hamam				
Sed kalefa	4600	2199	1196	3%
Suq khamis	20000	4087	913	2%
Sahel	6105	3177	806	2%
Gogas	2300	737	1046	3%
Keam	7700	1702	880	2%

Table 8. Demonstrate the deaths rate among people.

As a result of the previous table, we will apply the KNN algorithm, which requires calculating the distance using the previous law on the two variables (x1, x2) on the class of the value of "Ganema" which it was unknown previously. The following table represents the distance measures of the deaths.

Mahalla	**Population**	**Adult deaths**	**Young deaths**	**Rate of decreasing %**	**Class**	**Distance**
Baladya	20000	4576	986	2%	L	5.36
Bin juha	17067	3151	970	2%	L	3.92
Mergeb	7200	2913	808	2%	L	3.51
Sileen	8022	1849	732	2%	L	**2.38**
Ganema	6200	1532	1498	5%	H	2.82
Ejhawat	3434	1509	1430	4%	H	**2.74**
Libda	9500	2029	1522	5%	H	3.35
Ras hamam	4800	1390	1254	4%	H	**2.44**
Sed kalefa	4600	2199	1196	3%	H	3.19
Suq khamis	20000	4087	913	2%	L	4.8
Sahel	6105	3177	806	2%	L	3.78
Gogas	2300	737	1046	3%	H	**1.49**
Keam	7700	1702	880	2%	L	**2.38**

Table 9. Illustrations the distance calculate for all the data points to deaths.

5.2 Using K-means Algorithm Cluster

Using the k-means algorithm as a one of the clustering algorithms on our income salary social dataset indicated in the below table to measure the poverty rate among citizens inside a municipality. The poverty rate was calculated by two attributes (x1) and (x2) which represent the Mahala that had a greater number of people whose salaries are higher than the others. In this case, we set k=2, which will demonstrates the number of clusters that we are willing to create, the following table shows that dataset that we are going to apply the k-means algorithm [6] :-

Sample	Salary>= 1000 X1	Salary< 1000 X2	Class	POVERTY rate
1	1430	7947	L	7%
2	1101	6789	L	6%
3	1046	2504	L	6%
4	1756	1956	H	3%
5	877	1422	L	5%
6	623	800	H	2%
7	3448	3156	H	4%
8	108	750	L	5%
9	146	1955	L	6%
10	200	988	L	4%
11	655	1648	L	5%
12	384	764	H	2%
13	1500	2222	L	3%

Table 10. Shows that dataset of poverty rate for the k-means algorithm .

As a clustering algorithm, it required to calculate the distance. The distance will be calculated by

using the Euclidean distance with the following equation.

Distance (x,y),(a,b)=$\sqrt{(\mathbf{X-a})^2+(\mathbf{x-b})^2}=\mathbf{0}$

The below table shows the results of the Euclidean distance measures which produced, the result of two clusters.

Cluster	Euclidean Distance		
	Cluster1	Cluster2	Sample
Dataset (1430, 7947)	0	38.5	**1**
Dataset (1101, 6789)	38.5	0	**2**
Dataset (1046, 2504)	13.30	4.62	**3**
Dataset (1756, 1956)	11.92	21.26	**4**
Dataset (877, 1422)	41.94	32.52	**5**
Dataset (623, 800)	55.51	21.24	**6**
Dataset (3448, 3156)	22.38	98.06	**7**
Dataset (108, 758)	62.67	45.05	**8**
Dataset (146, 1955)	33.33	53.63	**9**
Dataset (200, 988)	54.89	62.05	**10**
Dataset (655, 1648)	29.75	25.35	**11**
Dataset (384,764)	58.87	29.59	**12**
Dataset (1500 ,2222)	16.90	58.76	**13**

Table 11. Shows k-means cluster on salaries dataset.

- **Marriage Rate Measurement**

We are going to measure the rate of the increasing population in terms of the marriage rate using the k-means algorithm according to the distance measures and the two clusters. The following table represents the marriage rate distance measures using cluster algorithm.

