that can effectively guarantee the health, well-being and safety of the occupants. This research is also a continuation of the study carried out by Ropi & Tabassi (2014), Yong et al., (2015) and Abd Khalik (2017) on the subject of school building maintenance practices and building occupant in Malaysia. In general, the previous studies discussed the maintenance practices adopted by all schools, as well as the perceptions of occupant satisfaction. This research on the other hand, complements the existing studies by appointing school administrators as not only building users but also as administrators who are responsible in evaluating the MPCs towards MP for conducive school environment.

### Research Conceptual Framework



**Figure 1.** Service Quality Theory (SERVQUAL)

Figure 1, describes the five dimensions used in Parasuraman's 1985 SERVQUAL Theory. All the above five dimensions were described as follows: reliability (capacity to execute the promised service efficiently and accurately); responsiveness (willingness to support customers and provide prompt service); tangible (physical facilities, equipment and staff appearance; assurance (knowledge and courtesy of employees and their ability to inspire confidence and trust); empathy (Caring, individualized attention the firms provides its customers). (Parasuraman et al., 1988). Since the implementation of SERVQUAL Theory, it has been accepted in many study fields. Mainly the service level correlated with the client or end-user. Several experiments were performed to map or extend the SERVQUAL instrument, but others claim SERVQUAL's factor structure or dimensionality remains consistent across different study contexts. (Chang et al., 2013; Famiyeh, 2018; Sweis et al., 2016).

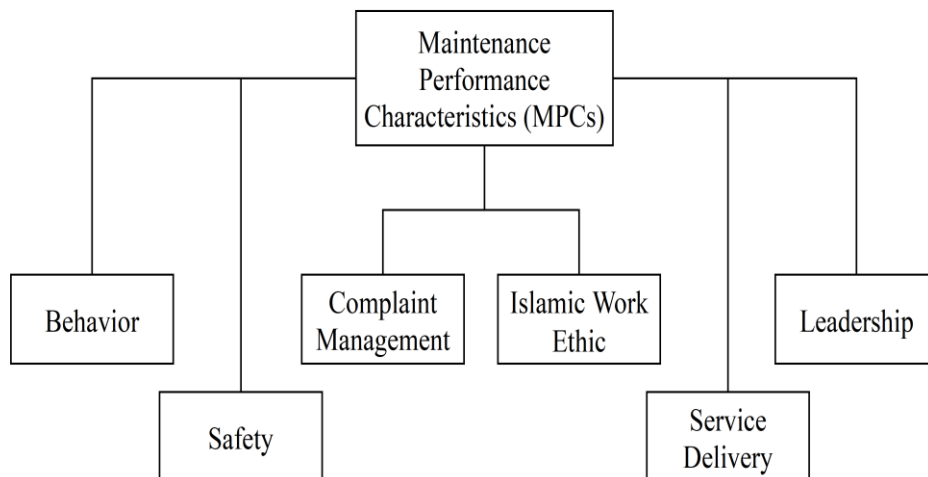


**Figure 2.**Development of Conceptual Framework

Figure 2, above explains in depth how SERVQUAL Theory is laid as theoretical basis before the conceptual framework is strengthened and established. The current five established constructs provide the framework as foundation to develop the

following; Reliability redefined for complaint management; Responsiveness redefined for service delivery while Tangible, Assurance and Empathy redefined for Behavior. The three new constructs known as leadership, safety and Islamic work ethics have been established by means of a theoretical analysis of current literature in the fields of maintenance and facilities management, service quality and work environment. The redefined is tailored to the body of knowledge in terms of the maintenance performance characteristics of the school administrator or the building user.

While Figure 3, below portray the conceptual framework that employed in this research. This conceptual framework represents the relationship between maintenance service characteristics with the maintenance performance towards school quality environment. In this study, the conceptual model is developed based on 31 items which are grouped into six maintenance service characteristics group namely Behavior (BHV), Complaint Management (COM), Service Delivery (SER), Safety (SAF), Leadership (LED) and Islamic Work Ethic (IWE). The characteristics and each item are labelled with rectangular shaped respectively.



**Figure 3.** MPCs Conceptual Framework

**Behavior (BHV)**

Organizational Citizenship behavior (OCB) is a behavior introduced willingly by employees in the organization. They are going beyond their original tasks to assist others (W.Organ, 1990). While Miao & Kim (2009), described OCB as a specific behaviour of a team member, can be understood as a team process variable that has a dynamic impact on team effectiveness. In working environment behavior to be defined as organizational citizenship behavior (OCB), as how individuals and groups behave in organizations (Tianya, 2015). In school any appointed maintenance personnel in

particular and their organisation must show value of behavior when engaging with school community to deliver maintenance services. The maintenance characteristics of behavior are; Appearance and attire (Ikediashi, 2014; Karunasena et al., 2018; Nath et al., 2016), Trustworthiness (Fokkens, 2015; Ikediashi, 2014), Communication (Husaini & Tabassi, 2014; Jin et al., 2018; Njuangang et al., 2016), Engagement with building users (Kim et al., 2017; Peng et al., 2014) and Skill and competency (Yong et al., 2016; Enshassi & Shorafa, 2015; Njuangang et al., 2016).

### **Complaint Management (COM)**

In maintenance good practice, managing complaint is one of the criteria for measuring maintenance performance related to building user's satisfaction. The process of managing complaint must be well organised. In their empirical research, (Enemuo et al., 2016; Husaini & Tabassi, 2014; Olanrewaju & Aziz, 2015), where maintenance complaints must be attended promptly while person in-charge of maintenance department must be competent in his role and committed in handling complaints received. It is undeniably that practice of efficient complaint management pertaining to school maintenance is crucial to ensure every complaints can be channeled to the right parties. Every maintenance services complaint lodged by the school administrator must be well treated by the appointed parties. The maintenance characteristics of complaint management are; Response (Olanrewaju & Aziz, 2015; Oluwatoyin et al., (2017), Requested work is completed within the time needed ( Peach et al., 2016; Ameta et al., 2017), Complaint handling (Enemuo et al., 2016; Mustapha & Habidin, 2016), Complaint procedures (Ismail, 2014; Olanrewaju & Aziz, 2015; Lim, 2016), Recurring complaint (Abdul & Aziz, 2015; Mydin, 2014; Abdul et al., 2019).

