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Cluster Analysis Usage to Assess Several (Breeding Goats) Problems: Case Study in Iraq

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Abstract

Due to the occurrence of many changes on the reality of livestock in Iraq and as a result of serious attempts in order to reduce the number of livestock in the past two decades, which led to differing data about livestock numbers, which is one of the most important obstacles to the development of a development strategy for the livestock sector in Iraq, which depends mainly on preparing Wealth, its types and levels of production. Also, the last year for which data on livestock are available is the year 2001 in which the comprehensive agricultural census was conducted and which was implemented by the Ministry of Planning / the Central Bureau of Statistics, since the conditions of wealth and its composition. Its products, quality and numbers have varied due to the exceptional time and circumstances that have passed through Iraq, and thus building a modern database on this wealth has become a national necessity in accordance with all objective and development criteria.Given the increasing importance of livestock and its role as one of the main channels in providing food security requirements, hence the importance of research in highlighting the most important problems facing the Iraqi governorates with regard to raising goats in Iraq and analyzing the cluster. The method was used as one of the multivariate methods (multivariate analysis) in classifying governorates into groups to which they belong and building a basis for separating these groups according to the most important factors affecting livestock in Iraq. The SPSS 22.0 statistical pouch was used to extract the results.

1. Introduction

Brief summary

Due to the occurrence of many changes to the reality of livestock in Iraq and as a result of serious attempts to countless numbers of livestock in the past two decades, which led to different data numbers for livestock, which is one of the most important obstacles to setting a development strategy for the livestock sector in Iraq, which It mainly depends on wealth preparation, classes and production levels. As the last year available with data on livestock is in 2001, when the agricultural census that was implemented by the Ministry of Planning / Central Bureau of Statistics was destroyed, where the conditions and composition of livestock and livestock products, and quality and preparation and preparation may differ due to time and unusual conditions Iraq is going through, so recent data on building this wealth base has become a national necessity according to all technical and development standards. Given the increasing importance of livestock and its role as one of the main channels in providing food security requirements, therefore, the importance of research in a position on the most important problems of the Iraqi provinces for livestock has been used as a cluster analysis along the lines of multivariate analysis methods and in classifying the provinces into groups belonging to them and building a foundation To separate these groups according to the most important factors affecting
Livestock in Iraq. The SPSS 22.0 cyst was relied upon as a result of a statistical
extraction. The first topic: Introduction and reference review of previous studies:

Livestock represents a distinguished position in the agricultural sector, and this comes from the role it can play in the development of this sector in particular and the economic development process in general, some of which are represented in the following: (Al-Musawi, Kazem Jaber 2013)

Livestock is an important basis in providing food, as nutritionists estimate the individual's daily protein needs by about (70) grams, i.e. (grams per kilogram of weight), and that 2/3 of these needs must be derived from animal sources such as meat and eggs One study indicates that the minimum human needs of animal protein during the day are subject to the difference in estimation, as an expert at the United Nations estimated about (23) grams per person and estimated by the National Nutrition Institute at the Ministry of Health (18) grams and estimated by other experts with an average of (24) Grams per person.

Iraq is among the Arab countries that are characterized by the consumption of a high percentage of grains and a low amount of meat and milk. This requires an expansion of the contribution of livestock in providing more animal products to meet the expansion in demand resulting from this high population growth rate, which exceeds in Iraq (3) Percent per year, which must be done to achieve it.

The increase in the income levels of individuals after the events of 9/4/2003, and consequently in their living levels, leads to an increase in their consumption of animal products, as it is known that the consumption of animal protein is parallel to the high level of income in general, especially that the experience of advanced countries proves this as its consumption increases Animal foods that include meat and dairy products include birds, eggs and others.

ŏ The development of animal wealth and the increase in its production can meet the domestic demand for these products automatically, and therefore not to resort to importing them from abroad and reducing it. This provides an insignificant amount of foreign currencies so that they are available for use in other areas that help in achieving economic development. This is on the one hand, and animal wealth can contribute to providing quite a few foreign currencies, as when there are capabilities that allow the export of some animal products abroad on the other hand.

