

Nasyid Competition Assessment Using Fuzzy Evaluation Method

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HIGHLIGHTS

- The Fuzzy evaluation method was used to evaluate the nasyid competition.
- The primary data was collected from nasyid competition in Kedah.
- This study evaluates a participant's performance based on several factors, including Voice, Music, Lyrics, and Performance.

ABSTRACT

The nasyid competition evaluates a participant's performance based on several factors, including Voice, Music, Lyrics, and Performance. Participants in the nasyid competition are usually assigned a point value of 100, with each point representing a linguistic word such as "Perfect", "Spectacular", "Very Good" and so on. Evaluating participant performance is especially difficult because it involves human decision-making, which is imprecise, ambiguous, and unpredictable. This study employs the fuzzy evaluation method to assess participant performance at a nasyid competition held in Kedah. In this manner, the membership function graph was used to determine the membership value of each satisfaction level. When fuzzy numbers are used, the fuzzy markings are created more consistently. The satisfaction level of each participant's mark would then be computed. In the end, the fuzzy markings with linguistic value would be obtained. The proposed assessment method has a bright future in evaluating those participants' performance because it provides an alternative approach to assessing performance.

Keywords: Fuzzy evaluation method, membership function, satisfaction level, nasyid competition

INTRODUCTION

The word nasyid is derived from the term ansyada, which means poetic melodies (Adil Johan, Mayco A. Santaella, 2021). The term ansyada also means to recite poetry and is connected to singing. When the Prophet Muhammad initially travelled from Mecca to Medina, the people of Medina greeted him with a nasyid. Nasyid is presently a type of Islamic devotional music with lyrics praising Allah or embracing other religious concepts such as universal love, good morals, or Islamic solidarity (Beng, 2007). They also campaigned for Islamic values and practices. The tunes were either sung a cappella or with frame drums such as the rebana or kompang accompanying them. Nasyid was already conducted organically by Islamic teachers and pupils in Malaysia at the end of World War II as a diversion during Quran reading sessions



(Azniwati Abdul Aziz, Mohamed Akhiruddin Ibrahim, Mohammad Hikmat Shaker, Azlina Mohamed Nor, 2016). The Arabic language was first utilized, but Malay gradually took its place. Hence, it is easier to understand the meaning of the songs and more relatable for its audience.

Accompanied by musical instruments, nasyid undeniably became a popular medium for dakwah, meaning to preach in many mosques and religious events (Weintraub, 2011). Dakwah organizations like Darul Arqam promoted nasyid in the 1980s through live concerts by allied musical groups like Nada Murni and The Zikr. These non-profit organizations improved nasyid by including percussion instruments and releasing their cassettes at Darul Arqam's cultural festivals. In the 1990s, the Prime Minister's Council's Islamic Affairs Ministry commissioned a plan to develop a modern age nasyid. This was in line with Dr. Mahathir Mohamed's new modernization narrative, Vision 2020, which he formulated at the time. In parallel to Vision 2020, Malaysia's road to modernization, psychological, religious, and ethical consciousness seem possible (Rafikul Islam, Yusof Ismail, 2011) & (Nur Azura Sanusi, Normi Azura Ghazali, 2014).

Islam plays an important role in accomplishing that vision. With influences from Darul Arqam's Nada Murni and post-modern nasyid, a new commercial version of nasyid called pop nasyid has emerged in Malaysia (Rahman Arifai, Ishak Saat, 2021). With the publication of their debut album Puji-Pujian, Raihan, the pioneer of commercial pop nasyid, soared to popularity. Since Raihan, several nasyid pop acts have emerged in Malaysia. Some of the most well-known groups include Hijjaz, Rabbani, In-Team, Waheeda, Mawi, Ramli Sarip, and many others. School children are developing their bands as a response to the influence of pop nasyid. The Ministry of Education Malaysia (MOE) also organizes nasyid tournaments for public schools to compete in, to promote nasyid principles among students. The ministry organizes nasyid competitions at all levels of education, including primary, secondary, and higher education at public universities. This study is eager to investigate a method of evaluating nasyid participant performance efficiently by adapting a fuzzy approach technique.