### **Service Delivery (SER)**

Service delivery was treated as a significant component of maintenance services, not only to fully meet user building needs, but also to enhance organizational performance through good maintenance practices. (Jin & Chua, 2018; Lai & Lai, 2013; Mydin, 2014; Parida et al., 2015). The service delivery is not only focusing on the service provider but also covering the customer or end-user. The same view has been discussed by Bettencourt et al., (2013); Ngo & O'Cass, (2013), where service delivery should also focusing on the value to be delivered to customer once service is completed. In school maintenance services, the level of service rendered must fulfill the end-user needs as per agreed by school administrator. In another major research related to training and development, Mpofo & Hlatywayo (2015), has discovered that continues employee training will contribute to the quality improvement of service delivery. The maintenance services characteristics of service delivery are; Level of nuisance (Claire & Edwards, 2016; Karunasena et al., 2018; Nguyen et al., 2018), Timeliness (Godderies (Godderis

et al., 2018; Fisher, 2019), Performed beyond the call of duty (Gupta et al., 2016; Nielsen & Daniels, 2016), Based on records and documents (Zolkafli et al., 2018; Jin & Chua, 2018), Frequency of monitoring and inspection (Au-yong et al., 2016; Ganisen et al., 2015; Oliveira et al., 2016).

### **Leadership (LED)**

Leadership can be defined as a relationship that creates values and influences other people's actions towards the achievement of certain objectives (Frost, 2014; Wakabi, 2016). The definition of leadership can be seen in maintenance practices. In addition to technical support, the influence of leadership on maintenance performance is very significant. Good maintenance leadership will develop teamwork and lead to the achievement of maintenance objectives. The leader will lead the team not only to ensure completion of the task but also to demonstrate how things can be done to meet the required standard. (Geraghty & Brown, 2018). The emphasis is also stated by Sirisookslip et al., (2015), where school administrators should have the characteristics of a leader in achieving their organizational objectives. The primary responsibility of school administrators is to provide effective supervision of educational institutions, curriculum and also to ensure that school administration works well. Many scholars having similar consensus that, leadership factors in school contributes to the success of the academic achievement and school administration. The maintenance services characteristics of leadership are; Exposed sense of authority and confidence (Fehr et al., 2015; Kalbani, 2015), Goes beyond self-interest for the good of the school community (Effelsberg et al., 2014; Lee, 2014; Nawoseing & Roussel, 2017), Articulates a clear vision to the future (Arokiasamy, 2017; Sulaiman et al., 2017), Good values and beliefs (Kwasi, 2015; Sirisookslip et al., 2015), Spends time coaching (Kalbani, 2015; Yukl, 2016).

### **Safety (SAF)**

It is widely reported, that the safety at school are still an issue and in some extend involves injuries and fatal accident to the students. In general safety practices at school must be seen in every aspects covering, teaching and learning, school building, infrastructure and facilities. According to Srichai et al., (2013), safe schools will ensure their students' well-being through continuous safety monitoring, responses to parental concerns, compliance with safety policies and regulations, and efficient school budget administration. It is clear to scholars and practitioners that school maintenance management involving repair, maintenance, minor alteration and additional work (RMAA) is a major part of ensuring the safety and conductivity of learning environment operations. The school management team ensures in particular that the school buildings and facilities are safe for the occupants and in good condition. (Hamzah et al.,

2012). The maintenance services characteristics of safety are; Safety culture ( Sultana et al., 2019;Jaafar & Hakim, 2017), Visibility of safety information (Apardian & Alam, 2017; Isnaini et al., 2018; Motamedi et al., 2016;),Involving building users in setting safety objectives (Husin et al., 2014; Akaa et al., 2016), Application of personal protective equipment (PPE) (Karakhan et al., 2018; Hashim & May, 2018), Near miss and accident rates (Antão et al., 2016; Curcuruto et al., 2015), Monitoring of safety practices (Antão et al., 2016; Jaafar & Hakim, 2017).

### **Islamic Work Ethic (IWE)**

By practicing IWE, they will lead to improved performance at work, such as improving confidence and satisfaction levels. Performance could be achieved through a sense of fairness and ownership. IWE thus has a positive and significant impact on workplace outcomes (Al-jabari, 2018; Saeed, 2016). In another major study by Ejere & Abasilim (2013), evaluating the attitude of employees towards Islamic Work Ethics (IWE), 90% of respondents agreed on the need and commitment to work as crucial to success as they represent a positive work value. The introduction of IWE in maintenance services characteristics will obviously generate and instil good values among the maintenance personnel and also organization. The maintenance services characteristics of IWE are; Cover “aurat”(Ekawati, 2019; Quoquab, 2016), Accompanied by school representative (Syed et al., 2018;Mirza, 2016), Privacy of building users (Lai & Lai, 2013; Olanrewaju & Aziz, 2015), Prohibited activities in Islam (Mahdi, 2016; Quoquab, 2016), Time of worship (Khan, 2017;Wibisono, 2017).

### **Methodology**

The main objective of this study is to examine the relationship between maintenance performance characteristics towards maintenance performance for school quality environment. In the quest to achieve the objective, this research concurrently develop the research structural model. This research employed positivist approach, with hypothesis testing using Structural Equation Modelling (PLS-SEM). The analysis was performed in two stages known as measurement model assessment and structural model assessment. The assessment of the measurement model involved an examination of the adequacy of the scales by analysing the relationship between the construct and the items. In contrast structural model is focusing on testing causal path between maintenance performance characteristics (MPCs) towards maintenance performance to achieve school conducive environment.



### Limitation of the study

Like in other research, this study has its own limitations. First, the study samples included Malaysia's entire 60 NRSS. Therefore, this research was applied in this population context. The selection of all sixty NRSS currently operating in Malaysia is to gain input from all school administrators towards maintenance performance at their respective schools. Study restricted only to Malaysia's total 60 NRSS. The second limitation is that the study was restricted to the school administrator's viewpoint as the school's highest authority with vast teaching and learning experience as well as school administration. Both opinions are obtained solely from school administrator experience.

### Data acquisition and sampling analysis

Respondents' selection for this study was based on their experience in school environment covering administration as well as teaching and learning. Participant selection for survey purposes is based on a group of school administrators consisting of management including educators and administrators. Principals, Senior Assistants and Chief clerks are three groups as school administrators, identified to suit the above criteria and to avoid bias in this study. Therefore in this study a total of 300 questionnaires were distributed to the entire National Religious Secondary School (NRSS) throughout Malaysia. However only 164 sets were returned and only 134 returned questionnaires were completed. A total of 14 states in Malaysia with distribution of 60 National Religious Secondary Schools (NRSS) have been selected to participate in this survey. The results of descriptive analysis for the respondents' position are shown in Table 2.