The animal wealth can contribute more to increasing the production of the agricultural sector and thus increasing the production and national income as well as increasing the per capita income in general and agricultural income in particular, and this is due to the fact that the value of animal products and their prices are high and the resultant increase in the capabilities of society in achieving its development And raise the levels of its personnel.

Livestock products are involved in many industrial activities that depend on these products as raw materials for their production. Therefore, the development of livestock production contributes to providing expansion requirements for many industries that rely on this production in these activities and its expansion.

The orientation towards development events in the animal wealth and its production necessarily requires providing many requirements for achieving this development and this stimulates the activities that provide these requirements for expansion and development.

Animal wealth, when produced, can contribute significantly to providing food security at the economic level of the country, due to the great importance of these products as necessary food commodities in terms of the scarcity of the product in relation to the increasing demand for it, which exposes the Iraqi economy to potential risks when The lack of a necessary minimum of it, especially in unusual circumstances.

In this research, the problems facing goats breeding sector in Iraq have been studied: (GIS Center, 2011, P.18)

Despite the presence of these animals in all parts of Iraq, they are especially raised in the northern regions on a large scale and are characterized by their ability to live and produce milk even if the pastures are reduced, as cows and sheep are not strong enough to starve, and there are two goats in Iraq. . Ordinary race

It is characterized by the fact that its hair is black and mostly short, and it is almost widespread in all parts of Iraq.

.Marazi sweat

In the northern mountainous regions, his hair is long and soft, and it is related to the well-known Inquire goats.

About the numbers of animals among the goats in Iraq for the year 2008

To achieve the results of the National Animal Resources Survey / (for (2008) implemented by the Central Statistics Authority / Agricultural Statistics Managers and the Ministry of Agriculture) that the number of animals is (12093063) including / goats (1474845) / as in Table No. (1) where the ratio of numbers of goats to The total number of animals in Iraq (12.20%).

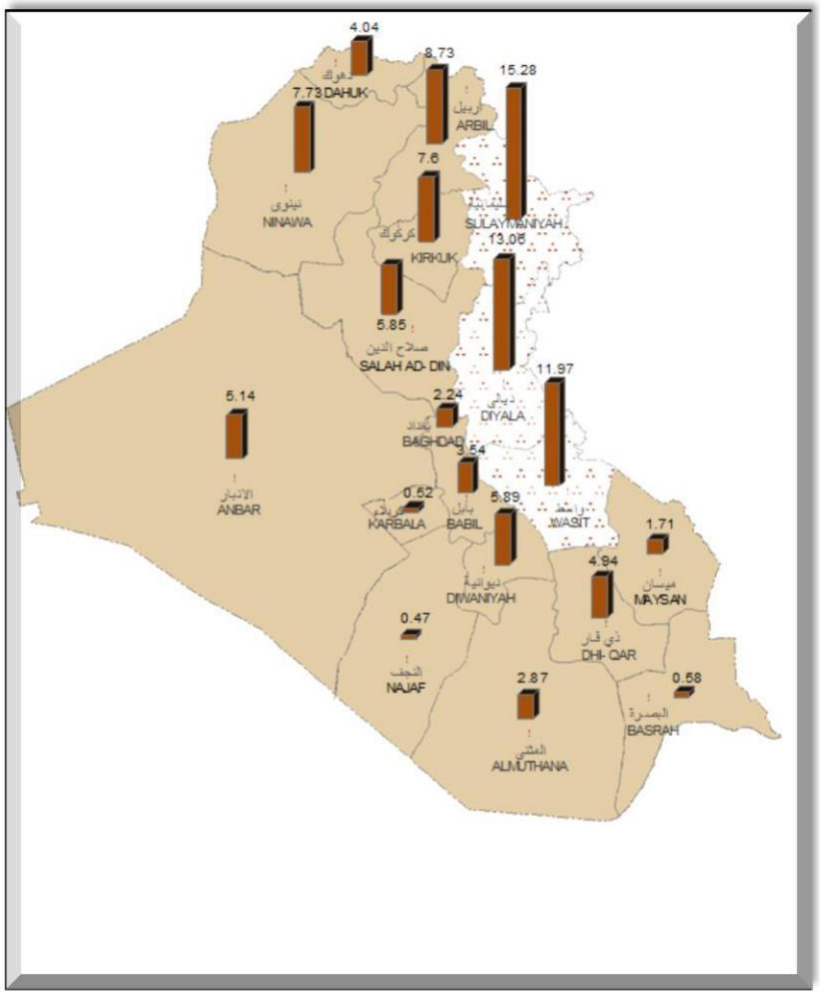
Table No. (1)