METHODOLOGY

In the methodology, we will discuss how the fuzzy approach will be adapted to the evaluation process.

Step 1: Normalizing the marks

Table 1 shows the sample of normalized value calculated by using equation (1) as follows.

$$\text{Normalized value}(NV) = \frac{\text{Marks obtained (MO)}}{\text{Total marks (TM)}} \quad (1)$$

Table 1: The normalized value for each criterion in the nasyid competition

CRITERIA	TOTAL MARK	MARK OBTAINED	NORMALIZED VALUE
Voice	40	29	0.73
Music	30	28	0.93
Lyrics	20	16	0.8
Performance	10	9	0.9

Step 2: Develop the graph of the fuzzy membership function.



To perform the fuzzification process, the membership feature graph is developed as shown in Figure 1. In this step, the input value is transferred to the membership graph function to obtain the fuzzy membership value of the corresponding particular input value.

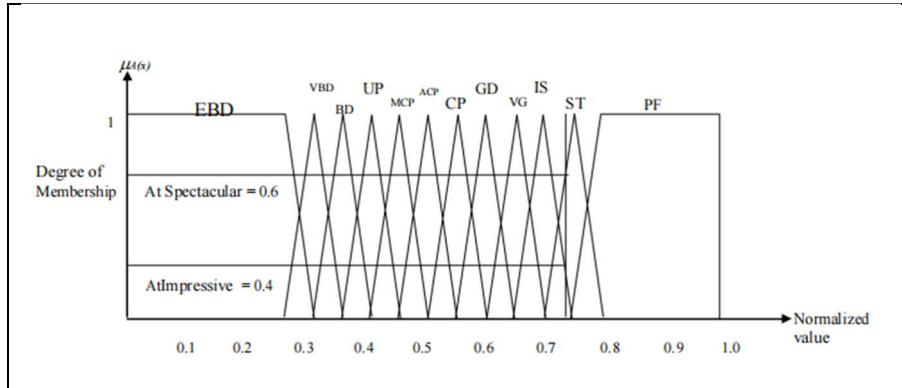


Figure 1: Membership function graph for satisfaction level of nasyid competition

Table 2 shows twelve degrees of satisfaction suggested by Daud et.al, 2011. The set of marks for each level of satisfaction is reflected by the degrees of satisfaction. The highest level of satisfaction is determined by the mapping function for the appropriate satisfaction standard, which is indicated by $T(X_i)$, where $T(X_i)$ is 0 to 1.

Table 2: Satisfaction levels and the corresponding degrees of satisfaction

SATISFACTION LEVEL (X_i)	DEGREES OF SATISFACTION	MAXIMUM DEGREE OF SATISFACTION $T(X_i)$
Perfect (PF)	80%-100% (0.8-1.0)	1
Spectacular (ST)	75%-79% (0.75-0.79)	0.79
Impressive (IS)	70%-74% (0.7-0.74)	0.74
Very Good (VG)	65%-69% (0.65-0.69)	0.69
Good (GD)	60%-64% (0.6-0.64)	0.64
Competent (CP)	55%-59% (0.55-0.64)	0.59
Almost Competent (ACP)	50%-54% (0.5-0.54)	0.54
Marginally Competent (MCP)	45%-49% (0.45-0.49)	0.49
Unpleasant (UP)	40%-44% (0.4-0.44)	0.44
Bad (BD)	35%-39% (0.35-0.39)	0.39
Very Bad (VBD)	30%-34% (0.3-0.34)	0.34
Extremely Bad (EBD)	0-29% (0-0.29)	0.29