**Table 2.** Respondents' position

| No    | Description                       | Total | Percentage (%) |
|-------|-----------------------------------|-------|----------------|
| 1     | Principal (Academic staff)        | 21    | 15.67%         |
| 2     | Senior Assistant (Academic Staff) | 80    | 59.70%         |
| 3     | Chief Clerk (Non Academic Staff)  | 33    | 24.63%         |
| Total |                                   | 134   | 100%           |

### Measurement Model Assessment

The path model consists of two components. The structural model defines the structural pathways between the constructs, while the measurement models represent the relationship between each constructs and its respective indicators. Structural and measuring models are also referred to as inner and outer models in PLS-SEM(Hair et

al., 2014; Sarstedt et al., 2019).The measurement model describes and assigns measurable variables (indicators) to each latent variable used in the model. It tries to analyze the correct measurement of the theoretical components by the obvious variables. In this study, the attributes of reliability and validity are referred (Hensler, 2011). In this measurement model the relationship between the seven constructs and 36 variables will be analyzed. For every constructs and variables, reliability and validity are evaluated.

### Convergent Validity

The validity of variable could be tested using convergent validity. Convergent validity is the extent to which a measure correlates positively with an alternative measure of the same construct. In examining the convergent validity of a measure in PLS, the average variance extracted (AVE) and item loadings are assessed. (Hair et al.,2013). It stipulates that objects that are a build predictor will share a high proportion of difference (Hair et al., 2010). In measurement model, after completion reliability test covering Cronbach’s Alpha (CA) and composite reliability (CR) further test to involve validity test. As mentioned by Hair et al., (2014), with reliability developed and convergent validity confirms that the scale is correlated with other known measures of the concept. Convergent validity tests such as CR and CA are suitable in reflective models but not for formative models(G.David, 2016). This study performed reflective models that suit the needs to have convergent validity test. In Table 3 describes in details for internal consistent reliability including CR and CA have recorded greater than 0.70 and 0.60 respectively. The recommended Average Variance Extracted (AVE) is higher than 0.50, but we can accept AVE below 0.50, when the CR is greater than 0.6 and the convergent validity of the construct still adequate.(Fornell & Larcker, 1981).This study indicates that only one construct known as Islamic Work Ethic with AVE 0.43 is below the recommended level of 0.50 of the AVE. However construct of Islamic Work Ethic also has CR of 0.79 which is above the recommended level of 0.60. Furthermore, the other six constructs recorded more than 0.5 average variance extracted with a CR exceeding 0.60. As such, the internal reliability of the MPCs group measurement items are acceptable with total only 31 variables as mentioned in Table 3

**Table 3.** Convergent Validity

| MPCs Group       | Symbol for MPCs | PLS-Algorithm         | PLS-Algorithm |       |      |       |
|------------------|-----------------|-----------------------|---------------|-------|------|-------|
|                  |                 |                       | Loadin g      | AVE   | CA   | CR    |
| Behavior (BHV)   | BHV3            | Communication         | 0.905         | 0.781 | 0.72 | 0.877 |
|                  | BHV5            | Skills and competency | 0.863         |       | 2    |       |
| Service Delivery | SER1            | Level of nuisance     | 0.640         | 0.588 | 0.77 | 0.850 |

|                            |      |  |       |       |       |       |
|----------------------------|------|--|-------|-------|-------|-------|
| (SER)                      |      |  |       |       | 1     |       |
|                            | SER2 | Timeliness   | 0.774 |       |       |       |
|                            | SER4 | Based on records and documents                                 | 0.820 |       |       |       |
|                            | SER5 | Monitoring and inspection                                      | 0.820 |       |       |       |
| Complaint Management (COM) | COM1 | Response   | 0.803 | 0.659 | 0.831 | 0.886 |
|                            | COM2 | Requested work completed                                       | 0.806 |       |       |       |
|                            | COM3 | Complaints handling  | 0.824 |       |       |       |
|                            | COM4 | Complaint procedures   | 0.815 |       |       |       |
| Safety (SAF)               | SAF1 | Safety culture   | 0.796 | 0.656 | 0.897 | 0.920 |
|                            | SAF2 | Visibility of safety information                               | 0.868 |       |       |       |
|                            | SAF3 | Involved building users  | 0.798 |       |       |       |
|                            | SAF4 | Application of personal protective equipment (PPE)             | 0.836 |       |       |       |
|                            | SAF5 | Near miss and accident rates                                   | 0.826 |       |       |       |
|                            | SAF6 | Monitoring of safety practices                                 | 0.730 |       |       |       |
| Leadership (LED)           | LED1 | Sense of authority and confidence                              | 0.754 | 0.623 | 0.849 | 0.892 |
|                            | LED2 | Goes beyond self-interest for the good of the school community | 0.780 |       |       |       |
|                            | LED3 | Articulates a clear vision for the future                      | 0.839 |       |       |       |
|                            | LED4 | Good values and beliefs  | 0.781 |       |       |       |

|                               |      |                                      |       |       |       |       |  |
|-------------------------------|------|--------------------------------------|-------|-------|-------|-------|--|
|                               | LED5 | Spends time coaching                 | 0.791 |       |       |       |  |
| Islamic Work Ethic (IWE)      | IWE1 | Cover "aurat"                        | 0.626 | 0.432 | 0.669 | 0.780 |  |
|                               | IWE2 | Accompanied by school representative | 0.816 |       |       |       |  |
|                               | IWE3 | Privacy of building users            | 0.817 |       |       |       |  |
|                               | IWE4 | Prohibited activities in Islam       | 0.366 |       |       |       |  |
|                               | IWE5 | Time of worship                      | 0.547 |       |       |       |  |
| Maintenance Performance (PAV) | PAV1 | Communication                        | 0.829 | 0.622 | 0.850 | 0.892 |  |
|                               | PAV2 | Skills and competency                | 0.794 |       |       |       |  |
|                               | PAV3 | Level of nuisance                    | 0.756 |       |       |       |  |
|                               | PAV4 | Timeliness                           | 0.808 |       |       |       |  |
|                               | PAV5 | Based on records and documents       | 0.754 |       |       |       |  |

### Discriminant Validity

A comparison of correlations between latent variables and the square root of average variance extracted (AVE) for a latent variable can examine the discriminant validity. The matrix diagonal includes the square roots of the AVEs in the corresponding row and columns which must be greater than off-diagonal elements. One way to assess the validity of discriminant is using Fornell-Larcker criterion by investigating the cross loads of the indicators. Specifically, the outer load of an indicator on the associated construct will surpass all loads on other constructs. (Hair et al., 2014). In this study the approach of correlations between latent variables and the square root of average variance extracted (AVE) can be seen in Table 4. The diagonal values of AVE (bold) are higher than the off-diagonal AVE. Therefore, this test confirms the discriminant validity.