Animal numbers by type for the year (2008) and percentage at the governorate level

%	Goats	Provinces
7.73	**114000**	**Nineveh**
5.43	**80058**	**Kirkuk**
13.06	**192640**	**Diyala**
5.14	**75855**	**Anbar**

2.24	**33098**	**Baghdad**
3.54	**52172**	**Babylon**
0.52	**7709**	**Karbala**
11.97	**176558**	**Wasit**
5.85	**86282**	**Salahuddin**
0.47	**6969**	**Najaf**
5.89	**86821**	**Al-Qadisiyah**
2.87	**42375**	**Al -Muthana**
4.94	**72794**	**DhiQar**
1.71	**25167**	**Maysan**
0.58	**8568**	**Basra**
71.94	**1061066**	**Provinces**
4.04	**59591**	**Dohuk**
8.73	**128773**	**Erbil**
15.28	**225409**	**Sulaymaniyah**
28.06	**413773**	**Kurdistan region**
100.00	**1474839**	**Iraq**
12.20%		**percentage**

The following figure shows The percentage of goats numbers distribution map according to governorates, 2008 survey .



Many studies have addressed the issue of livestock problems and ways to address them, but the Arab library lacks studies related to linking cluster analysis with the problems of animal wealth, so this study came as an

attempt by the researcher to enrich the Arab library with such topics, and among the studies that dealt with the problem of livestock are :

In 2004, the researcher (Hussein, Adam Ahmed) conducted a study that addressed the productive and marketing constraints of livestock in Somalia. The study aimed to diagnose the current state of production and marketing of livestock, highlighting the productive and marketing constraints facing producing and marketed companies, determining how to overcome them, and studying Contemporary global and regional changes and determining its impact on the productive and marketed establishments of Somali livestock, and determining the extent of awareness and awareness of decision makers in commercial establishments with constraints. Among the most important results of the study:

Lack of adequate feed and water for all four seasons, which has led to instability of herders, as well as lack of modern medicines and treatments, the number of veterinarians and animal medicine specialists, as well as the methods of production and treatment of livestock are traditional.

Foreign exchange and monetary inflation were reflected on the animal wealth and its marketing, as well as the lack of clarity in the administrative and marketing policies of the facilities, and that the distribution channels are not appropriate for the distribution of animal wealth and its cost is high, in addition to the lack of available ships and insured ships, and consequently the marketing factors for the animals are as follows:

Political and legal obstacles

• Competitive factors

Marketing capabilities

• Foreign competition

• Promotional and distributive factors and marketing services

In 2008, the researcher (Al-Samea ', Prof. Dr. Mahmoud Badr Ali) conducted a study on ruminants in Iraq, and the possibility of developing their sources of nutrition using dates and their offspring, and the researcher concluded that there is a significant decrease in the number of ruminants in the country for many reasons Including the lack of adequate food in quantity and quality, in addition to the fact that these animals are characterized by low production compared to their foreign counterparts, and among the most important reasons for this is their lack of nutrition. There is also a decline in the sources of ruminant feed in the country, represented by natural pastures, cultivated fodder, concentrated feed, and agricultural and industrial waste .

In 2009, the researcher (Camel, Mohamed Mahmoud Mohamed) conducted a study that aimed to study the reality of animal production in some villages in the northern Nablus governorate, in an attempt to develop the potential of livestock and their capabilities, through a comprehensive study that studies the status of animal wealth and the surrounding conditions It includes the farmers based on it, the conditions of production, and shedding light on the most important problems and obstacles facing the livestock sector in the study area. The most important results that have been reached are:

Livestock and natural pastures in the study area face many problems, which reduce pastoral areas and decrease animal production, such as urban sprawl, overgrazing and irresponsible logging.

The results showed that the natural factors affect livestock and pastures, and that the most important of these factors are:

Temperature: It plays a major role in influencing the animal, its food, and its production.

o Soil: where the plant is rooted, and from which it derives the essentials of its life necessary for its survival, reproduction and production.

