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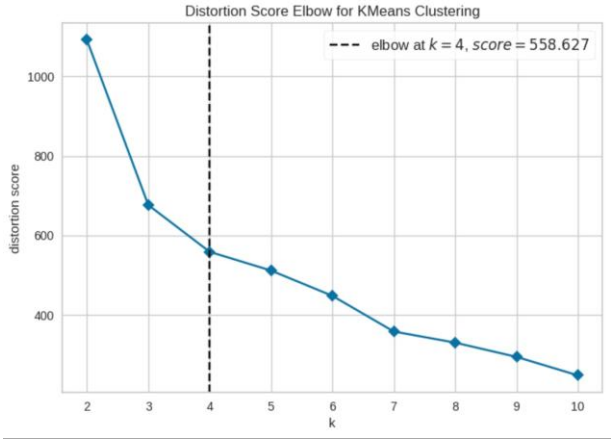
Clustering Assignment

Dataset used - Seeds Dataset

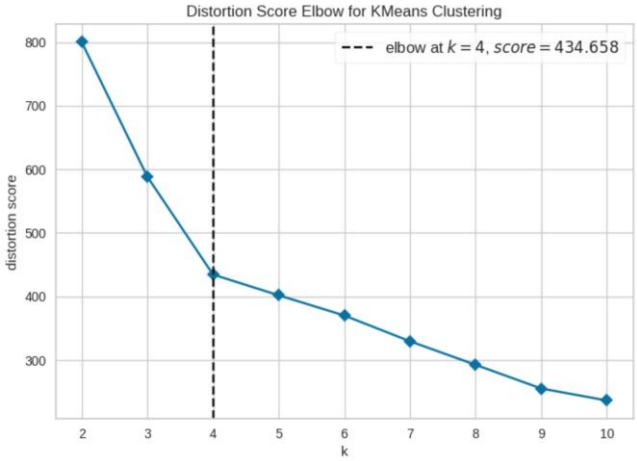
KMeans

	Using KMeans Clustering																	
Parameters	**No Data Processing**			**Using Normalization**			**Using Transform**			**Using PCA**			**Using T+N**			**T+N+PCA**		
	C=3	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**
Silhouettee	0.4540	0.3962	0.4021	0.3991	0.3326	0.2779	0.5198	0.5343	0.502	0.4572	0.4042	4021	0.3960	0.3173	0.2780	0.3960	0.3280	0.2572
Calinski-Harabasz	324.495	245.880	237.81	213.5749	168.7474	137.363	488.6652	653.3190	606.1324	324.37	275.4213	237.8020	196.5351	152.9984	127.1048	196.5351	179.2579	58.8120
Davies-Bouldin	0.789	1.0350	0.8625	0.9647	1.3136	1.4062	0.5032	0.5414	0.5659	0.7981	0.8602	0.8625	0.9848	1.2858	1.2895	0.9483	1.1101	1.2872