**Table 4.** Result of Discriminant Validity

| MPCs | AVE   | BHV           | COM           | IWE           | LED           | PAV | SAF | SER |
|------|-------|---------------|---------------|---------------|---------------|-----|-----|-----|
| BHV  | 0.781 | <b>0.884*</b> |               |               |               |     |     |     |
| COM  | 0.659 | 0.532         | <b>0.812*</b> |               |               |     |     |     |
| IWE  | 0.432 | 0.223         | 0.468         | <b>0.657*</b> |               |     |     |     |
| LED  | 0.623 | 0.412         | 0.599         | 0.493         | <b>0.789*</b> |     |     |     |

|     |       |       |       |       |       |               |               |               |
|-----|-------|-------|-------|-------|-------|---------------|---------------|---------------|
| PAV | 0.622 | 0.416 | 0.379 | 0.248 | 0.497 | <b>0.789*</b> |               |               |
| SAF | 0.656 | 0.501 | 0.633 | 0.438 | 0.741 | 0.499         | <b>0.810*</b> |               |
| SER | 0.588 | 0.551 | 0.656 | 0.270 | 0.479 | 0.393         | 0.551         | <b>0.767*</b> |

### Structural Model Assessment

The following assessment is the evaluation of the structural model. This is done when a measurement model for reliability and validity has been developed. The study relates to the evaluation of the structural model in order to analyse the interrelationship between multiple independent and dependent variables relevant to maintenance service characteristics with respect to maintenance service performance. The structural model establishes the causal link between the latent variables and measures the structural model on the basis of the importance and meaning of the potential linkages between the constructs.. (Hair, et al., 2014; Hensler et al., 2011).

### Predictive Power

The next step is assessing the path coefficient of all MPCs group (paths) by comparing beta ( $\beta$ ) values among all the paths. The path coefficient represents the hypothesized relationships. The Highest  $\beta$  value indicates the strongest relationship of independent MPCs group towards the dependent (Maintenance service performance).

(Joe F. Hair, Ringle, & Sarstedt, 2011) claims that path coefficients should exceed 0.10 to account for a certain impact within the model. However,  $\beta$  value has to be tested for its significance level through t-value test. The test is carried out by performing a non-parametric bootstrapping technique. Therefore, the re-sample number of Bootstrapping is 5,000 to provide a reliable prediction as recommended by (G.David, 2016; Sarstedt et al., 2019; Wong, 2019). While Hair et al., (2011), suggest that acceptable t-values for a two-tailed test are 1.65 (significance level = 0.10 or 10%), 1.96 (significance level = 0.05 or 5%) and 2.58 (significance level = 0.01 or 1%). A detail results using PLS for hypothesis tests can be seen in Table 5 and Bootstrapping analysis is attached as Figure 4.

**Table 5.** Result of Hypothesis Tests

| Hypothesis | Relationship                                    | Path Coefficient ( $\beta$ ) | T-Values | P-Values | Remarks         |
|------------|---|------------------------------|----------|----------|-----------------|
| H1         | Behavior > MP-NRSS-school Conducive environment | 0.192                        | 2.231**  | 0.026**  | Significant     |
| H2         | Complaint management > MP-NRSS-                 | -0.070                       | 0.726    | 0.468    | Not significant |

|    |  |        |         |         |                 |
|----|--|--------|---------|---------|-----------------|
|    | Conducive school environment                             |        |         |         |                 |
| H3 | Islamic work ethic>MP-NRSS-Conducive school environment. | -0.008 | 0.126   | 0.899   | Not significant |
| H4 | Leadership>MP-NRSS-Conducive school environment.         | 0.274  | 2.531** | 0.011** | Significant     |
| H5 | Safety>MP-NRSS-Conducive school environment.             | 0.194  | 1.821*  | 0.069** | Significant     |
| H6 | Service delivery>MP-NRSS-Conducive school environment    | 0.098  | 1.055   | 0.292   | Not significant |

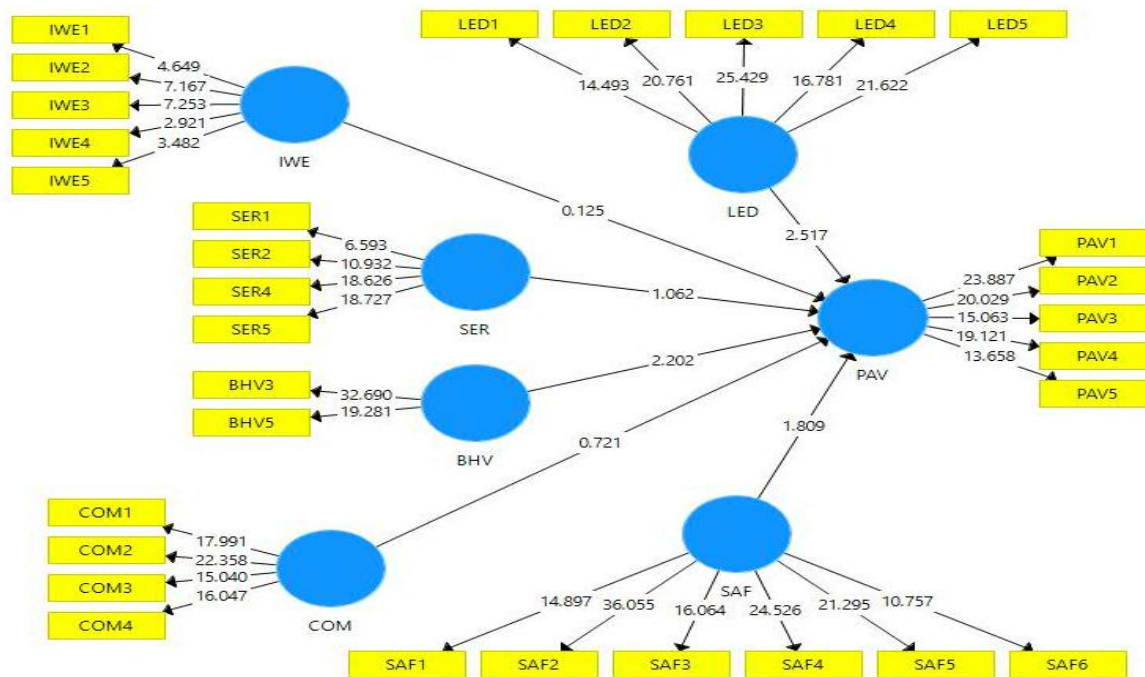


Figure 4.Bootstrapping analysis to predict power

### Results of The Study

The results of this study have not only provided a new picture of the feedback from academic knowledge and methodology, but can also indirectly benefit from the practical dimension in which findings can be applied in public and private schools with similar

buildings and facilities in Malaysia. The findings of this study have shown that behavior is also the most important characteristic, followed by safety and leadership by the school administrator, which will guide the improvement of school maintenance success. Clearly, the three characteristics referred to above should lay the foundation for any maintenance activities to be carried out at school. The study findings will show that, from the perspective of the school administrator, the maintenance performance characteristics can be used to improvise school maintenance policies, maintenance practices, and on-site school maintenance operations.