The study found that (7%) of the breeders take animal husbandry as a basic craft and totally depend on it for their livelihood.

The study found that (73%) of the educators have a basic level of education or less, and this affects the prevailing pattern of education.

The study found that (55%) of the educators do not receive assistance from the government.

The study concluded that there is an impact of the occupation on the animal system, through controlling water sources, which amounted to (32%), confiscation of agricultural and grazing lands by (26%), and the pursuit of the occupation authorities and their expulsion from the meadow (14%).

Unavailability of feed throughout the year and an increase in consumption over production.

In 2009, the researcher (Odeh, Hayat Kadhim) conducted a study aimed at identifying the most important problems facing meat breeding projects in Al-Diwaniyah Governorate, which were classified into productive (technical), administrative, financial, and marketing problems, as well as identifying the extent of There are differences in the problems facing the producers according to some of their characteristics (academic achievement, years of experience in raising chicken meat, the number of meals during the year, the number of birds per meal) as well as determining the relationship between the characteristics of the producers and the problems they face.

Among the results reached in the research are:

• There are a number of problems facing meat chicken producers in Al-Diwaniyah Governorate, and (51.9%) of these problems were weak-impacted, (18.5%) were medium-impact, and (29.6%) were highly-impacted, but these problems as a whole are medium-impact on producers. .
• The productive problems are the most influential, followed by administrative, then marketing and financial problems.
• (48%) of the surveyed producers face few or weak-impact problems, compared to (24%) with moderate problems and (28%) with big problems, and the average numerical values of problems facing the producers fall within the category of medium problems.
• The most problems affecting the producers are the failure to operate the fields at their maximum capacity, as well as inconsistency or continuous blackouts, high feed costs, competition for imported chicken, high costs of chicks, failure to ensure the quality of the chicks, and the lack of weight below the ideal weight when marketing, inefficiency Veterinary medicines and vaccines, high prices of fuel (fuel), high percentage of feed loss, exploitation of intermediaries, use of inefficient (untrained) labor, lack of knowledge of the quantities of feed provided for different breeding stages, poor quality of feed, high costs of medicines and vaccines Aatrih.
• There is a difference between the respondents in determining the degree of influence of a section of problems (average numerical values for each problem) according to the difference in their characteristics and categories within them.
• There is a significant correlation between the problems facing meat producers in Diwaniya, the two characteristics of academic achievement and the number of years of experience in raising chicken, with a significant correlation between the severity of the problems and the characteristics of the number of meals during the year and the number of birds per meal.

In 2014, each of the researchers (Al-Samea, Prof. Dr. Mahmoud Badr Ali), (Ali, Dr. Muthanna Fadel) conducted a study that aimed to shed light on the most important problems facing livestock in Iraq, and the cause In its decline and deterioration in number and production, and then developing appropriate solutions to address and limit them, researchers have reached a set of results, including:

عجارت The decline of animal wealth in Iraq is linked to a number and productive of many natural and living conditions, foremost among which is the extremes of temperature that accounted for (39.7%) of all statistically treated factors, and (65.7%) which is the highest percentage which indicates the decline of livestock Due to the recurrence of diseases.

رې غت The change in livestock has been relatively consistent with the natural and biological deteriorations that the country witnessed, including the deterioration of the water situation and the decline of rainfall, which contributed greatly to the decline of natural pasture areas, as well as the retreat of the marshes of Iraq.

د لعأ The highest change and fluctuation of the Iraqi animal population is for sheep, while the largest decline has been experienced by buffalo, and the main reason may be the decline in the marshes of Iraq due to the water situation in addition to previous government policies, and what applies to numbers also applies to Both products.

