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## The Quality of Experience of Integrated Management Tahfiz Model (IM-Tahfiz) in Malaysian Education

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### Abstract

Nowadays, the Islamic educational system in Malaysia demands a new technology for teaching and learning in Tahfiz education management. This Tahfiz learning management relatively has issues due to insufficient resources, infrastructure, and facilities. This paper proposes the usefulness of the Integrated Management Tahfiz Model (IM-Tahfiz) towards the effectiveness of education satisfaction at the heuristic level. The focus will be on Quality of Experience (QoE) based on user satisfaction due to implementing the IM-Tahfiz Model in the random Tahfiz institution in Malaysia.

**Keywords:** QoE, Integreted Management, Tahfiz Model, IM-Tahfiz, Malaysia

### INTRODUCTION

Al-Quran education is one of the core areas of Islam. It starts with learning the basics of knowing *hijaiyah* letters, spelling, reading, and learning tajwid law, as well as completing the Al-Qur'an. Exposure to the early stages of Al-Quran education is the main foundation that needs to be strengthened before exploring another Al-Quran knowledge (Muridah *et al.*, 2015). The most crucial goal in Al-Quran education is to educate people in devotion to Allah SWT. The main objective of tahfiz learning is Al-Qur'an is *al-hifz* which means students can memorize the Al-Qur'an well without looking at the next *mushaf alwa'iy*, students can appreciate and understand the verse that is read and meditate on it in the soul. At the end of *istirja'*, students can re-read memorized sentences fluently according to the order, letters, lines, and so on without looking at the manuscript (Ahmad. N., 2015). Therefore, students who master these three skills can memorize the Quran well.

Through data sources issued by the Islamic Religious Department of Malaysia (JAKIM), there are more than 278 tahfiz educational institutions in Malaysia involving 14 government-owned and the remaining 254 privately owned registered under JAKIM, and the number is increasing every year (JAKIM, 2021). Government-owned tahfiz institutions the federal or state governments are seen as unable to accommodate requests from parents who are interested in sending their children to the field of tahfiz, then private tahfiz centers are the choice. Therefore, the empowerment of unregistered private tahfiz centers is seen as very significant, and there is a need nowadays so that the standards set by the government can be met in line with the Education Policy National Tahfiz (DPTN, 2021).

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## LITERATURE REVIEW

In the excitement of developing a private tahfiz center, various aspects still need to be addressed and strengthened to ensure the stability of these centers in Malaysia. Most private tahfiz centers nor the private sector are moving in their direction, which leads to a non-uniformity of methods of tahfiz learning itself (Sharini, 2017). This causes the learning process to be carried out only based on the experience of the instructor without any specific method that is specific and organized. Challenges faced by the tahfiz center have been highlighted by Solahuddin, (2018), who suggested that it should be strengthened further tahfiz center development plan and initiative to be seen as capable of benefiting and producing quality tahfiz products that can be adopted in the market and society.

Mardhiah *et al.* (2018) highlights some aspects that make this tahfiz center not ultimately a center that is as competitive as any mainstream education center. It started with education management that weak tahfiz which eventually led to the inconsistency of the curriculum and teaching methods standard in the tahfiz center (Mardhiah *et al.*, 2018). Azmil (2014) also views the cause of weakness in the tahfiz teaching process as that there are still teachers who maintain the traditional teaching method. This can be one of the obstacles in getting the teaching and learning process systematic tahfiz when the tahfiz instructor himself does not have the appropriate specialist skills in tahfiz college.

The rest of the paper is organized as follows. Section two presents the method for the *IM-Tahfiz* Model that caters tahfiz integrated management model depending on the combined entity. In contrast, Section three provides information about the result and discussion of the methodology for this research paper; Finally, conclusions are drawn in the last section.

## METHODOLOGY

Integrated management or known as Integrated Management, is a combination of processes, procedures, and practices used by an organization to implement more efficient organizational policies in achieving goals compared to diverse management systems (Australian Standards International, 1999).

### *a. IM-Tahfiz Model*

In other words, integrated management is a management system that is comprehensive, understandable, and open. Exhaustive means covering all organizational activities understood standards accepted and understood by all organization members, and available means the management Superiors can re-evaluate one designation. There are three phases set in the model formation for this proposed paper, which is the critical requirement entity regarding the government, ministry of education, state government, and all involved stakeholders.