Cluster	Euclidean Distance		
	Cluster1	Cluster2	Sample
Dataset (1236, 4234)	0	77.30	**1**
Dataset (1160, 3786)	77.30	0	**2**
Dataset (1058, 1167)	97.15	82.88	**3**
Dataset (1072, 2789)	45.98	53.16	**4**
Dataset (988, 2346)	60.21	41.25	**5**
Dataset (660, 987)	18.50	44.20	**6**
Dataset (712, 3122)	38.87	69.56	**7**
Dataset (444, 1288)	96.46	58.61	**8**
Dataset (496, 1201)	98.72	3.205	**9**
Dataset (2000, 5644)	50.71	65.08	**10**
Dataset (1102,1550)	84.98	49.83	**11**
Dataset (376,877)	27.40	61.89	**12**
Dataset (1080 ,2099)	28.89	44.59	**13**

Table 12. Illustration marriage rate distance measures using cluster algorithm.

- **Deaths Rate Measurement**

As we mentioned before concerning the death rate is the rate of decreasing, and from this aspect, we are going to measure the decreasing population based on deaths using the k-means algorithm, to

measure the distance of two clusters. This calculation will be indicated in the following table.

Cluster	Euclidean Distance		
	Cluster1	Cluster2	Sample
Dataset (4576, 986)	0	47.81	**1**
Dataset (3151, 970)	47.81	0	**2**
Dataset (2913, 808)	53.14	52.88	**3**
Dataset (1849, 732)	66.41	83.11	**4**
Dataset (1532, 1498)	50.28	26.21	**5**
Dataset (1509, 1430)	97.99	31.19	**6**
Dataset (2029,1522)	55.52	93.45	**7**
Dataset (1390,1254)	16.67	26.00	**8**
Dataset (2199,1196)	51.90	63.39	**9**
Dataset (4087 ,913)	74.61	60.37	**10**
Dataset (3177,806)	44.60	28.97	**11**
Dataset (737, 1046)	60.12	77.53	**12**
Dataset (1702, 880)	91.03	30.96	**13**

Table 13. Shows the deaths rate distance measures using cluster algorithm.

6 Experiments and Results

The aims of this paper, is to investigate the main issues that impact e-Government implementation and suggest useful practice guidelines for a successful e-Government application within the context of developing countries such as Libya. The objectives of this paper that arise as a result of the above aim are: -

- Develop a strategy for creating a municipal data warehouse.
- Facilitate accessing, processing, and managing municipality data.
- Employees in the municipality can store easily and securely via intelligent devices.
- Providing services to citizens in the municipality through the municipality's websites.
- The ability to provide an external dataset to exchange data with the internal datasets in the data warehouse to provide fast data sharing in the time-series data environments.

6.1 Results of Using KNN Algorithm

The result that we obtained from applying the KNN algorithm to the statistical community of the referred data of the Mahala within the municipality, depending on the number of males and females who receive a salary from the public sector or the private sector, is as follows:

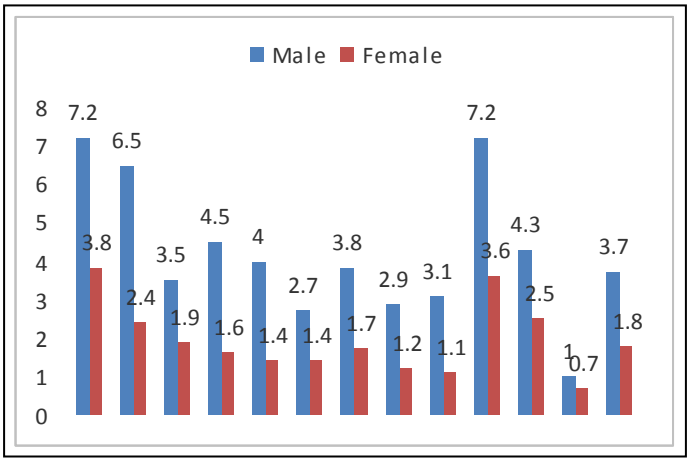


Figure 1. Shows the population in every Mahala inside a municipality based on the salary.

The above chart illustrates the measure of the poverty rate based on salaries that are received every year.