Among the studies that dealt with the subject of cluster analysis and its applications, we mention:

In 2011 each of the researchers (Youssef, Prof. Haitham Yaqoub), (Abd al-Latif, Hisham Faroun), (Muhammad, Ja`farQasim) conducted a study aimed at using cluster analysis to assess the dimensions of the Human Development Index in Iraq for the year 2006 represented by the variables (literacy guide, gross enrollment ratio guide, education guide, per capita gross domestic product index) classified by customary governorates, using cluster analysis in the hierarchical cluster analysis and K-means for observations (governorates) and variables (Elements of dimensions of the Human Development Index) Among The results of which have been reached:

- The governorates were classified into four groups, the first group included (Dohuk, Sulaymaniyah, Erbil). The second group was (Basra, DhiQar, Salah al-Din, Wasit, Karbala, Babil, Kirkuk, Nineveh). As for the third group it was (Maysan, Muthanna, Qadisiyah, Najaf) while the fourth group was (Baghdad, Anbar, Diyala).
- Evidence of human development in Iraq has been categorized into four groups based on the value of the simple correlation coefficient. It has been shown that the highest simple correlation coefficient was between the education guide and the literacy index, and this is a sign of direct correlation, as the increase in the education guide It will increase literacy.
- There are significant differences in the classification of governorates between groups according to the variables of the dimensions of human development.
- There are significant differences between the variables of the Human Development Index according to the governorates as follows:
- The governorates of the first group (Dohuk, Sulaymaniyah, Erbil) represent the best governorates in terms of variables (index of life expectancy, index of gross enrollment ratio, index of per capita share of GDP), according to the researchers 'belief because of the stability of the security situation and the high level of living for these governorates.

The fourth group governorates (Baghdad, Diyala, Anbar) are the best governorates in terms of (literacy guide, education guide) and the reason, according to the researchers' opinion, is the increased culture of these governorates and the high level of living of their residents, and being close to the center (the capital) and which is available Model schools and universities and proximity to civilization.

In 2012, each of the researchers (Al-Shamarti, Prof. Hamed Saad Nour), (Al-Tamimi, and M. Suhad Ali) conducted a study aimed at revealing the possibility of applying cluster analysis in analyzing the problems of indicators of sustainable development and the environment, categorized by Iraqi provinces, and among the results reached:

Baghdad governorate is the best governorate in terms of indicators of sustainable development, due to development projects and plans in recent years.

The provinces of the Kurdistan Region, Najaf and Nineveh came in second place in terms of indicators of sustainable development.

The governorates of (Qadisiyah, DhiQar, Karbala, Maysan, Salahuddin, Wasit, Muthanna, Anbar, Diyala, Kirkuk, Babil, and Basra) were ranked third in terms of their similarity in indicators of sustainable development, due to the delay in development projects in those governorates .

With regard to environmental indicators, the results have shown the progress of Baghdad Governorate as the best governorate in terms of environmental indicators compared to other provinces of Iraq.

In 2012, each of the researchers (Taha, HudhaifaHazim) and (Hussein, Muhammad Hussein) conducted a study that aimed to classify a number of groundwater wells for the selected sites in the wells of Bashiqa area in Nineveh governorate, according to the type of water in them, and from the results that Reached:

- Most of the groundwater wells of the Bashiqa area are suitable for human use, and the other part of them is suitable for animal use, except for the well that bears the number (7) it is not suitable for human use as well as animal, due to the high salinity in it, which poses a threat to the life of young animals, which She is in foster care.

The second topic: the general framework of the

research This topic included the following:

research importance

The main goal of raising agricultural animals is to provide animal food in the first place, and other products such as wool, lint, feathers and inedible leather come second.

The main problem faced by the contemporary world is what the increasing millions of mankind needs from the quantities produced from consumer food commodities as they have risen and deep from long periods of time. The International Food and Agriculture Organization has estimated that about 10-15% of the world's population suffers from malnutrition and that Half of the world's population is not sufficient for the nutrients, animal protein, vitamins and minerals needed to build healthy bodies.

Most of the problems of animal production and animal husbandry are in developing countries, and appropriate and rapid solutions must be found to this phenomenon, especially after a decrease in the quantity and level of the product of foodstuffs in some developed countries, and consequently, the export of surplus foodstuffs to developing countries and the poor has decreased, therefore it is necessary for countries Developing people pay attention to their agricultural wealth in order to develop them, if not to reach the surplus.

The level of production of Iraqi animals is low compared to the global production level because developed countries have taken care of health and nutritional care in addition to improving the genetic makeup of their animal wealth, hence the importance of research in standing on the classification of Iraqi governorates into groups according to the most important problems of raising goats in Iraq for the purpose of reaching Solutions to these problems that negatively affect the reality of livestock in it.