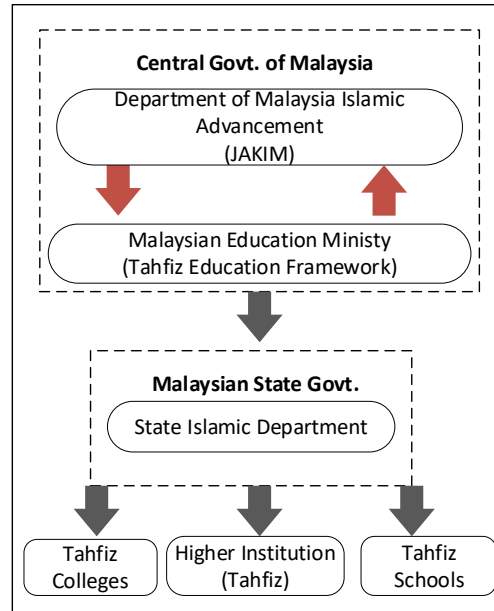
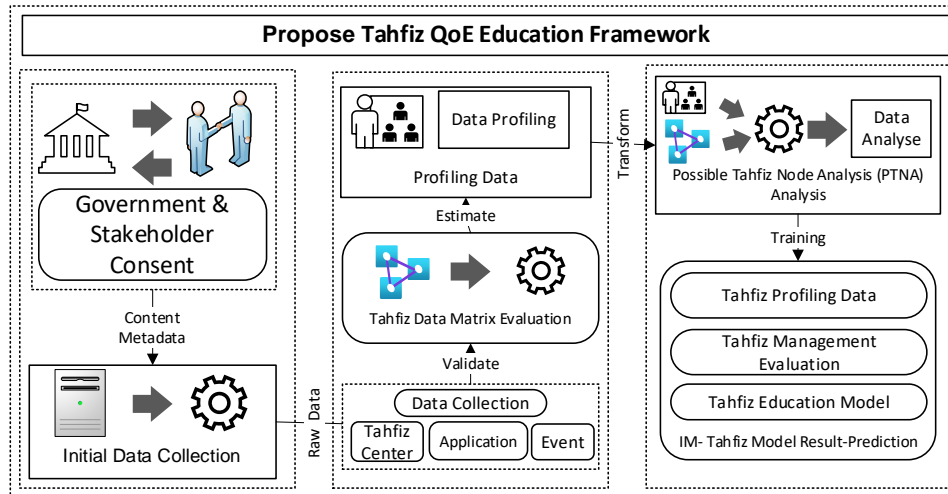


Figure 1: IM-Tahfiz Model

Fig.1 shows there are several entities involved in *IM-Tahfiz* Model. The first element is the Malaysian government that supports this embark for tahfiz education move ahead. Then the Department of Malaysian Islamic Advancement (JAKIM) and the Malaysian Education Ministry. Both bodies are essential for the success of tahfiz education. After that, the Malaysian state government, including the state Islamic department, plays the leading role in managing the tahfiz education system. The last tier is the institution, colleges, and schools implementing the IM-Tahfiz model. This paper will not discuss any of the government's in-depth education characteristics, and a further improvement in education technology currently exists. After the model is completed, the following elements will propose the tahfiz education framework that will be tailored to the needs of the tahfiz center.

*b. Propose Tahfiz Education Framework*

After integrating management, the major procedure is to analyze the effectiveness of *IM-Tahfiz* depending on the proposed framework. This framework has comprehensive elements from the government sector to the QoE end-user analysis. In this research, QoE is described as the degree of user expectation in terms of management efficiency in the tahfiz center. Additionally, QoE adopts a quality level as perceived by the user, which is vital to find a substantial agreement between users and a specific element constraint (e.g., quality of the management, quality of staff, etc.) (Petrangeli *et al.*, 2018). Relatively, the first phase is the government sector, and stakeholders play the primary role in the consent given to the provider as the data will be collected and stored for analysis—the design phase form and development as well as the usability testing phase. Fig.2 shows the proposed Tahfiz QoE Education Framework in this paper.



