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 cent 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.

1. 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 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.
2. 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 31st July 2019 (MOE, 2019c)

<table>
<thead>
<tr>
<th>No</th>
<th>Location</th>
<th>Certificate of Completion (CPC)</th>
<th>Practical</th>
<th>On-going projects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sarawak</td>
<td>121</td>
<td>45</td>
<td></td>
<td>166</td>
</tr>
<tr>
<td>2</td>
<td>Sabah</td>
<td>105</td>
<td>45</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>3</td>
<td>Semenanjung</td>
<td>212</td>
<td>6</td>
<td></td>
<td>218</td>
</tr>
<tr>
<td>4</td>
<td>Jumlah</td>
<td>438</td>
<td>96</td>
<td></td>
<td>534</td>
</tr>
</tbody>
</table>

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.

3. 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 firm 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).

![Diagram of Conceptual Framework]

**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 re-defined 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.
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, Mpofu & 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 (Goderis
et al., 2018; Fisher, 2019), performed beyond the call of duty (Gupta et al., 2016; Nielsen & Daniels, 2016), based on records and documents (Zolkaifli 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 (Kwast, 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 (RMMA) 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 (Aparidian & Alam, 2017; Ismaili 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) (Karахan et al., 2018; Hashim & May, 2018), Near miss and accident rates (Antao et al., 2016; Curruruto et al., 2015), Monitoring of safety practices (Antao 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 (Seyd 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).

4. 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**

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Principal (Academic staff)</td>
<td>21</td>
<td>15.67%</td>
</tr>
<tr>
<td>2</td>
<td>Senior Assistant (Academic Staff)</td>
<td>80</td>
<td>59.70%</td>
</tr>
<tr>
<td>3</td>
<td>Chief Clerk (Non Academic Staff)</td>
<td>33</td>
<td>24.63%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>134</td>
<td>100%</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>MPCs Group</th>
<th>Symbol for MPCs</th>
<th>PLS-Algorithm</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Loading</td>
<td>AVE</td>
<td>CA</td>
</tr>
<tr>
<td>Behavior (BHV)</td>
<td>BHV3 Communication</td>
<td>0.905</td>
<td>0.781</td>
<td>0.722</td>
<td>0.877</td>
</tr>
<tr>
<td></td>
<td>BHV5 Skills and competency</td>
<td>0.863</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Delivery (SER)</td>
<td>SER1 Level of nuisance</td>
<td>0.640</td>
<td>0.588</td>
<td>0.771</td>
<td>0.850</td>
</tr>
<tr>
<td></td>
<td>SER2 Timeliness</td>
<td>0.774</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SER4 Based on records and documents</td>
<td>0.820</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SER5 Monitoring and inspection</td>
<td>0.820</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complaint Management (COM)</td>
<td>COM1 Response</td>
<td>0.803</td>
<td>0.659</td>
<td>0.831</td>
<td>0.886</td>
</tr>
<tr>
<td></td>
<td>COM2 Requested work completed</td>
<td>0.806</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM3 Complaints handling</td>
<td>0.824</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM4 Complaint procedures</td>
<td>0.815</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety (SAF)</td>
<td>SAF1 Safety culture</td>
<td>0.796</td>
<td>0.656</td>
<td>0.897</td>
<td>0.920</td>
</tr>
<tr>
<td></td>
<td>SAF2 Visibility of safety information</td>
<td>0.868</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAF3 Involved building users</td>
<td>0.798</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAF4 Application of personal protective equipment (PPE)</td>
<td>0.836</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAF5 Near miss and accident rates</td>
<td>0.826</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAF6 Monitoring of safety practices</td>
<td>0.730</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leadership (LED)</td>
<td>LED1 Sense of authority and confidence</td>
<td>0.754</td>
<td>0.623</td>
<td>0.849</td>
<td>0.892</td>
</tr>
<tr>
<td></td>
<td>LED2 Goes beyond self-interest for the good of the school community</td>
<td>0.780</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED3 Articulates a clear vision for the future</td>
<td>0.839</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED4 Good values and beliefs</td>
<td>0.781</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LED5 Spends time coaching</td>
<td>0.791</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islamic Work Ethic (IWE)</td>
<td>IWE1 Cover “aurat”</td>
<td>0.626</td>
<td>0.432</td>
<td>0.669</td>
<td>0.780</td>
</tr>
<tr>
<td></td>
<td>IWE2 Accompanied by school representative</td>
<td>0.816</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IWE3 Privacy of building users</td>
<td>0.817</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IWE4 Prohibited activities in Islam</td>
<td>0.366</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IWE5 Time of worship</td>
<td>0.547</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>PAV1 Communication</td>
<td>0.829</td>
<td>0.622</td>
<td>0.850</td>
<td>0.892</td>
</tr>
</tbody>
</table>
5. 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>
<thead>
<tr>
<th>MPCs</th>
<th>AVE</th>
<th>BHV</th>
<th>COM</th>
<th>IWE</th>
<th>LED</th>
<th>PAV</th>
<th>SAF</th>
<th>SER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHV</td>
<td>0.781</td>
<td>0.884*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>0.659</td>
<td>0.532</td>
<td>0.812*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IWE</td>
<td>0.432</td>
<td>0.223</td>
<td>0.468</td>
<td>0.657*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>0.623</td>
<td>0.412</td>
<td>0.599</td>
<td>0.493</td>
<td>0.789*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAV</td>
<td>0.622</td>
<td>0.416</td>
<td>0.379</td>
<td>0.248</td>
<td>0.497</td>
<td>0.789*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAF</td>
<td>0.656</td>
<td>0.501</td>
<td>0.633</td>
<td>0.438</td>
<td>0.741</td>
<td>0.499</td>
<td>0.810*</td>
<td></td>
</tr>
<tr>
<td>SER</td>
<td>0.588</td>
<td>0.551</td>
<td>0.656</td>
<td>0.270</td>
<td>0.479</td>
<td>0.393</td>
<td>0.551</td>
<td>0.767*</td>
</tr>
</tbody>
</table>