Research Methodology

The descriptive analytical approach was used in the implementation of this research, through reviewing many sources that dealt with the cluster analysis method, most of which were mentioned in the reference review, and the results were presented by relying on the statistical bag of social sciences SPSS 22.0 in extracting the results.

research aims

The research aims to study the reality of goats breeding in Iraq, and this is an attempt by the researcher to develop the potentials and capabilities of livestock, and by studying the factors that affect the production of livestock and the surrounding conditions, using the Cluster analysis method by the hierarchical analysis method and the K-averages method Means in assessing livestock problems in Iraq, which are as follows:

- Lack of labor
- Bad genetic factors
- Lack of feed
- Lack of treatment
- Price fluctuation

- Inefficient marketing system

Watering animals

Other factors such as (providing an export surplus, providing a decent standard of living for livestock breeders in particular and those working in the agricultural sector in general)

Research problem

The animal wealth suffers from a clear deterioration, especially after the drought that afflicted Iraq and the region due to lack of rain and low levels of Tigris and Euphrates water as a result of giant projects established by the upstream and downstream countries Turkey and Syria, where the livestock sector in Iraq began to decline in all its joints from animal husbandry and animal production, especially sheep. As sheep farmers start their day with the first threads of dawn, and as you are accustomed to grazing their sheep, this time not in the wide pastures where the natural plant has healing and food for those who eat it, but in the garbage and landfills of cities, which has had a negative impact on the Animal a wealth, so it had to be exposed to this economic phenomenon, researched and developed as one of the most basic components of the Iraqi economy, and the search for alternatives and solutions to the problems afflicting this sector.

Research Hypotheses

The research aims to test each of the following hypotheses:

1. There are significant differences in the classification of governorates between groups according to the variables of livestock problems.
2. There are significant differences between the variables of livestock problems according to the governorates.

Research Variables and Limitations

This research relies on the variables available at the Ministry of Agriculture - Planning and Follow-up Department - Statistics Department for the year 2008 and in cooperation with the Iraqi Ministry of Planning - Central Statistics Authority - Agricultural Statistics Directorate, which includes the following: -

1- Economic factors represented by (lack of manpower, fluctuation of prices, incompetent marketing system)
2- Health factors represented by (lack of treatment, bad genetic factors)
3- Natural factors including (watering animals, lack of feed)
4- Other factors such as (providing an export surplus, providing a decent standard of living for livestock breeders in particular and those working in the agricultural sector in general).

And that is at the vocabulary level (Iraqi provinces) and each of the problems that face (cows, buffalo, sheep, goats, camels) as shown in the following table:

Table 5

The relative distribution of the problems facing goats breeders by governorates for the year 2008

Other factors	Watering animals %	Inefficient marketing system %	Price fluctuation%	Lack of treatment%	Lack of feed%	Bad genetic factors %	Lack of labor%	Governorate
4.2	15	2.3	7.5	14.4	46.5	3.0	7.1	Dohuk
4.9	0.9	5.2	9.5	3.3	75.9	0.0	0.3	Nineveh
6.3	12.9	3.4	3.4	11.7	46.6	1.4	14.3	Sulaymaniyah
7.2	3.5	5.6	13.5	7.8	55.6	1.3	5.4	Kirkuk
5.6	10.5	5.2	4.2	11.3	53.2	0.5	9.5	Erbil
5.4	14.9	5.3	9.4	12.5	45.9	5	1.6	Diyala
1.7	2.1	4.3	8.7	16.4	66.2	0.1	0.5	Anbar
9.8	5.9	2.8	8.8	11.6	51	8.2	2	Baghdad
0.4	3.7	2.2	6.4	9.4	68	1.3	8.6	Babylon
3.8	3.1	3.1	7.5	12.5	65.6	0.0	4.4	Karbala
1	5	1.2	13.8	5.6	67.5	0.7	5.2	Wasit
1.9	0.1	1.7	8	17.3	70	0.0	1	Salahuddin
4.2	1.9	0.8	6.1	2.8	83.6	0.6	0.0	Najaf
1	2.7	1.5	5.7	9.6	71.9	0.0	7.5	Al-Qadisiyah
8.1	6.8	1.5	4.5	7.1	64.3	0.0	7.7	Muthana
2.3	1.2	7.3	15.1	13.6	56.7	2.4	1.4	DhiQar
8.3	7.6	0.7	4.6	6.1	70.1	0.3	2.3	Maysan
5.7	3.6	0.0	10	5	75.7	0.0	0.0	Basrah