### Conclusion and Recommendation

Determining the relationship between the MPCs group and the characteristics of the MPCs with respect to school maintenance performance. The data were analyzed at the same time by developing a structural model known as the MP model using PLS-SEM, which involved two phases: the assessment of the measurement model and the assessment of the structural model. The assessment of the measurement model has gone through the procedures for reliability and validity, but no elements have been omitted from the framework. The second stage of the model assessment is the testing of a structural model that has shown explanatory power and predictive power. The findings of the evaluation supported the assumption that three MPCs, namely 'Behavior,' 'Leadership' and 'Safety,' have a significant relationship to the performance of school maintenance in order to achieve a conducive school environment. The following discusses and suggests a future study of school maintenance performance from the perspective of school administrators in order to achieve a conducive school environment. This research framework can be extended by assessing other specific characteristics related to the built environment in recent studies which, in turn, may have an impact on the assessment of maintenance performance from a stakeholder perspective. The maintenance performance framework included 60 NRSS in Malaysia. Potential research will focus on other schools and provide a broader context for MPCs towards MP for conducive school environment.

### REFERENCES

1. Abdul Lateef Olanrewaju and Abdul-Rashid Abdul- Aziz. (2015). *Building Maintenance Processes and Practices, The Case of a Fast Developing Country*. (Ramesh Nath Premnath, Ed.) (First Edit). Singapore, New York, London: Springer International Publishing.
2. Abd Khalik Khassunah Muzir. (2017). *School Buildings Maintenance In Malaysia: Current Practices, Key Challenges And Implications*. Newcastle University
3. Abdul Rahim, N. F., Ahmed, E. R., Sarkawi, M. N., Jaaffar, A. R., & Shamsuddin, J. (2019). Operational risk management and customer complaints: The role of product complexity as a moderator. *Benchmarking*, 26(8), 2486–2513. <https://doi.org/10.1108/BIJ-04-2018-0089>
4. Akaa, O. U., Abu, A., Spearpoint, M., & Giovinazzi, S. (2016). A group-AHP decision analysis for the selection of applied fire protection to steel structures. *Fire Safety Journal*, 86(November), 95–105. <https://doi.org/10.1016/j.firesaf.2016.10.005>
5. Al-jabari, M. (2018). The relationship between Islamic work ethic and workplace outcome.

- Emeraldinsight*, 47(7), 1286–1308. <https://doi.org/10.1108/PR-05-2017-0138>
6. Ameta, U., Dahima, R., Singh, R., Swati, P., & Rahul, P. (2017). A Typical Call Monitoring System to Handle Complaints & Queries in Smart Cities. In *IJSTE National Conference on Road Map for Smart Cities of Rajasthan (NC-RMSCR)* (pp. 331–335).
  7. Antão, P., Calderón, M., Puig, M., Michail, A., Wooldridge, C., & Darbra, R. M. (2016). Identification of Occupational Health, Safety, Security (OHSS) and Environmental Performance Indicators in port areas. *Safety Science*, 85(June), 266–275. <https://doi.org/10.1016/j.ssci.2015.12.031>
  8. Aparidian, R., & Alam, B. M. (2017). A Study of Effectiveness of Midblock Pedestrian Crossings: Analyzing a Selection of High-Visibility Warning Signs Rebekka. *Interdisciplinary Journal of Signage and Wayfinding*, 1(2), 26–59.
  9. Arokiasamy, A. R. A. (2017). Moderating influence of school culture on the relationship between transformational leadership and organizational health of secondary school teachers in Malaysia. *Economics, Management and Sustainability*, 2(1), 19–35. <https://doi.org/10.14254/jems.2017.2-1.2>
  10. Au-yong, C. P., Shah, A., & Ahmad, F. (2016). Relationship between Predetermined Maintenance Interval and Maintenance Performance. In *Applied Mechanics and Materials* (Vol. 845, pp. 305–310).
  11. Bettencourt, L. A., Brown, S. W., Sirianni, N. J., & Carey, W. P. (2013). The secret to true service innovation. *Business Horizons*, 56(1), 13–22. <https://doi.org/10.1016/j.bushor.2012.09.001>
  12. Chang, M. Y., Chen, K., Pang, C., Chen, C. M., & Yen, D. C. (2013). A study on the effects of service convenience and service quality on maintenance revisit intentions. *Computer Standards and Interfaces*, 35(2), 187–194. <https://doi.org/10.1016/j.csi.2012.08.002>
  13. C.Y.Yong, M. Z. S., Yong, C. Y., Zailan Sulieman, M., C.Y.Yong, M. Z. S., Yong, C. Y., Zailan Sulieman, M., & C.Y.Yong, M. Z. S. (2015). Assessment of building maintenance management practice and occupant satisfaction of school buildings in Perak, Malaysia. *Jurnal Teknologi*, 75(5), 57–61. <https://doi.org/10.11113/jt.v75.4995>
  14. Fornell Claes and David F.Larcker. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18, 39–50.
  15. Claire Sanderson, D., & Mary Edwards, V. (2016). Determinants of satisfaction amongst tenants of UK offices. *Journal of Corporate Real Estate*, 18(2), 102–131. <https://doi.org/10.1108/JCRE-09-2015-0022>
  16. Curcuruto, M., Conchie, S. M., Mariani, M. G., & Violante, F. S. (2015). The role of prosocial and proactive safety behaviors in predicting safety performance. *Safety Science*, 80, 317–323. <https://doi.org/10.1016/j.ssci.2015.07.032>
  17. Dickerson, D. E., & Ackerman, P. J. (2016). Risk-based Maintenance Management of U.S. Public School Facilities. *Procedia Engineering*, 145, 685–692. <https://doi.org/10.1016/j.proeng.2016.04.069>
  18. Effelsberg, D., Solga, M., & Gurt, J. (2014). Getting Followers to Transcend Their Self-Interest for the Benefit of Their Company: Testing a Core Assumption of Transformational Leadership Theory. *Journal of Business and Psychology*, 29(1), 131–143. <https://doi.org/10.1007/s10869-013-9305-x>
  19. Ejere, E. I., & Abasilim, U. D. (2013). Impact of Transactional and Transformational Leadership Styles on Organisational Performance: Empirical Evidence from Nigeria. *Journal of Commerce*, 5(1), 30–41. <https://doi.org/10.1016/j.cja.2015.07.002>
  20. Ekawati, E. (2019). Organization Culture Oriented on Islamic Principle and Company Performance. *Integrative Business and Economics Research*, 8(4), 301–312.
  21. Enemu, O. B , Ejikeme, J. N. U , Edward, C. (2016). The role of customer satisfaction and maintenance culture in the sustainability of hospitality industries in Umuahia North and South Local Government Areas of Abia State. *Journal of Hospitality and Management Tourism*, 7(1), 1–10. <https://doi.org/10.5897/JHMT2015.0164>
  22. Enshassi, A. A., & Shorafa, F. El. (2015). Key performance indicators for the maintenance of public hospitals buildings in the Gaza Strip. *Facilities*, 33(3/4), 206–228. [Dec 2021| 210](https://doi.org/10.1108/f-07-2013-</a></li></ol></div><div data-bbox=)