We also utilized a function to calculate the average salaries of individuals of both genders in each Mahala within the municipality and the results are demonstrated in the following figure as:

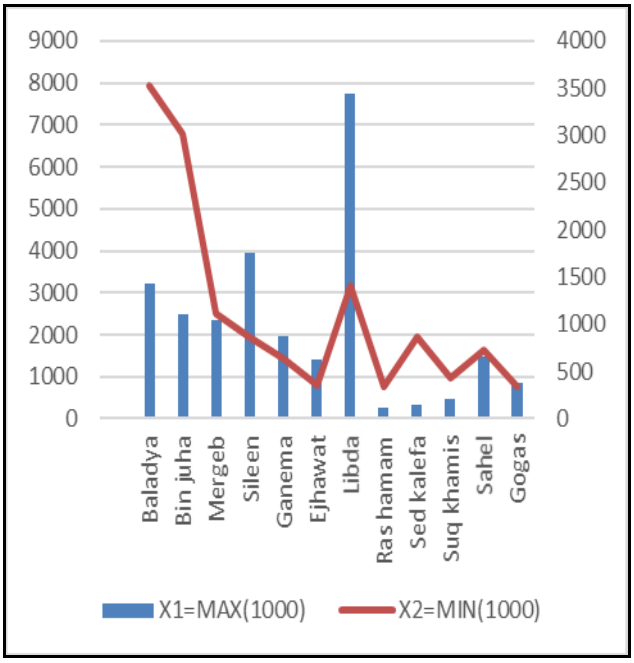


Figure 2. Illustrates the different salaries among every Mahala.

The above figure displayed the statistic calculation of the percentage for the income salaries in terms of the Max (>1000) and Min (<1000) for every Mahala and the results were promising and close to reality, where it is as follows:

In the Mahala of "Baladya", the number of people receiving salaries with Min (<1000) reached 8000 individuals representing 25%. Whereas; on the opposite side 3200 individuals receiving the highest salaries representing 12%. On the other hand, our consideration of the minimum population in the Mahala of "Gogas" is the number of citizens who received high salaries that reaches 900 individuals with an average of 8%, whereas the opposite of 700 individuals with an average of 5%, which illustrate the percentage are close to each other.

The Mahala of "Libda" appeared among the highest salaries in the municipality. Whereas; the Mahala of "Goga" were the lowest salary compared to the population of municipality social dataset.

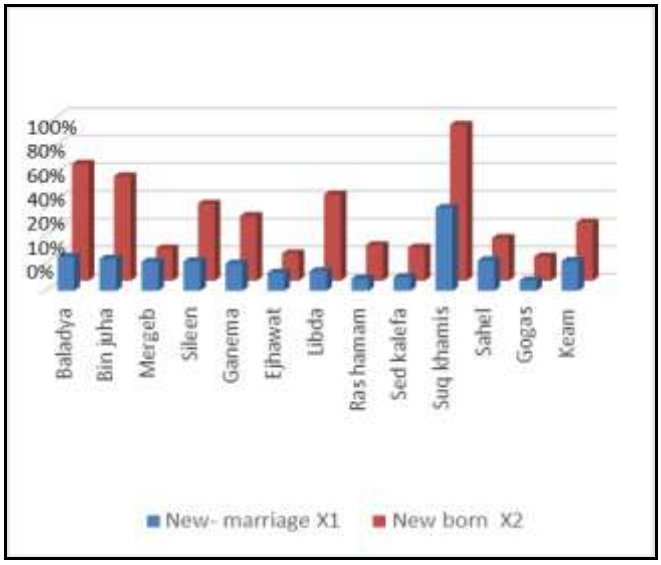


Figure 3. Shows the increasing number of people in case of new born and new marriages.

In figure 3, indicate the increasing rate of the population after measure the marriage rate which appeared to be a rising mark. According to that we calculate the marriage and new born people rates yearly to detect the increasing percentage of the general population inside the municipality.

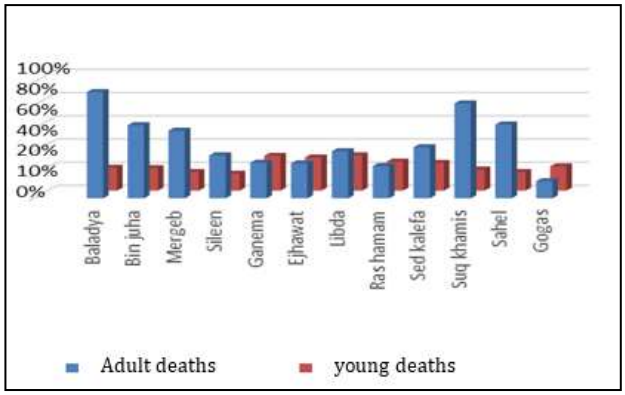


Figure 4. Displays the decreasing rate of the deaths.