Step 3: Calculating the degree of satisfaction

In this step, the degree of satisfaction which is denoted by $D(C_i)$ is evaluated by:

$$\text{Degree of satisfaction } D(C_i) = \frac{y_1(Tx_1)+y_2(Tx_2)\dots y_{12}T(x_{12})}{y_1+y_2+\dots y_{12}} \quad (2)$$

where y = degree of membership value and $T(X)$ = the maximum degree of satisfaction



Step 4: Evaluating the Final mark

For the final step, the final scores or marks are calculated using the equation (3) and will be presented in Table 3:

$$F(S_k) = \frac{w_1D(C_1)+w_2D(C_2)+w_3D(C_3)+w_4D(C_4)}{w_1+w_2+w_3+w_4} \quad (3)$$

where w is the sum of marks that reflects the number of criteria.

Table 3: Fuzzy grade sheet

NO.	CRITERIA	FUZZY MEMBERSHIP VALUE											DEGREE OF SATISFACTION	FINAL MARK	
		EBD	VBD	BD	UP	MCP	ACP	CP	GD	VG	IS	ST			PF
1	C1													D(C1)	F(S1)
	C2													D(C2)	
	C3													D(C3)	
	C4													D(C4)	

FINDINGS AND DISCUSSIONS

The scores obtained from each school participant would be normalized and used as an input value for this evaluation as shown in Table 4. We must divide the overall maximum mark by the mark received from each criterion.

Table 4: Samples of normalized value for nasyid competition

No.	School	Criteria	Total Marks	Marks Obtained	Normalized Value
1	SK SUNGAI LAYAR	VOICE	40	28	0.7
		MUSIC	30	27	0.9
		LYRICS	20	18	0.9
		PERFORMANCE	10	8	0.8
2	SK TELOK WANG	VOICE	40	27	0.68
		MUSIC	30	26	0.87
		LYRICS	20	13	0.65
		PERFORMANCE	10	8	0.8
3	SK PINANG TUNGGAL	VOICE	40	29	0.73
		MUSIC	30	28	0.93
		LYRICS	20	16	0.8
		PERFORMANCE	10	9	0.9
4	SK IBRAHIM	VOICE	40	31	0.78
		MUSIC	30	25	0.83



		LYRICS	20	18	0.9
		PERFORMANCE	10	10	1

Figure 1 represents the satisfaction levels of impressive and spectacular, which reflect the degree of membership for a normalized value of 0.73 from the first criteria for SK Pinang Tunggal. The samples for the degree of satisfaction and final marks are calculated as follows using equations (2) and (3).

Table 5: Samples of calculation for the degree of satisfaction and final score for each participant

1	SK SUNGAI LAYAR			
D(C ₁)	$\frac{(0.2)(0.79)+(0.8)(0.74)}{0.2+0.8} = 0.75$	F(S ₁)	$\frac{(40)(0.75)+(30)(1.00)+(20)(1.00)+(10)(1.00)}{100} = 0.900$	
D(C ₂)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₃)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₄)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
2	SK TELOK WANG			
D(C ₁)	$\frac{(0.2)(0.69)+(0.8)(0.74)}{0.2+0.8} = 0.73$	F(S ₂)	$\frac{(40)(0.73)+(30)(1.00)+(20)(0.70)+(10)(1.00)}{100} = 0.832$	
D(C ₂)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₃)	$\frac{(0.2)(0.74)+(0.8)(0.69)}{0.2+0.8} = 0.70$			
D(C ₄)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
3	SK PINANG TUNGGAL			
D(C ₁)	$\frac{(0.2)(0.74)+(0.8)(0.79)}{0.2+0.8} = 0.78$	F(S ₃)	$\frac{(40)(0.78)+(30)(1.00)+(20)(1.00)+(10)(1.00)}{100} = 0.912$	
D(C ₂)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₃)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₄)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
4	SK IBRAHIM			
D(C ₁)	$\frac{(0.2)(0.79)+(0.8)(1.00)}{0.2+0.8} = 0.96$	F(S ₄)	$\frac{(40)(0.96)+(30)(1.00)+(20)(1.00)+(10)(1.00)}{100} = 0.984$	
D(C ₂)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₃)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			
D(C ₄)	$\frac{(1.0)(1.00)+(0)(1.00)}{1.0+0} = 1.00$			

Based on the final mark, the participant from SK Pinang Tunggal is assigned a fuzzy linguistic term of perfect at 1.0 (PF = 1.00). This figure is taken from the graph of the membership function.