0053

23. Fehr, R., Yam, K. C., & Dang, C. (2015). Moralized leadership: The construction and consequences of ethical leader perceptions. *Academy of Management Review*, 40(2), 182–209. <https://doi.org/10.5465/amr.2013.0358>
24. Fisher, N. I. (2019). A comprehensive approach to problems of performance measurement. *Journal of the Royal Statistical Society. Series A: Statistics in Society*, 182(3), 755–803. <https://doi.org/10.1111/rssa.12424>
25. Fokkens, D.-J. (2015). *A practical approach to maintenance performance measurement. Master Thesis, University of Twente, Netherlands.* University of Twente, Netherlands.
26. Frost, J. (2014). Values based leadership. *Industrial and Commercial Training*, 46(3), 124–129. <https://doi.org/10.1108/ICT-10-2013-0073>
27. G. David Garson. (2016). *PARTIAL LEAST SQUARES (PLS-SEM)* (2016 editi). Statistical Associates Publishing. Retrieved from [www.statisticalassociates.com](http://www.statisticalassociates.com)
28. Ganisen, S., Mohammed, A. H., Nesan, L. J., & Kanniyapan, G. (2015). Critical Success Factors for Low Cost Housing Building Maintenance Organization. *Jurnal Teknologi, Universiti Teknologi Malaysia*, 2(74), 31–40. <https://doi.org/10.11113/jt.v74.4520>
29. Geraghty, A., & Paterson-brown, S. (2018). Leadership and working in teams. *Surgery*, 36(9), 503–508. <https://doi.org/10.1016/j.mpsur.2018.07.013>
30. Godderis, L., Boonen, E., Cabrera Martimbianco, A. L., Delvaux, E., Ivanov, I. D., Lambrechts, M. C., ... Pachito, D. V. (2018). WHO/ILO work-related burden of disease and injury: Protocol for systematic reviews of exposure to long working hours and of the effect of exposure to long working hours on alcohol consumption and alcohol use disorders. *Environment International*, 120(January), 22–33. <https://doi.org/10.1016/j.envint.2018.07.025>
31. Gupta, V., Agarwal, U. A., & Khatri, N. (2016). The relationships between perceived organizational support, affective commitment, psychological contract breach, organizational citizenship behaviour and work engagement. *Journal of Advanced Nursing*, 72(11), 2806–2817. <https://doi.org/10.1111/jan.13043>
32. Hair, Joe F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–152. <https://doi.org/10.2753/mtp1069-6679190202>
33. Hair, Joseph F., Ringle, C. M., & Sarstedt, M. (2013). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, 46(1–2), 1–12. <https://doi.org/10.1016/j.lrp.2013.01.001>
34. Hamzah, N., Mahli, M., Tahir, M. M., Abdullah, N. a G., & Tawil, N. M. (2010). The Development of Smart School Condition Assessment Based on Condition Survey Protocol ( CSP ) 1 Matrix: A Literature Review. *International Journal of Civil, Environmental, Structural, Construction and Architectural Engineering*, 4(11), 369–374.
35. Hashim, M. A. S., & May, E. J. (2018). Effectiveness of Personal Protective Equipment (PPE) at Construction Site. *INTI Journal*, 1(12), 1–12. Retrieved from [http://eprints.intimal.edu.my/1146/1/v1\\_2018\\_12.pdf](http://eprints.intimal.edu.my/1146/1/v1_2018_12.pdf)
36. Husaini, A. I. A., & Tabassi, A. A. (2014). Performance Assessment of Maintenance Practices in Government Office Buildings : Case Study of Parcel E , Putrajaya. *MATEC Web of Conferences , EDP Sciences*, 10, 7.
37. Husin, H. N., Nawawi, A. H., Ismail, F., & Khalil, N. (2014). Analysis on Occupants' Satisfaction for Safety Performance Assessment in Low Cost Housing. *Web of Conferences*, 3, 238–248. <https://doi.org/10.1051/e3sconf/20140301004>
38. Ikediashi, D. I. (2014). *A framework for outsourcing facilities management services in Nigeria's public hospitals. Published PhD Thesis, Heriot Watt University.* Heriot-Watt University April,.
39. Ismail, Z.-A. (2014). System development toward effective maintenance management practices. *Built Environment Project and Asset Management*, 4(4), 406–422. [Dec 2021| 211](https://doi.org/10.1108/BEPAM-</a></li></ol></div><div data-bbox=)