The above figure is the statistical population decline from two decreasing components which are the deaths of the adults and the deaths of the young people among the citizens in the municipality. According to that the figure shows the adult's death

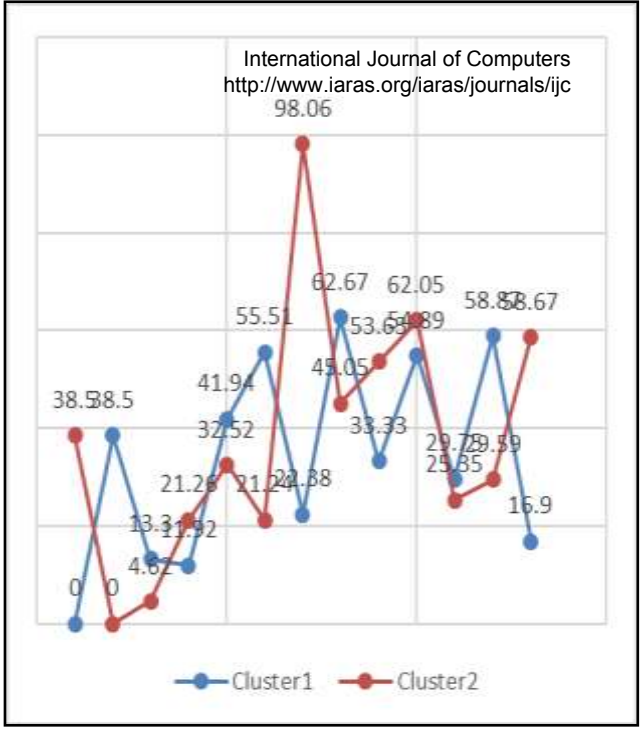
rate is estimated as 77%, whereas; the young people death rate is estimated as 33%.

6.2 Results of Using K- Means Algorithm

As we applied the k-means algorithm to the municipality's social dataset, were it is one of the algorithms that is used in the clustering method. We were able to deduce statistical readings of the poverty rate by increasing or decreasing salaries, the rate of increase in the population, deaths rate and population decrease. These statistics are illustrated in the following graphs:

Figure 5. Shows the rates of the two clusters of the salaries.

Figure 5, demonstrates the percentage of neighbouring high salaries as well as low salaries between the Mahalas in the municipality social dataset. Whereas; cluster1 represents the values of salaries greater than 1000 Libyan dinner, while cluster2 represents the salaries less than 1000 Libyan dinner. In the statistical analysis, the results appear to be fairly close.



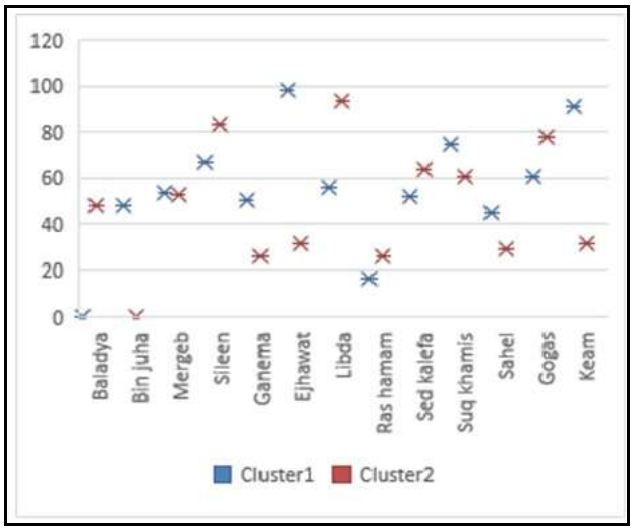


Figure 6. Illustrates the increasing rate of the population in each Mahala.

In this regard, and in the above figure, we have shown the rate of increase in population. This increase includes the rate of new marriages and new-born, as the average rate of marriage and

new born compared to the population within the municipality for each Mahala is somewhat close Based on the values of cluster 1 (new marriage) and cluster 2 (new-born).