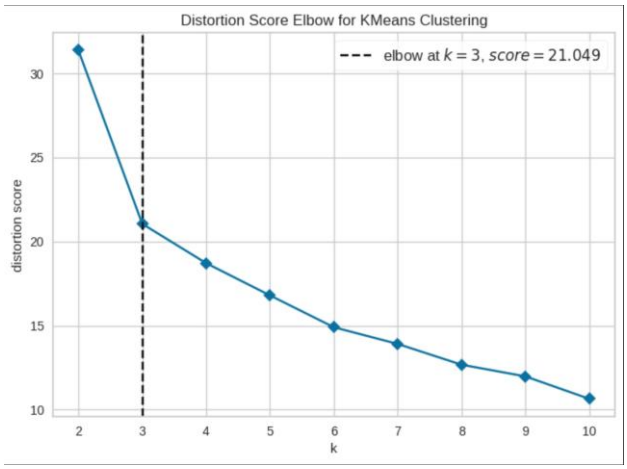
For No Data Processing



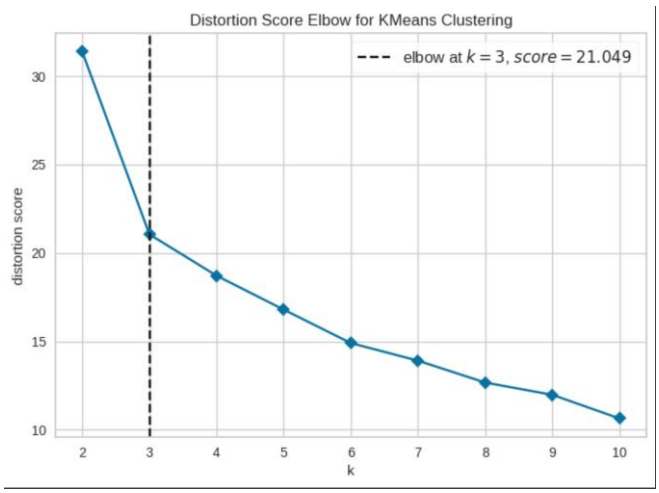
For Using Normalisation



For Using T+N



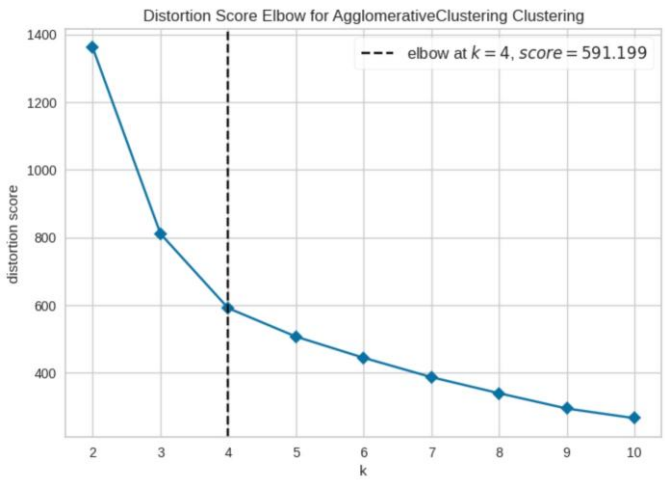
For Using T+N+PCA



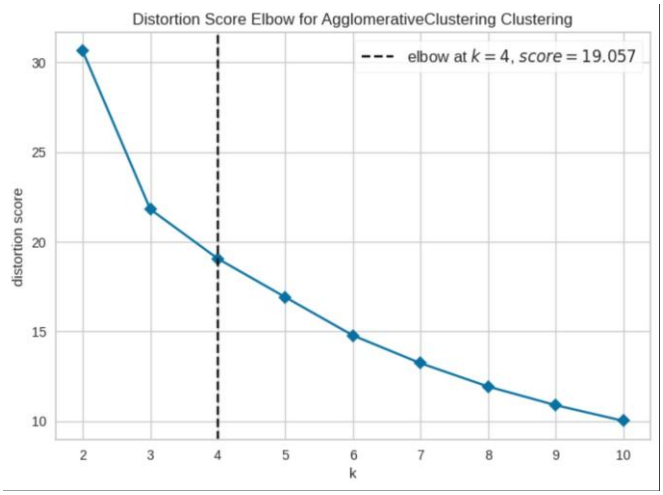
Hierarchical Clustering

	Using Hierichal Clustering																	
Parameters	**No Data Processing**			**Using Normalization**			**Using Transform**			**Using PCA**			**Using T+N**			**T+N+PCA**		
	C=3	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**
Silhouettee	0.5064	0.5169	0.4994	0.3737	0.3755	0.2961	0.5064	0.5129	0.4994	0.4066	0.3914	0.3734	0.3822	0.3870	0.3590	0.3822	0.3870	0.3590
Calinski-Harabasz	438.9554	608.5274	630.6559	189.7498	154.0536	136.1257	438.9552	608.5274	630.6559	253.3361	256.1087	231.3250	188.0839	149.23292	125.584	188.0304	149.232	125.5824
Davies-Bouldin	0.5312	0.5506	0.5332	1.0376	0.9478	1.0402	0.5312	0.5506	0.5332	0.8383	0.9231	0.9811	1.036	1.3004	1.0750	1.0136	1.3004	1.0750