6. 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).

7. Predictive Power

The next step is assessing the path coefficient of all MPCs group (paths) by comparing beta (β) values among all the paths. The path coefficient represents the hypothesized relationships. The highest β 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, β 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

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Path Coefficient (β)</th>
<th>T-Values</th>
<th>P-Values</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Behavior&gt;MP-NRSS-Conducive school environment</td>
<td>0.192</td>
<td>2.231**</td>
<td>0.026**</td>
<td>Significant</td>
</tr>
<tr>
<td>H2</td>
<td>Complaint management&gt;MP-NRSS-Conducive school environment</td>
<td>-0.070</td>
<td>0.726</td>
<td>0.468</td>
<td>Not significant</td>
</tr>
<tr>
<td>H3</td>
<td>Islamic work ethic&gt;MP-NRSS-Conducive school environment</td>
<td>-0.008</td>
<td>0.126</td>
<td>0.899</td>
<td>Not significant</td>
</tr>
<tr>
<td>H4</td>
<td>Leadership&gt;MP-NRSS-Conducive school environment</td>
<td>0.274</td>
<td>2.531**</td>
<td>0.011**</td>
<td>Significant</td>
</tr>
<tr>
<td>H5</td>
<td>Safety&gt;MP-NRSS-Conducive school environment</td>
<td>0.194</td>
<td>1.821*</td>
<td>0.069**</td>
<td>Significant</td>
</tr>
<tr>
<td>H6</td>
<td>Service delivery&gt;MP-NRSS-Conducive school environment</td>
<td>0.098</td>
<td>1.055</td>
<td>0.292</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Figure 4. Bootstrapping analysis to predict power

8. 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.
9. 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