**Figure 2:** Propose Tahfiz QoE Education Framework

There are three types of raw data for the analysis such as thafiz center data, application, and event. These data are based on the parameter given for examination. Then the next phase is the Tahfiz Data Matrix Evaluation which is data filtering and cleaning before the profiling phase. Each phase of the formation of this framework has been detailed based on the main elements of the research method, namely the selection of informants, process data collection, data analysis procedures, and model development study matrix.

### c. Initial Data Collection

Data collection is essential for the framework evaluation, where the first obtained raw data is gathered. These data will be converted to suitable parameters depending on what modeling should be proper for the finalized data. Data parameters such as management financial, management resources, and additional conceivable variables affect the management directly in a data collection. In the implementation phase, 60 respondents (both male and female divided equally) for the subjective method in video QoE evaluation. Next is the age of the respondents for the survey experiments. To attain consistent results for the respondent's average for the subjective method, the average age is required to be in nominal standard in the age range of 20 to 50 years old (Peltonen *et al.*, 2015). For this research, the average (mean) respondent age is around 25 to 35.

In the outline phase, the experiment is conducted based on the survey duration and the location (Ghadiyaram *et al.*, 2019). The period of the survey experiments, this experiment starts in January 2022 until June 2022, with six months of testing. The location for the conducted testing was a random area. But the experimentation was conducted in the Malaysian area and divided into three-part; the northern region, central region, and southern region of Malaysia tahfiz center. Every possible number of tahfiz centers was called upon due to this testing. Therefore, to attain a respondent with a reliable preference and suit the testing environment is quite challenging (Ghadiyaram *et al.*, 2019).

Next is the assigned step, where the subjective method testing is put to the respondents after the outline stage. The participants were put into small group of 3 or 4 people, and the survey testing was performed for the central management issues in the tahfiz center. It took 15 to 20 minutes for each respondent to complete the task given. Finally, the respondent's results were obtained, and the QoE parameter was given. These conditions are stated from the QoE dimension factor (e.g, financial, resources, staffing organization.). These results will be discussed later with the data matrix evaluation for analysis modeling.

### d. Tahfiz Data Matrix Evaluation Modelling

A purposive sampling method was conducted to select a sample with the obtained results in this phase. Through this method, the researcher selects a group of people with specific characteristics to hold a session. Discussion supervised by a facilitator in charge of the testing. In this study, the researcher had a group session focused on entrepreneurs or management of private tahfiz centers in selected states (North, South, East, West Zone). To

adapt the sampling method in tahfiz management issues, three parameters have been decided for modelling data sampling; first is the financial management and resources, and lastly is human resources (staff). This element can be represented as follow:

$$IM\_Tahfiz = financial + resources + staff$$

Each parameter will be nominal, and end users or consumers will interrelate with the management through the sampling experimentation. Typically, a QoE of  $IM\_Tahfiz$  is the action of converting or transforming elements to fit a management capability. We alter these elements into numerical order for the experimental proposal.  $financial = \sum f = f(1), f(2), f(3), f(4), \dots, f(n)$ , where each element of  $f$  is the parameters sampling of financial issues in tahfiz management. In addition,  $resources = \sum r = r(1), r(2), r(3), r(4), \dots, r(n)$ , where each element of  $r$  is the parameters sampling of resources management issue in the tahfiz center. For the human resources issues, the elements represent as  $staff = \sum s = s(1), s(2), s(3), s(4), \dots, s(n)$ , where each element of  $s$  is the parameters sampling of manpower or staff in the tahfiz center issue. Each aspect plays a primary role with each other for better sampling results. To simulate the total of  $IM\_Tahfiz$  attributes can be inserted into :

$$IM\_Tahfiz = \sum_{k=0}^n (\sum f + \sum r + \sum s)$$

Where  $IM\_Tahfiz$  is the total representation of involved elements in the tahfiz management center as sampling data.  $n$  represents the data reliability of the total  $(\sum f + \sum r + \sum s)$  and  $k=0$  is the possible loss of data numerical for sampling result.

e. Data Profiling

Data profiling means the use of the QoE subjective method. This method is to determine subjective respondent results by using the Mean Opinion Score (MOS) approaches (ITU, 2008). This method will enable the user QoE assessment thoroughly. To execute survey pilot testing, the first is to set up the sampling data. In this research, Simple Random Sampling (SRS) will be used for data sampling. This method explicitly sets the range to avoid data leaks between too much data and too little data. It also represents the respondent population for experimentation purposes. ITU, 2008 state that the respondents sample range from around 30 – 40 respondents.