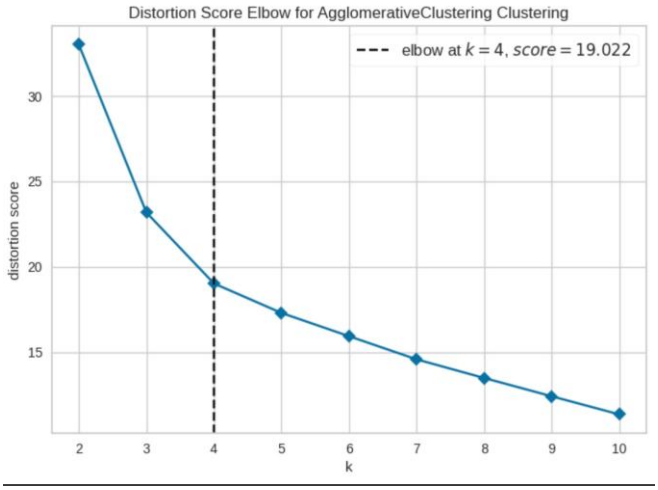
For No Data Processing



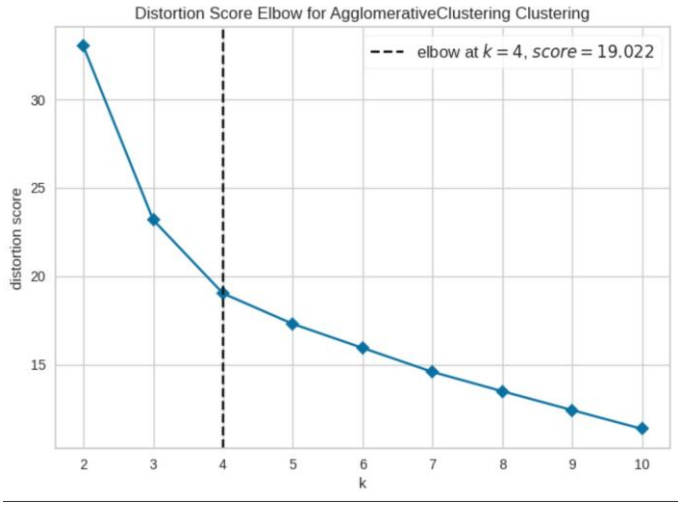
For Using Normalisation



For Using T+N



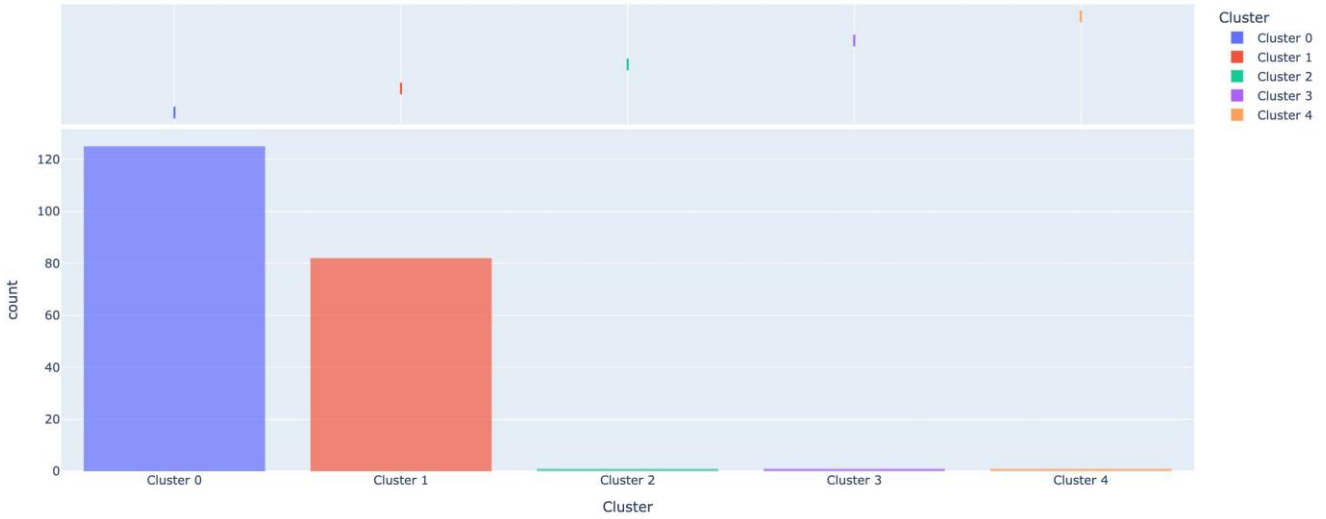
For Using T+N+PCA



KMeans Shi< Clustering

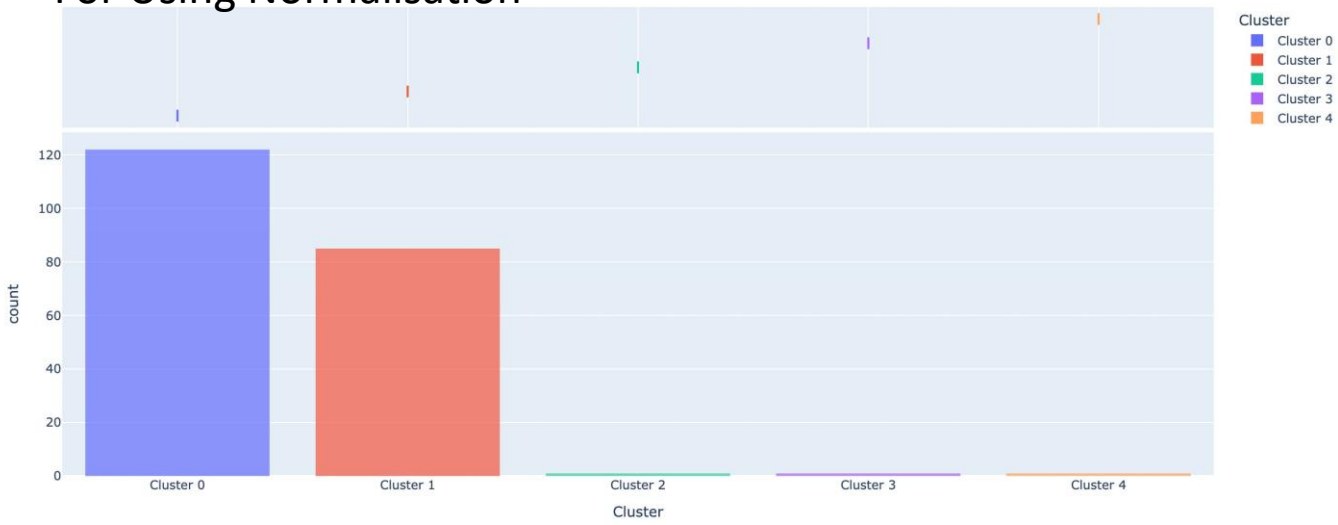
	Using KMean Shift Clustering																	
Parameters	**No Data Processing**			**Using Normalization**			**Using Transform**			**Using PCA**			**Using T+N**			**T+N+PCA**		
	C=3	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**	**C=3**	**C=4**	**C=5**
Silhouettee	0.4401	0.4401	0.4401	0.4505	0.4505	0.4505	0	0	0	0.4724	0.4724	0.4724	0.3997	0.3997	0.3997	0.4115	0.4115	0.4115
Calinski-Harabasz	93.4796	93.4796	93.4796	74.0335	74.0335	74.0335	0	0	0	93.4795	93.4795	93.4795	55.7264	55.7264	55.7264	62.2176	62.2176	62.2176
Davies-Bouldin	0.4805	0.4805	0.4805	0.4979	0.4979	0.4979	0	0	0	0.4805	0.4805	0.4805	0.5739	0.5739	0.5739	0.5382	0.5382	0.5382