Source / same previous source, p. 84

The concept of cluster analysis

The cluster analysis aims to classify the sample of observations into two mutually exclusive categories, depending on formations of variable categories, in order to discover common characteristics that organize observations (individuals) and divide them into groups with the same properties. Assuming we have the following matrix of observations: - (Alvin C. Rencher (2002) ch.14)

$$Y = \begin{pmatrix} y_1' \\ y_2' \\ . \\ . \\ . \\ y_n' \end{pmatrix} = (y_{(1)}, y_{(2)}, \ldots\ldots\ldots, y_{(p)}) \qquad \text{----------(1)}$$

So that :-

y_i' : Represents the vector of observations

$y_{(j)}$: Represents the vector of variables

The purpose of the analysis is to discover a specific pattern that organizes the observations shown in matrix (1) above, and whose elements have common characteristics, that enable us to coordinate these observations in specific groups. (Dr. Mahmoud Khaled Okasha (2002), Chapter 17)

Stages in cluster analysis

The stages of conducting Cluster Analysis are represented by a set of steps that include finding the following:

First: the proximity matrix

It is an identical array whose number of rows is equal to the number of its columns. Where cluster analysis usually begins with the formation of that matrix, whose elements represent a measure of the distance between observations, and the idea is to link units that are similar to each other in separate groups. So the general shape of this matrix can be represented as follows: - (Wolfgang Hardle (2003) ch.11)

$$D = \begin{bmatrix} d_{11} & d_{12} & \ldots & d_{1n} \\ . & d_{22} & \ldots & . \\ . & . & \ldots & . \\ . & . & \ldots & . \\ . & . & \ldots & . \\ d_{n1} & d_{n2} & \ldots & d_{nn} \end{bmatrix} \qquad \text{----------(2)}$$

So that :-

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$$D = \begin{bmatrix} d_{11} & d_{12} & \cdots & d_{1n} \\ \cdot & d_{22} & \cdots & \cdot \\ \cdot & \cdot & \cdots & \cdot \\ \cdot & \cdot & \cdots & \cdot \\ \cdot & \cdot & \cdots & \cdot \\ d_{n1} & d_{n2} & \cdots & d_{nn} \end{bmatrix} \quad \text{----------(2)}$$

So that:
D: kinship matrix with dimension
n: - represents views
P: - represents the variables

The elements of the matrix represent the distance between observations or variables, and that distance is measured in one of the following formulas: -

1. Using the Euclidean distance square

The square of the Euclidean distance for the two variables (x, y) can be written according to the following formula: (Johson, R.A.micorn, D.W. (1988).

$$d^2(x,y) = (x-y)'(x-y) = \sum_{j=1}^{p}(x_j - y_j)^2 \quad \text{----------(3)}$$

We could write it as

$$d^2(x,y) = (v_x - v_y)^2 + p(\bar{x} - \bar{y})^2 + 2v_x v_y(1 - r_{xy}) \quad \text{-------(4)}$$

That :

$$v_r^2 = \sum_{i-1}^{p}(x_j - \bar{x})^2$$

$$\bar{x} = \sum_{j=1}^{p} x_j / p$$

$$r_{xy} = \frac{\sum_{j=1}^{p}(x_j - \bar{x})(y_j - \bar{y})}{\sqrt{\sum_{j=1}^{p}(x_j - \bar{x})^2 \sum_{j=1}^{p}(y_j - \bar{y})^2}}$$

2-Euclidean distanceusage :

$$d(x,y) = \sqrt{\sum_{j=1}^{p}(x_j - y_j)^2} \quad \text{------(5)}$$

City Block distanceused:

$$d(x,y) = \sum_{j=`}^{p} \left| x_j - y_j \right| \quad \text{----------(6)}$$

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Using the Euclidean distance square .1