Furthermore, this deliberate approach considers that it directly affects the user not only a personal fact but opinion through direct experience (e.g., experience, conversational method, and instance quality). There is a wide-ranging variety of direct metrics, the most relevant metrics in quality assessment. Table 1 shows the MOS table for this sampling proposal.

Table 1: Mean Opinion Score (MOS)

MOS	Quality	Impairment
5	Excellent	Imperceptible
4	Good	Perceptible but not annoying
3	Fair	Slightly annoying
2	Poor	Annoying
1	Bad	Very Annoying

We evaluated the selection of MOS quality depending on the user’s selection sampling. However, we disregard the other potential parameter, such as the higher authority's availability in the tahfiz management, due to internal security and protocol, etc.

The results data in Table 2 shows the average of the result based on the respondent's demographic experiments. After data has been obtained, the next phase is to analyze the data with possible profiling node analysis results.

Table 2: Respondent Demographics for QoE  $IM\_Tahfiz$  Experiments

Respondents = $\beta$	$\sum f$	$\sum r$	$\sum s$
Number of Respondents	$f_1, f_2, f_3$	$r_1, r_2$	$s_1, s_2$

Male = 30	$\sum r\mu = 2.2$	$\sum r\mu = 3.6$	$\sum s\mu = 3.2$
Female = 30	$\sum r\mu = 2.1$	$\sum r\mu = 2.7$	$\sum s\mu = 2.9$
<b>Age of Respondents</b>			
Male	$\mu = 38.8$	$\mu = 38$	$\mu = 44.5$
Female	$\mu = 39.2$	$\mu = 37.4$	$\mu = 41.3$

$\sum_n \mu$ : total number of average;  $\mu$ : average/mean;

In Table 2, the number of male demographic respondents sampled is 30 and 30 females. These random respondents are from tahfiz management staff dispatch for this testing purpose. The testing experiment was conducted at the North Zone, Southeast, and West Malaysia tahfiz center.  $\sum f$  represents the total numerical respondent number for the financial variation variable. In addition, the  $\sum r$  shows the resources variation variable in the testing experiment while  $\sum s$  for the total staff variation variable in the sampling. Hence,  $\sum f\mu_\beta = \{f_1 + f_2 + f_3\}$  simplify as male respondents MOS result as  $\sum f_{\beta(m)} = 2.2$  while female respondents MOS results,  $\sum f_{\beta(f)} = 2.1$ . Next for  $r$  is  $\sum r\mu_\beta = \{r_1 + r_2\}$  stream as male respondents MOS result as  $\sum r_{\beta(m)} = 3.6$  while female respondents MOS results,  $\sum r_{\beta(f)} = 2.7$ . Lastly for  $s$  is  $\sum s\mu_\beta = \{s_1 + s_2\}$  stream as male respondents MOS result as  $\sum s_{\beta(m)} = 3.2$  though female respondents MOS results,  $\sum s_{\beta(f)} = 2.9$ . These results will be formed into a node for the possible profiling node analysis later—the respondent's age demographic average from 20 years old to 50 years old.

## FINDINGS AND DISCUSSION

### a. Possible Tahfiz Node Analysis (PTNA)

The total number of *PTNA* after the experiment is conducted and the data from video attribute size will increase progressively. Some of the data is impractical and incorrectly categorized. Unused data, data errors, or misclassifying data will start overfitting. Overfitting condition happens either from invisible analysis data results or over-analyze data. Besides, it occurs when the data result continues to scatter trends and is more likely to set the final dissemination data error result of a dataset. The purpose of pruning is to discard or remove parts of classification nodes that are genuinely not met with the selection data. The pruning variation is split into two categories; pre-pruning and post-pruning (Xie *et al.*, 2014). The post-pruning method enables pruning nodes after the analysis finish. Figure 3 shows the results of a list tree for the rule post-pruning method via *PTNA* analysis. The node of *PTNA* will be pruned depending on the rule post-pruning condition (Wang & Chen, 2013). Rule post-pruning is also an effective method to avoid the complexity of the data analysis. Furthermore, it can stop the growth of the unnecessary nodes that become misplaced data for the analysis.