For No Data Processing

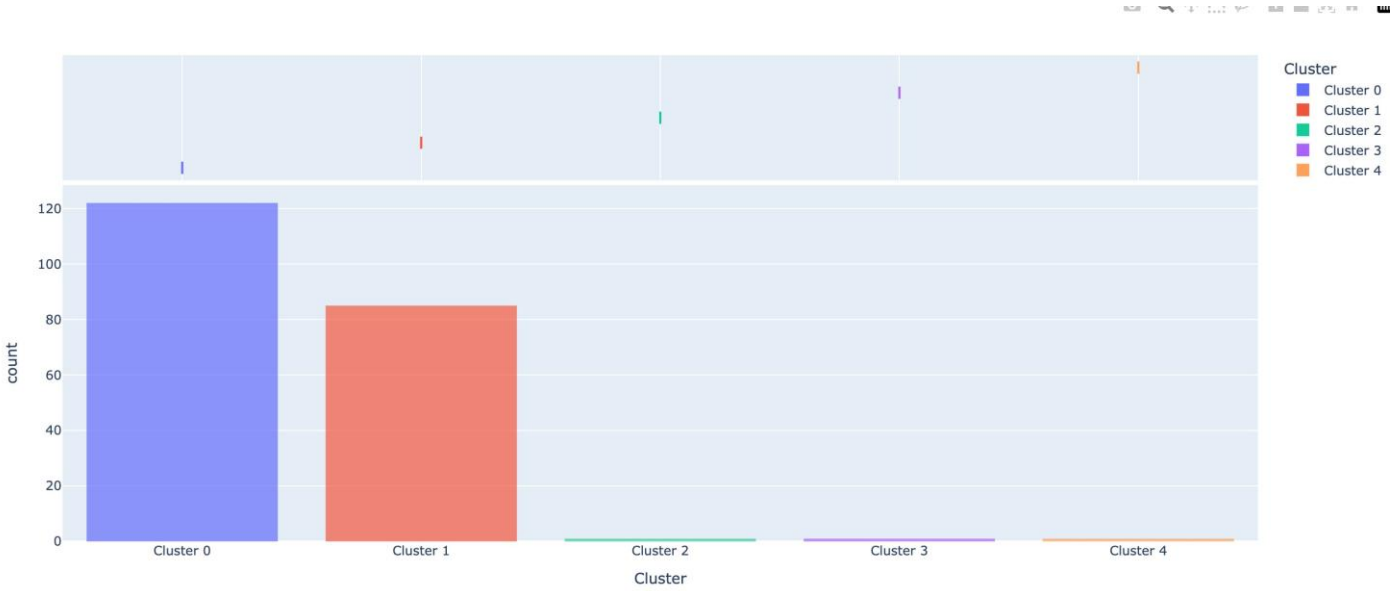


For Using Normalization

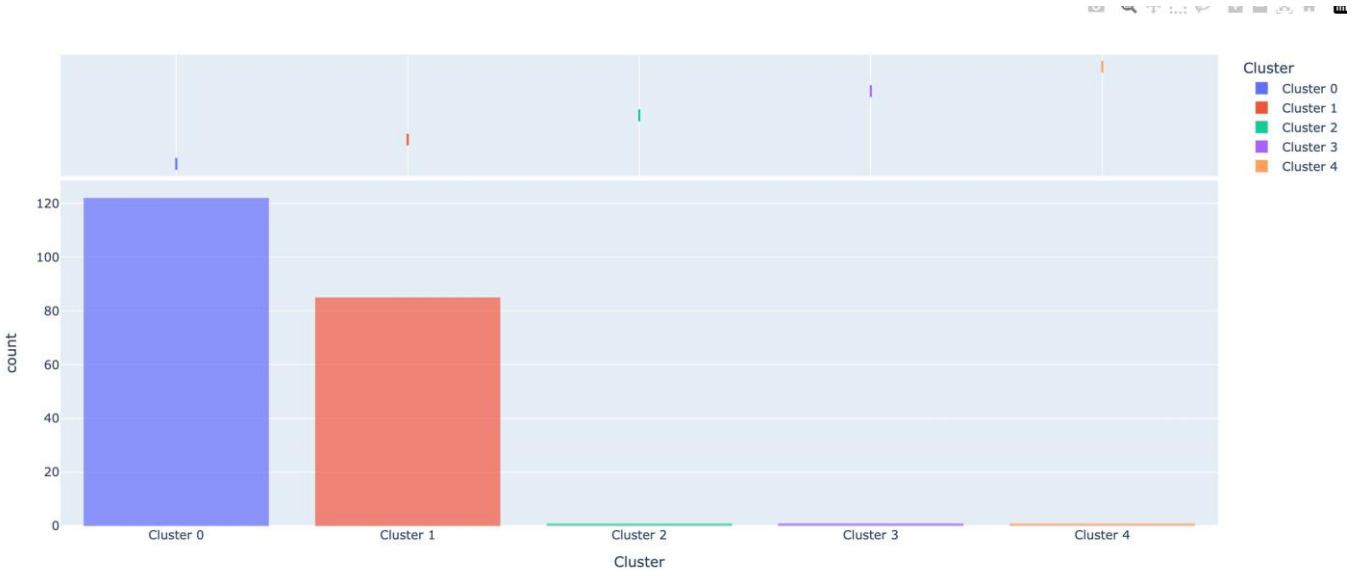
For Using Normalisation



For Using T+N



For Using T+N+PCA



Conclusion:-

K-Means provided a good balance of efficiency and performance with preprocessing, while Hierarchical clustering needed normalization for better results. K-Means Shift offered flexibility with raw data but at a computational cost. Overall, the choice depends on the specific dataset and computational resources, but K-Means with preprocessing appeared to be the most consistent in terms of performance.