- 11-2013-0059
40. Ismail, Z.-A., & Kasim, N. (2014). Maintenance Management Practices For Building Facility: A Case Study. *International Journal of Engineering Research and Applications*, 3(4), 2248–9622.
  41. Isnaini Janipha, N. A., Aina Syed Alwee, S. N., Mohd Ariff, R., & Ismail, F. (2018). Maintenance and Safety Practices of Escalator in Commercial Buildings. *IOP Conference Series: Earth and Environmental Science*, 117(1), 6. <https://doi.org/10.1088/1755-1315/117/1/012042>
  42. Jaafar, S., & Hakim, A. (2017). Facilities maintenance employees ' priority of safety management practices A research study in Malaysia. *Facilities*, 35(5), 319–334. <https://doi.org/10.1108/F-03-2015-0012>
  43. Jin, S., & Chua, L. (2018). Maintenance of high-rise residential buildings. *International Journal of Building Pathology and Adaptation*, 36(2), 137–151. <https://doi.org/10.1108/IJBPA-09-2017-0038>
  44. Jin, S., Chua, L., Au-yong, C. P., Ali, A. S., & Sufian, M. (2018). Building Maintenance Practices towards the Common Defects and Resident ' s Satisfaction of Elderly Homes. *Journal of Design and Built Environment*, (1), 62–71.
  45. Joseph F. Hair, Jr, G.Thomas M.Hult, Christian M.Ringle, M. S. (2014). *A Primer on Partial Least Squares Structural Equation Modelling (PLS SEM)*. London: SAGE Publication Ltd. <https://doi.org/10.1108/ebr-10-2013-0128>
  46. Joseph F. Hair, William C. Balck, Barry J. Babin, R. E. A. (2010). *Multivariate Data Analysis* (Seventh Ed). Pearson Prentice Hall.
  47. Joseph F. Hair, William C. Balck, Barry J. Babin, R. E. A., & Anderson, R. E. (2014). *Multivariate Data Analysis*. (Joseph F. Hair Jr. William C. Black Barry J. Babin Rolph E. Anderson, Ed.) (7th Editio). London UK: Pearson New International Edition.
  48. Kalbani, M. Al. (2015). *Leadership And Followership Practices In Learning Organisations : A Case Study Of Abu Dhabi Education Council Leadership And Followership Practices In Learning Organisations : A Case Study Of Abu Dhabi*. Lancaster Unviersity Uk.
  49. Karakhan, A. A., Xu, Y., & Nnaji, C. (2018). Technology Alternatives for Workplace Safety Risk Mitigation in Construction. *Conference: Proceedings of the 35th CIB W78 2018 Conference: IT in Design, Construction, and ManagementAt: Chicago, IL, (October)*. <https://doi.org/10.1007/978-3-030-00220-6>
  50. Karunasena, G., Vijerathne, D., & Muthmala, H. (2018). Preliminary framework to manage tenant satisfaction in facilities management service encounters. *Facilities*, 36(3–4), 171–194. <https://doi.org/10.1108/F-05-2016-0050>
  51. Khan, K. (2017). *The Role Of Islamic Work Ethics In The Relationship Between Perceived Organizational Support, Organizational Justice And Job Performance*. Phd Thesis, International Business School Universiti Teknologi Malaysia. Universiti Teknologi Malaysia.
  52. Kim, A. A., Ph, D., Asce, A. M., Mccunn, L. J., Ph, D., & Lew, J. (2017). Successful Facility Change-Management Practices for Retrofit Projects : Case Study in Lighting. *Journal of Management in Engineering*, 33(4), 1–8. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000519](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000519)
  53. Kwasi Dartey-Baah. (2015). Resilient leadership: a transformational-transactional leadership mix. *Journal of Global Responsibility*, 6(1), 199–112.
  54. Lai, A. W. Y., & Lai, W. M. (2013). Users' satisfaction survey on building maintenance in public housing. *Engineering, Construction and Architectural Management*, 20(4), 420–440. <https://doi.org/10.1108/ECAM-06-2011-0057>
  55. Lee, M. (2014). Transformational leadership: is it time for a recall? *International Journal Of Management and Applied Research*, 1(1), 17–29. <https://doi.org/10.18646/2056.11.14-002>
  56. Lim, W. S. (2016). *Service Quality And Property Owner Satisfaction In Building Management For Private Residence Property*. Master Thesis, Unitar, Malaysia. Universiti Tunku Abdul Rahman.
  57. Mahdi, A. (2016). *University Of Huddersfield Repository Islamic Work Ethic Scale Amir Mahdi Khorshid*. Phd Thesis, The Business School University Of Huddersfield. University Of Huddersfield.

58. Mydin.M.A.O (2014). Key Performance Indicator of Building Maintenance and Its Effect on the Building Life Cycle. *Analele Universitatii'Eftimie Murgu Resita*, (1), 193–202. Retrieved from <http://anale-ing.uem.ro/2014/20.pdf>
59. Miao, R. T., & Kim, H. G. (2009). The impact of organizational citizenship behavior on team effectiveness in China: The moderating role of task complexity. *ICCIT 2009 - 4th International Conference on Computer Sciences and Convergence Information Technology*, 641–646. <https://doi.org/10.1109/ICCIT.2009.200>
60. Mirza, M. O. N. (2016). Employer-Employee Relationships in Islam: A Normative View from the Perspective of Orthodox Islamic Scholars. *International Journal of Business and Management*, 11(4), 59. <https://doi.org/10.5539/ijbm.v11n4p59>
61. MOE. (2019). Status Pelaksanaan Projek Pembangunan Semula Sekolah-sekolah daif di Sabah, Sarawak, Labuan dan Semenanjung Malaysia 2016-2018. Retrieved February 25, 2020, from <https://www.moe.gov.my/en/muat-turun/penerbitan-dan-jurnal/maklumat-prestasi-projek-daif/2771-maklumat-projek-daif/file>
62. MOE, 2013-2025. (2013). *Malaysia Education Blueprint 2013 - 2025*. <http://www.moe.gov.my> (Vol. 27). <https://doi.org/10.1016/j.tate.2010.08.007>
63. Motamedi, A., Yabuki, N., Wang, Z., Fukuda, T., & Michikawa, T. (2016). Automatic Signage Visibility Checking System Using BIM - enabled VR Environments. *Icccbe*, (July), 1601–1608.
64. Mpofu, M., & Hlatywayo, C. K. (2015). Training and development as a tool for improving basic service delivery; the case of a selected municipality. *Journal of Economics, Finance and Administrative Science*, 20(39), 133–136. <https://doi.org/10.1016/j.jefas.2015.10.004>
65. Mustapha, R., & Habidin, N. F. (2016). Using DMAIC in Improvement of Customer Satisfaction and Facilities provided at Commuter Stations, 6(12), 821–836. <https://doi.org/10.6007/IJARBSS/6-i12/2564>
66. Myeda, N. E., & A. (2013). *Enhancing The Facilities Management (Fm) Service Delivery In Malaysia: The Development Of Performance Measurement Framework (Perfm)*. Phd Thesis, University College London. University College London.
67. Nath, V., Bach, S., & Lockwood, G. (2016). Dress codes and appearance at work: Body supplements, body modification and aesthetic labour. *ACAS Research Publication*, 1–59. <https://doi.org/doi:10.2752/bewdf/edch1013>
68. Nawoseing'ollan, D., & Roussel, J. (2017). Influence of Leadership Styles on Employees' Performance: A Study of Turkana County, Kenya. *International Journal of Business and Social Science*, 8(7), 82–98. Retrieved from [www.ijbssnet.com](http://www.ijbssnet.com)
69. Ngo, L. V., & O'Cass, A. (2013). Innovation and business success: The mediating role of customer participation. *Journal of Business Research*, 66(8), 1134–1142. <https://doi.org/10.1016/j.jbusres.2012.03.009>
70. Nguyen, Q., Nisar, T. M., Knox, D., & Prabhakar, G. P. (2018). Understanding customer satisfaction in the UK quick service restaurant industry: The influence of the tangible attributes of perceived service quality. *British Food Journal*, 120(6), 1207–1222. <https://doi.org/10.1108/BFJ-08-2017-0449>
71. Nielsen, K., & Daniels, K. (2016). Sickness absenteeism, presenteeism, transformational leadership. *An International Journal of Work, Health & Organisations*, 30(2), 193–208.
72. Nizam, S., Sarah, S., & Osman, A. (2016). The Effect of Islamic Work Ethics on Organizational Commitment. *7th International Economics & Business Management Conference*, 35(October 2015), 582–590. [https://doi.org/10.1016/S2212-5671\(16\)00071-X](https://doi.org/10.1016/S2212-5671(16)00071-X)
73. Njuangang, S., Lasanthi Liyanage, C., & Akintoye, A. (2016). Performance measurement tool (PMT) to control maintenance-associated infections. *Facilities*, 34(13/14), 766–787. <https://doi.org/10.1108/F-12-2014-0107>
74. Olanrewaju, A. L., & Abdul-Aziz, A. R. (2015). *Building maintenance processes and practices: The case of a fast developing country*. *Building Maintenance Processes and Practices: The Case of a*