The final *PTNA* makes it more understandable to the user, depending on the parameter setup. When pruning, an efficient mechanism is needed for distinct parts of a *PTNA* node converted from a tree to rules. *PTNA* node categories represent the parameters setup for a node from the respondent demographic result for analysis. of  $PTNA(1) = \{f_1 + f_2 + f_3\}$ ,  $PTNA(2) = \{r_1 + r_2\}$  and  $PTNA(3) = \{s_1 + s_2\}$ .

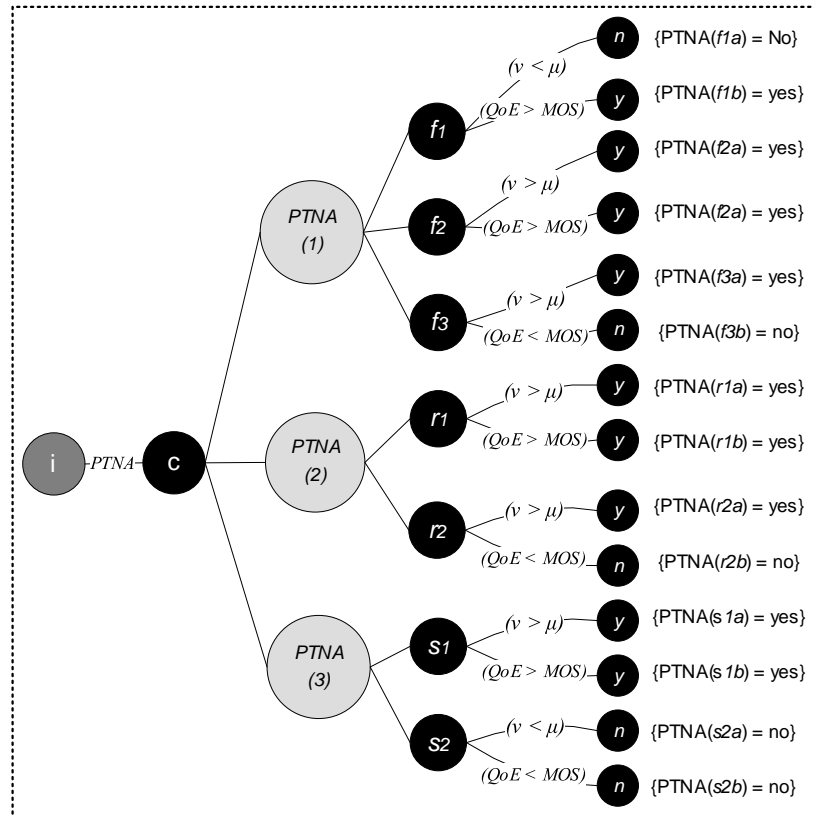


Figure 3: PTNA Node List Tree

Data from a list tree will be analyzed based on rule post-pruning methods. To set the variation of this set by using adisjunction (symbol  $\wedge$ ) of conjunctions of constraints on the attribute values of instances. The implementation of rule post-pruning methods can be seen in the equation as follow:

$$if(v < \mu) \wedge (QoE < MOS) \text{ then No;}$$

$$if(v > \mu) \wedge (QoE > MOS) \text{ then Yes;}$$

where  $v = \sum (PTNA)$  and  $\mu = \sum f \mu_{\beta} + \sum r \mu_{\beta} + \sum s \mu_{\beta}$  (MOS) which is the argument of respondent result earlier. IF  $(v < \mu)$ , the MOS result experiment will not be accepted since  $\mu$  is considered positive for the respondent result while  $(v > \mu)$  is always a positive result, and the PTNA node parameter will be accepted as a yes result. In this case, the yes node result will not be in pruning, while no node will result in pruning mode. The other parameter is  $(QoE < MOS)$ , where MOS is considered higher than QoE for the better node accepted. Then otherwise, it will be pruned eventually. After the PTNA is executed for the analysis results, the next stage is to determine whether the PTNA and  $\sum f$ ,  $\sum r$ , and  $\sum s$  comparison can be matched into several outputs; then, the result from these results will be discussed based on the case-based study and the possible real-time scenario setup.

