

The analysis mentioned above is caused by different amounts of terms, which became a unique term for each K, and resulted in diverse data distribution.

B. Second Scenario: Stemming

In the second scenario, preprocessing was done with three schemas, which are classification with stemming, without stemming, and with stemming modification. The stemming method was based on *Sastrawi's* model (Indonesia's Stemming Model). This scenario was run to measure the performance of Stemming itself. Stemming modification eliminated some rules that exist in the stemming model itself. This was done to prove the extent of the effect of the affixes on the word and system performance. The results obtained are presented in Table 2.

TABLE II
THE RESULT OF CLASSIFICATION WITH STEMMING DIFFERENTIATOR

Stemming	K-Fold	F1 Macro Precision	F1 Macro Recall	F1 Macro Score	Max F1 Macro Score (%)
With Stemming	1	0.7956	0.7935	0.7946	80.92
	2	0.7998	0.8058	0.8027	
	3	0.7546	0.7550	0.7550	
	4	0.8094	0.8089	0.8092	
	5	0.7607	0.7681	0.7643	
No Stemming	1	0.8269	0.8218	0.8243	84.64
	2	0.8339	0.8592	0.8464	
	3	0.7935	0.7899	0.7917	
	4	0.8290	0.8493	0.8391	
	5	0.8034	0.8002	0.8018	
Stemming Modification	1	0.8191	0.8192	0.8192	81.92
	2	0.7998	0.8057	0.8027	
	3	0.7741	0.7667	0.7703	
	4	0.7967	0.7965	0.7966	
	5	0.7574	0.7640	0.7607	

Rules of stemming and could therefore improve performance. Based on this result, most of the words cannot be the same as its basic word. It is important to therefore conduct the feature classification process carefully.

IV. CONCLUSION

Based on the results of this research, the following conclusions are derived: The Back Propagation Neural Network classification method has been proven to work well for hadith text classification, yielding a maximum F1-Score of 84.63%. The stemming process was carried out based on the literature but the results were not as good as the process without stemming. This was because there were several words

that if transformed into other words would change the meaning of the particular *hadith* and would eliminate some information from the words. This is proven from the process of Stemming Modification. Stemming modification obtained better performance than when using Full Stemming.

The evaluation process used K-Fold with K = 5. Each fold experienced changes that fluctuated quite a bit. Therefore, the use of K-Fold greatly affected the maximum results of the implementation process. All paragraphs must be justified alignment. With justified alignment, both sides of the paragraph are straight.

It is quite possible to further develop the system used today. Other feature selection methods should be explored, so that the terms obtained are more varied. SVM, Bayesian, and Decision Tree methods could affect the results obtained. The dataset that was also, and is still in use, is 1600 of the total Bukhari Hadith that numbers 7000 Hadith. Big data could affect the quality of the model produced during the training process.

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