- Fast Developing Country*. <https://doi.org/10.1007/978-981-287-263-0>
75. Oliveira, M., Lopes, I., & Rodrigues, C. (2016). Use of Maintenance Performance Indicators by Companies of the Industrial Hub of Manaus. *Procedia CIRP*, 52, 157–160. <https://doi.org/10.1016/j.procir.2016.07.071>
  76. Oluwatoyin, I. O., Olotuah, A. O., & Ayo-vaughan, E. K. (2017). MAINTENANCE OF PUBLIC SECONDARY SCHOOL BUILDINGS: USERS' PRACTICES IN NIGERIA. In *11th International Technology, Education and Development Conference Valencia, Spain* (pp. 1–10). <https://doi.org/10.21125/inted.2017.1891>
  77. Parida, A., Kumar, U., Galar, D., & Stenström, C. (2015). *Performance measurement and management for maintenance: a literature review*. *Journal of Quality in Maintenance Engineering* (Vol. 21). <https://doi.org/10.1108/JQME-10-2013-0067>
  78. Peach, R., Ellis, H., & Visser, J. K. (2016). A maintenance performance measurement framework that includes maintenance human factors: A case study from the electricity transmission industry. *South African Journal of Industrial Engineering*, 27(2), 177–189. <https://doi.org/10.7166/XX-X-1492>
  79. Quoquab, J. M. and F. (2016). Furthering the thought on Islamic work ethic: how does it differ? *Journal of Islamic Marketing*, Vol. 7(No.3), 355–375. <https://doi.org/10.1108/JIMA-07-2014-0047>
  80. Ropi, R. M., & Tabassi, A. A. (2014). Study on Maintenance Practices for School Buildings in Terengganu and Kedah, Malaysia. In *MATEC Web of Conferences* (Vol. 003, pp. 1–7). <https://doi.org/10.1051/mateconf/20141003003>
  81. Saeed Hameed Aldulaimi. (2016). Fundamental Islamic perspective of work ethics. *Islamic Accounting and Business Research*, 7(1), 59–76. <https://doi.org/10.1108/JIABR-02-2014-0006>
  82. Sarstedt, M., Ringle, C. M., & Hair, J. F. (2019). *Partial Least Squares Structural Equation Modeling. Handbook of Market Research*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-05542-8>
  83. Sirisookslip, S., Ariratana, W., & Keow, T. (2015). The Impact of Leadership Styles of School Administrators on Affecting Teacher Effectiveness. *Procedia - Social and Behavioral Sciences*, 186, 1031–1037. <https://doi.org/10.1016/j.sbspro.2015.04.022>
  84. Srichai, P., Yodmongkol, P., Sureephong, P., & Meksamoot, K. (2013). Managing School Safety in Thailand: Assessing the Implications and Potential of a Lean Thinking Framework - Thailand. *SAGE Open*, 1(17), 2158244013489985-. <https://doi.org/10.1177/2158244013489985>
  85. Sulaiman, N. L., Salleh, K. M., Mohamad, M. M., & Sern, L. C. (2017). Technical and Vocational Education in Malaysia: Policy, Leadership, and Professional Growth on Malaysia Women. *Journal Asian Social Science*, 11(24), 153–161. <https://doi.org/10.5539/ass.v11n24p153>
  86. Sultana, S., Andersen, B. S., & Haugen, S. (2019). Identifying safety indicators for safety performance measurement using a system engineering approach. *Process Safety and Environmental Protection*, 128, 107–120. <https://doi.org/10.1016/j.psep.2019.05.047>
  87. Syed, J., Ali, F., & Hennekam, S. (2018). Gender equality in employment in Saudi Arabia: a relational perspective. *Career Development International*, 23(2), 163–177. <https://doi.org/10.1108/CDI-07-2017-0126>
  88. Tianya, L. (2015). *Organizational Culture & Employee Behavior: Case study*. Lahti University of Applied Science. LAHTI UNIVERSITY OF APPLIED SCIENCES. Retrieved from <https://core.ac.uk/download/pdf/38122623.pdf>
  89. W.Organ, D. (1990). The motivational basis of organizational behavior. *Research in Organizational Behavior*. resource.udallas.edu. <https://doi.org/10.1002/bs.3830090206>
  90. Wakabi, B. M. (2016). Leadership Style and Staff Retention in Organisations. *International Journal of Science and Research (IJSR)*, 5(1), 412–416. <https://doi.org/10.21275/v5i1.nov152642>
  91. Wang, W. L., Lo, S. M., Liu, S. B., & Kuang, H. (2014). Microscopic modeling of pedestrian movement behavior: Interacting with visual attractors in the environment. *Transportation Research Part C: Emerging Technologies*, 44, 21–33. <https://doi.org/10.1016/j.trc.2014.03.009>

92. Wibisono, C. (2017). Prayer Determination toward Employees Performance. *International Journal of Social Science Studies*, 5(5), 59–70. <https://doi.org/10.11114/ijsss.v5i5.2360>
93. Wong, K. K. (2019). *Mastering Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS in 38 Hours*. Universe.
94. Yukl, G. (2016). Effective Leadership Behavior: What We Know and. *Academy of Management Perspective*, (March), 21. <https://doi.org/10.5465/amp.2012.0088yukl>
95. Zolkafli, U. K., Zakaria, N., & Mazlan, A. M. (2018). Maintenance work for heritage buildings in Malaysia: owners' perspectives. *Journal of Building Pathology and Adaptation*, 31(1). <https://doi.org/10.1108/IJBPA-07-2018-0062>