b.  $\sum PTNA$  and Analysis Results

The result for  $\sum f$ ,  $\sum r$ ,  $\sum s$ , and PTNA can be derived from the  $\sum f \mu_{\beta}$ ,  $\sum r \mu_{\beta}$ , and  $\sum s \mu_{\beta}$ . The first  $f_i$  description shows the respondent's results  $\sum f_{\beta(m)}$  and  $\sum f_{\beta(n)}$  in Figure 4.

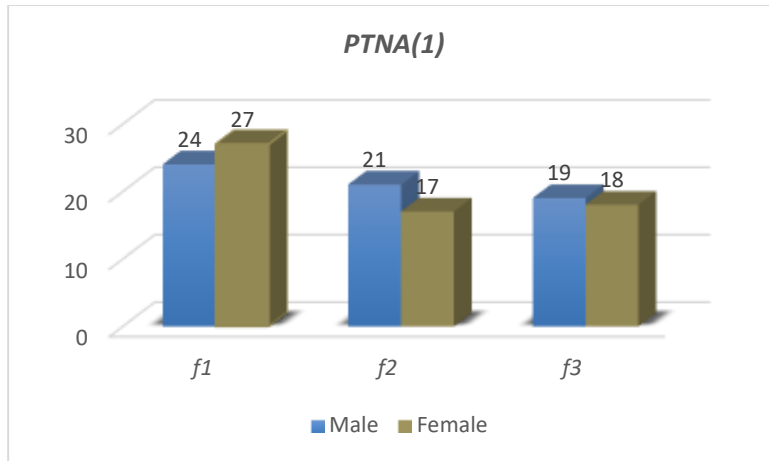


Figure 4: *PTNA* compare with  $\sum f$  results e

The first result  $\sum f_{\beta(m)}$  is 24 male respondents, and  $\sum f_{\beta(f)}$  is 27 female respondents with a baseline of 1.9 MOS result. Both genders agree that  $f_1$  was the major problem for the tahfiz center issue. Next is the  $f_2 \sum f_{\beta(m)}$  result with the 21 male respondents and  $f_2 \sum f_{\beta(f)}$  17 female respondents with

a baseline of 2.1 MOS result. The third  $f_3 \sum f_{\beta(m)}$  result with 19 male respondents and  $f_3 \sum f_{\beta(f)}$  18 female respondents with a baseline of 2.3 MOS result. The following  $\sum r$  and *PTNA*(2) first  $r_1$  can be described in the respondent's results  $\sum r_{\beta(m)}$  and  $\sum r_{\beta(f)}$  in Figure 5.

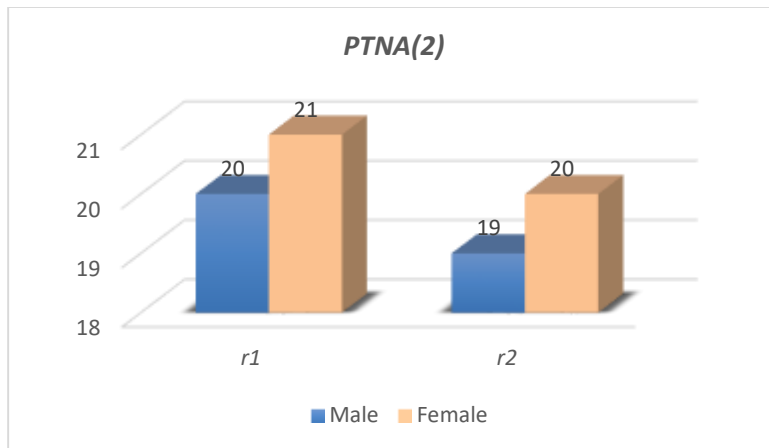


Figure 5: *PTNA*(2) compare with  $\sum f$  results

The first result  $\sum r_{\beta(m)}$  is 20 male respondents, and  $\sum r_{\beta(f)}$  is 21 female respondents with a baseline of 2.7 MOS result. Next is the  $r_2 \sum r_{\beta(m)}$  result with the 19 male respondents and  $r_2 \sum r_{\beta(f)}$  20 female respondents with a baseline of 3.6 MOS result. The total results show the average for both parties, male and female respondents. The last  $\sum s$  and *PTNA*(3) first  $s_1$  can be described in the respondent's results  $\sum s_{\beta(m)}$  and  $\sum s_{\beta(f)}$  in Fig. 6.



