#	Feature Name	Description	Type	Overall Average	Cluster 1	Cluster 2	Cluster 3
1	Durum	Contains Müspet, Uyarı and Menfi	Nominal	1379.33	757	1218	2163

Table 1: First 4138 complaints clustered by k-mean algorithm with k=3
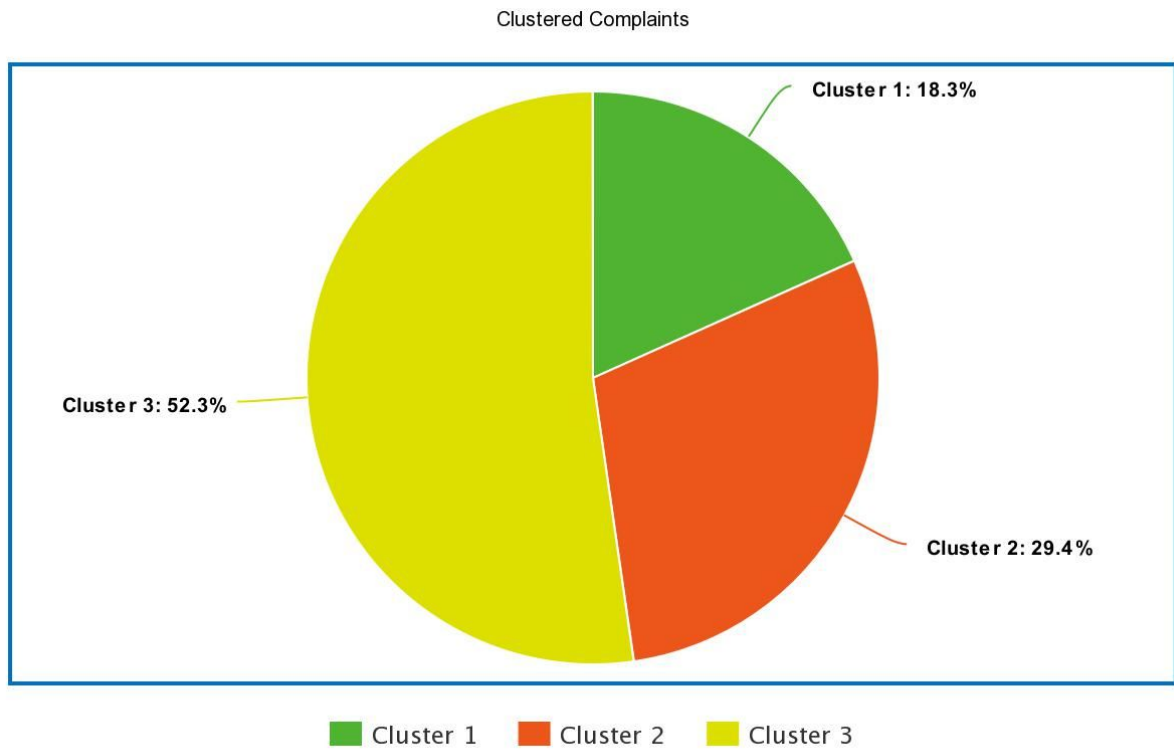
Clustered Complaints

Figure 1: Pie chart of complaints in 3 cluster with percentages

Clustering Experiment	# of Clusters	average number of instances in clusters	Standard Deviation	Sum of squared error	Distortion
1	k=2	2069	1197.53	4302242.66	0.1553
2	k=3	1379.33	585.22	1027460.66	0.0970
3	k=4	1034.5	210.93	133480.66	0.0750
4	k=5	827.6	389.47	455060.66	0.0566
5	k=6	689.66	462.54	641844.66	0.0437

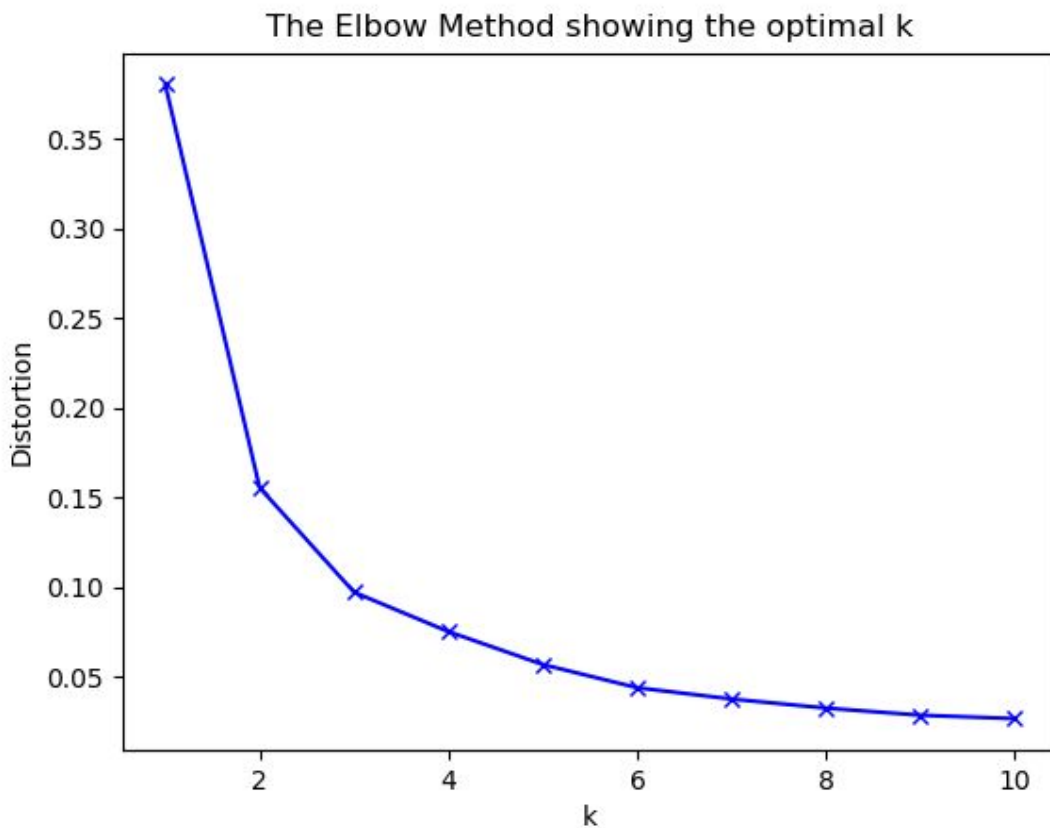Table 2: Clustering experiments with different k values

Figure 2: Different k values with their distorsions

Results

   In this experiment we use k-mean algorithm for clustering the sentences that already clustered by humans. To determine the ideal k value ,i.e. number of clusters, we test clustering algorithm with different k values then plot them with their distortion values that calculated with distortion function. When k value increases, the centroids are closer to the clusters centroids. At some point, the improvements will drop rapidly, forming the shape of the elbow and that point is the optimal value for k and this value is 3-4 which is very similar to real number of classes which are müspet,menfi and uyarı.