Table 6: Result of fuzzy grade sheet

No	Criteria	Fuzzy Membership Value											Degree of Satisfaction	Final Mark	
		EBD	VBD	BD	UP	MCP	ACP	CP	GD	VG	IS	ST			PF
1	Voice	-	-	-	-	-	-	-	-	-	-	0.2	0.8	0.75	0.9
	Music	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Lyrics	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Performance	-	-	-	-	-	-	-	-	-	-	-	1	1	
2	Voice	-	-	-	-	-	-	-	-	-	0.2	0.8	-	0.73	0.832



	Music	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Lyrics	-	-	-	-	-	-	-	-	-	0.2	0.8	-	0.7	
	Performance	-	-	-	-	-	-	-	-	-	-	-	1	1	
3	Voice	-	-	-	-	-	-	-	-	-	0.2	0.8	-	0.78	0.912
	Music	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Lyrics	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Performance	-	-	-	-	-	-	-	-	-	-	-	1	1	
4	Voice	-	-	-	-	-	-	-	-	-	0.2	0.8	-	0.96	0.984
	Music	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Lyrics	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Performance	-	-	-	-	-	-	-	-	-	-	-	1	1	

The final comparison section will provide a performance study of the results produced using the fuzzy and non-fuzzy evaluation methods. Table 7 displays the results of both approaches for 16 competitors of various schools during the nasyid competition in Kedah for the year 2015.

Table 7: Results for 16 participants of the nasyid competition obtained from the fuzzy and non-fuzzy method

School	Non-Fuzzy Method		Fuzzy Evaluation Method	
	Final Mark	Linguistic Term	Final Mark	Linguistic Term
1	81	Perfect	0.9	Perfect at 1.0
2	74	Impressive	0.832	Perfect at 1.0
3	82	Perfect	0.912	Perfect at 1.0
4	84	Perfect	0.984	Perfect at 1.0
5	78	Spectacular	0.89	Perfect at 1.0
6	86	Perfect	1	Perfect at 1.0
7	68	Very Good	0.79	Perfect at 1.0
8	65	Very Good	0.712	Spectacular 0.4, Impressive at 0.6
9	80	Perfect	0.892	Perfect at 1.0
10	77	Spectacular	0.818	Perfect at 1.0
11	80	Perfect	0.912	Perfect at 1.0
12	78	Spectacular	0.877	Perfect at 1.0
13	68	Very Good	0.805	Perfect at 1.0
14	69	Very Good	0.755	Perfect at 0.2, Spectacular at 0.8
15	78	Spectacular	0.878	Perfect at 1.0
16	77	Spectacular	0.872	Perfect at 1.0

CONCLUSION AND RECOMMENDATIONS

In conclusion, an evaluation is essential to provide a greater understanding of how well one's performance is and helps to determine what works well and can be improved (Aziz et al., 2021). This study shows that the fuzzy approach with the help of the membership function graph and the fuzzy grade sheet as an alternative evaluation score to determine a result for nasyid competition. Previously, the commonly used



method for obtaining the discussed competition's scores was unsatisfactory as a result would be ambiguous and debatable amongst competitors, leaving the judges displeased. Moreover, the use of linguistic terms on the membership function graph is practical for judges to refer to when providing constructive feedback for each performance as it is straightforward and explainable. Consequently, it motivates competitors to work harder to achieve the highest level of performance while also competing with other rivals in future competition.

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CONFLICT OF INTEREST DISCLOSURE

The authors declared that they have no conflicts of interest to disclose.

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