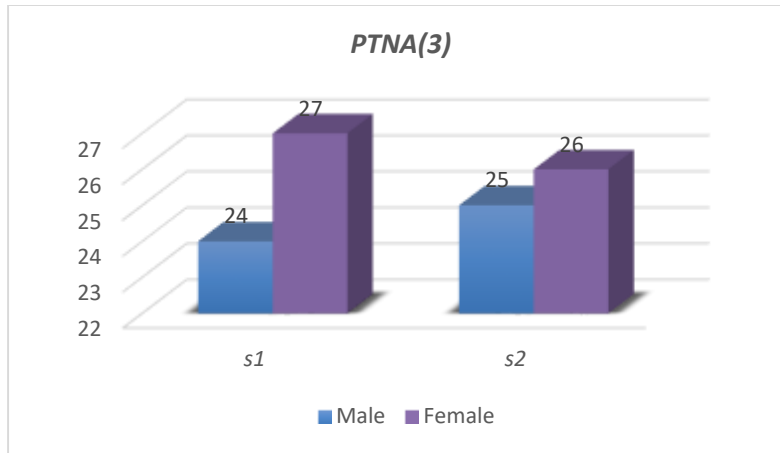


Figure 6: PTNA(3) compare with  $\sum f$  results

The first result  $\sum s_{\beta(m)}$  is 24 male respondents, and  $\sum s_{\beta(f)}$  is 27 female respondents with a baseline of 3.2 MOS result. The second result is the  $s_2 \sum s_{\beta(m)}$  result with the 25 male respondents and  $s_2 \sum s_{\beta(f)}$  26 female respondents with a baseline of 3.1 MOS result. The total results show the average for both parties, male and female respondents. After the final result of PTNA  $\sum f$ ,  $\sum r$  and  $\sum s$  are obtained, the next phase is to determine the analysis of *QoE* and MOS.

c. PTNA Versus MOS in *QoE* Analysis

In this phase, the analysis of the IM-Tahfiz model related to PTNA requirements is for reliability in *QoE* and MOS. MOS scale will be used for the comparison finding. The results of these elements are presented in Figure 7.

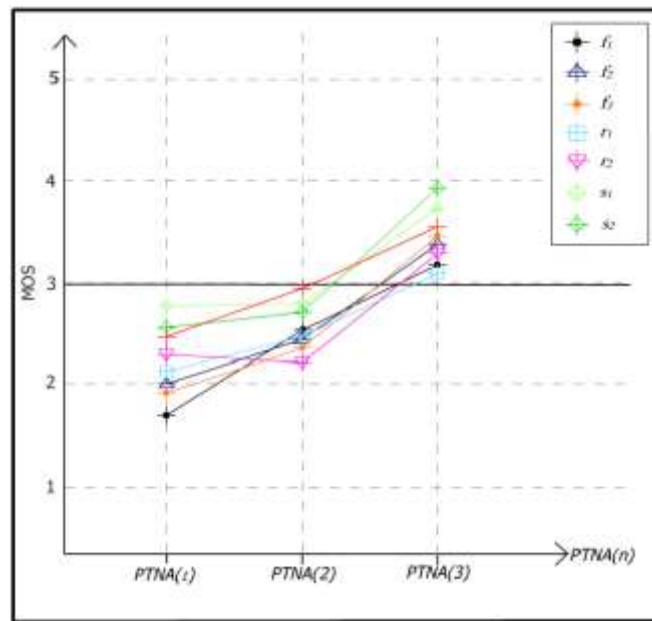


Figure 7: PTNA vs MOS in *QoE* Analysis Results

The baseline of MOS can be determined as the median acceptance level. This will be set in 3 values. Relatively, the upper side of level 3 is acceptable for the acceptable result, while lower 3 is the negative result. As we can see from the results. Low-value group running with the calculation of  $\sum PTNA = \sum \left( \frac{\sum f \beta(m) + \sum f \beta(f)}{\sum f} \right) +$