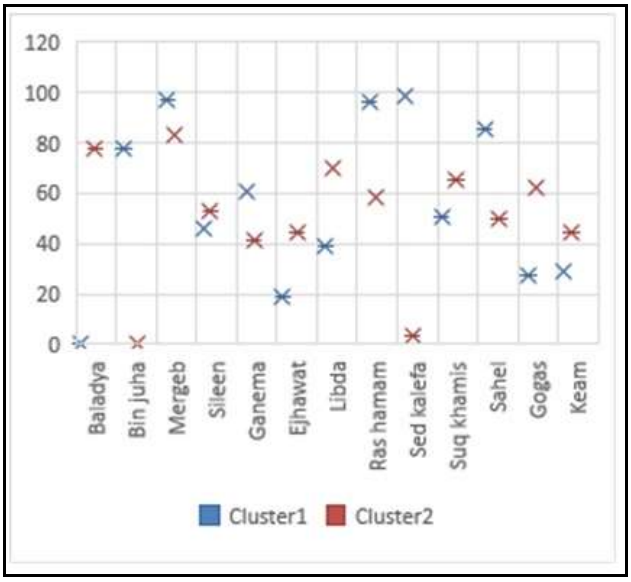


Figure 7. Displays the deaths rates in the population in each Mahala.

The graph indicated in the figure, shows the death rate between adults and children for each Mahala within the municipality social dataset. Whereas; cluster1 represents the values of adults death rate and cluster2 represents the values of children death rate.

7 Evaluations

According to the social dataset obtained from the municipality. As well as analyzing our experiments results from the use of the KNN algorithm as a method of classification, beside on our results of the use of k-means algorithm as a clustering method. The evaluation of this work will be evaluated into two variables, accordingly that the variable X1 represents high values in terms of salary >1000, new marriage and adult deaths. On the other hand, the variable X2 will represent low values such as salary<1000, new-born, and children deaths. Based on that we will be able to evaluate our work as follows:

X1: represent high values in all charts.

X2: represent low value in all charts.

Value	Poverty rate	Increasing rate	Decreasing rate
X1	25.11%	22.96%	35.55%
X2	12.02%	36.18%	28.41%

Table 14. The evaluation results of the municipality social dataset used.

In table 14, this displays the largest values, which also represent the increase, and the smallest, which also represent the decrease. These values are the results of using the aforementioned algorithms. We evaluated these results as follows:

- **Poverty rate**: The evaluation result based on the proposed system gave 25.11% for those with salaries less than 1000 LYD, compared to 12.02% for those with salaries more than 1000 LYD. We can say that the population in the municipality suffers from a percentage of 25% poverty.

-**Increasing the population rate**: Through evaluating the deteriorating results from the proposed system. The percentage of increase in the population was estimated at 22.96% based on new marriages, in addition to 36.18% for new born. As a net result of the rate of increase in population in the municipality will be 59.14 %.

-**Decreasing the population rate**: The high rate of population depreciation is considered unfortunate sometimes, but it is considered as results obtained from the proposed system that we cannot ignore. Whereas, the evaluation of the population decrease rate for the number of deaths was 35.55%, in addition to the 28.41% for those that reluctance to marriages. This indicator rises to 63.96%, which is slightly higher than the rate of increase.

8 Conclusions

We used the existing social dataset in the municipality of Al Khums in Libya. The dataset contained a lot of data on citizens within the municipality, but it was not organized. We used one of the data mining methods in classifying the data, which is classification, and in this

aspect we used the KNN algorithm. We also used another method of data mining in clustering the data through K-means algorithm. After applying the data mining methods, we were able to measure the following rates:

- Measurement of poverty rate (via income).
- Measurement of increasing the population rate (via marriage).
- Measurement of decreasing the population rate (via deaths).

To measure these rates using the above-mentioned data mining methods, it is necessary to use an application to extract these data and measure the rates mentioned above. In this regard, we have used the Weka software, which is one of the pioneering programs in the use of different data mining methods.

We applied Weka software to the municipality's social dataset, as well as implementing the KNN algorithm and the K-means algorithm. We were able to measure the poverty rate, the rate of increase and the rate of decrease in the municipality's population.

Besides, we were able also to conclude, some results, which are promising, as well as some unfortunate results on the situation of the population in general in the municipality.

Finally, this work that we have done on the social dataset in the municipality of Al-Khums in Libya is considered the first of its kind, which is based on helping decision makers in the municipality to make the right decision. We can also develop this proposed system in the future to include the evaluation of institutions within the municipality according to the quality standards used in the quality of international institutions.

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