$\frac{\sum r\beta(m)+\sum r\beta(f)}{\sum r} + \frac{\sum s\beta(m)+\sum s\beta(f)}{\sum s}$ ) the maximum value for this calculation  $\sum f\mu_{\beta} = \{f_1+f_2+f_3\}$  the first result for low-value group *PTNA(1)* with below 3 area (2.3 MOS value). The second mid-value group with the maximum value for this calculation  $\sum r\mu_{\beta} = \{r_1+r_2\}$  the second result for mid-value group *PTNA(2)* with average 3 area (2.7-3.1 MOS value). The third upper-value group with the maximum value for this calculation  $\sum s\mu_{\beta} = \{s_1+s_2\}$  the result for upper-value group *PTNA(3)* with an average 3 area (3.1-3.6 MOS value).

d. *Possible Real-Time Scenario IM-Tahfiz Model*

There are many possibilities that the final results show the potential of *PTNA* results as they were. Between *PTNA(1)*, *PTNA(2)*, and *PTNA(3)*, the result from *PTNA(1)*, seem to give significant issues since *PTNA(1)* is directly from the financial point of view. This is because a majority of respondents result from the donations or funds from the community, authorities, corporations, and individuals can no longer be given as they did before the pandemic. The burden is further compounded by some parents who cannot pay tuition fees but continue their children's studies at the institution. In addition, the financial problem will lead to *PTNA(2)* and *PTNA(3)* in general. The relationship is mainly on *PTNA(1)*.

The *PTNA(2)* result shows a MOS value of 2.7-3.1 MOS value where the main issue is resources are not sufficient overall. Through data sources issued by the Islamic Religious Department of Malaysia (JAKIM), there are more than 278 tahfiz educational institutions in Malaysia involving 14 government-owned and the remaining 254 privately owned registered under JAKIM, and the number is increasing every year. This is a similar number to the respondent result of *PTNA(2)*. In *PTNA(2)*, the central issue is the consent of the government's miscommunication with the tahfiz center. Government-owned tahfiz institutions the federal or state governments are seen as unable to accommodate requests from parents who are interested in sending their children to the field of tahfiz, then private tahfiz centers are the choice. Therefore, the empowerment of unregistered private tahfiz centers is seen as very significant. There is a need nowadays so that the standards set by the government can be met in line with the Education Policy National Tahfiz (DPTN). Tahfiz institutions face several challenges to continue their survival which is the challenge of modernization, technology, and certification. This issue is related to this paper since Education 4.0 is essential nowadays. Therefore, he proposed several suggestions to strengthen and empower tahfiz institutions, namely (i) Registering all tahfiz institutions, (ii) Coordination of Curriculum, (iii) Creating a standard Tahfiz Certificate, and (iv) Introducing skills programs. Among the fields that can be introduced and offered are entrepreneurship, management, tourism, and commercial agriculture.

The third element is *PTNA(3)*, related to the staffing issue and human resources. Starting with weak tahfiz education management ultimately leads to the inconsistency of the curriculum and teaching methods standard in the tahfiz center (Mardhiah *et al.*, 2018). Azmil (2014) viewpoint that the reason for the traditional teaching method's weakness in the tahfiz teaching procedure to some teachers did not cooperate due to this matter. This can be an impediment to the systematic teaching and learning process in tahfiz when the tahfiz instructor himself does not have the proper specialist skills and certificate in tahfiz college to teach pupils in the tahfiz center.

## CONCLUSION

Based on this study, we conclude that all the tahfiz-related stakeholders in this education must be aware. It is such a loss if a decrease in motivation demotivates the students from memorizing due to various problems or issues not being in the circle of the environment. Shukri & Razak (2020) said the latest study by their findings highlights among the external motivational factors that help them in strengthening the memorization of the Quran is the atmosphere of the tahfiz center. The need for children who memorize the Qur'an is to get something conducive to atmosphere and environment to increase their motivation, then become an injection of enthusiasm to dignify the quality of tahfiz education.

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