The square of the Euclidean distance for the two variables (x, y) can be written according to the following formula: (Johson, R.A.micorn, D.W. (1988...

$$D(A, B) = \frac{1}{n_A n_B} \sum_{i=1}^{n_A} \sum_{j=1}^{n_B} d(y_i, y_j) \quad \text{----------(9)}$$

4-2-1centroid Method

This method is summarized by calculating the general average by adding the average product of each group by the number of its vocabulary and dividing it by the total number of vocabulary, as follows:

$$D(A, B) = d(\bar{y}_A, \bar{y}_B) \quad \text{--------(10)}$$

That:

$$\bar{\mathbf{y}}_A = \sum_{i=1}^{n_A} \mathbf{y}_i / n_A$$

$$\bar{\mathbf{y}}_{AB} = \frac{n_A \bar{\mathbf{y}}_A + n_B \bar{\mathbf{y}}_B}{n_A + n_B}$$

5-2-1Ward's method

This method of combining between groups depends on the square of the distance inside the groups, which can be found to link two groups, such as (A, B) as follows-:

$$\mathrm{SSE}_A = \sum_{i=1}^{n_A} (\mathbf{y}_i - \bar{\mathbf{y}}_A)'(\mathbf{y}_i - \bar{\mathbf{y}}_A)$$

$$\mathrm{SSE}_B = \sum_{i=1}^{n_B} (\mathbf{y}_i - \bar{\mathbf{y}}_B)'(\mathbf{y}_i - \bar{\mathbf{y}}_B)$$

$$\mathrm{SSE}_{AB} = \sum_{i=1}^{n_{AB}} (\mathbf{y}_i - \bar{\mathbf{y}}_{AB})'(\mathbf{y}_i - \bar{\mathbf{y}}_{AB})$$

So that-:
na: The number of vocabulary words in the first group
nb: represents the number of vocabulary in the second group

$n_{ab} = n_a + n_b$

$$\bar{\mathbf{y}}_{AB} = (n_A \bar{\mathbf{y}}_A + n_B \bar{\mathbf{y}}_B)/(n_A + n_B)$$

And that SSEAB, SSEB, and SSEA represent the sum of squares within group A, B, and AB respectively, and that this method mainly depends on the merging process of groups A and B that have the smallest SSE defined as follows- :

$$I_{AB} = \mathrm{SSE}_{AB} - (\mathrm{SSE}_A + \mathrm{SSE}_B).$$

There are other methods such as linking between groups, linking within groups, linking with intermediary dependence, and others.

-2 K-means cluster analysis

This method requires prior knowledge of the number of groups, so the vocabulary can be distributed to them in a flat way. In this way, the vocabulary is distributed among the groups on the basis of a specific rule as a first step, and the averages of these groups are calculated, then these vocabulary are mixed and re-distributed again on the basis of group averages as a second step. At the end of this step, the averages of the groups are calculated and this process is repeated until the vocabulary settles in Specific groups so that the private group of any individual does not change.

The fourth topic: Presentation, analysis and discussion of the results

The SPSS 22.0 statistical bag was used for the purpose of extracting the results of cluster analysis according to the following cases:

Hierarchical method

This method requires the extraction of both the kinship matrix, the assembly steps, and the distribution of vocabulary as members of groups in addition to the ice sheets in relation to (vocabulary and variables) as follows:

First: the kinship matrix for Hierarchical Cluster Analysis

In order to obtain the kinship matrix, the grouping method (linking groups) was used, depending on the square of the Euclidean distance. In the option of transformational values in the SPSS program we choose Standardized and for standard values it is within the range (1.0) and the marker is below the list based on By variable we get the following kinship matrix:

.4The kinship matrix of goats

Table (10) shows the kinship matrix for the goat variety:

Table 10

Proximity Matrix

Hierarchical vocabulary (governorates) for goats

	Squared Euclidean Distance																	
Case	1: Duhok	2: Nineveh	3: Sulaymaniyah	4: Kirkuk	5: Erbil	6: Diyala	7: Anbar	8: Baghdad	9: Babel	10: Karbala	11: Wasit	12: Salah al-Din	13: Najaf	14: Al-Qadisiyah	15: Muthanna	16: DhiQar	17: Maysan	18: Basra
1: Dohuk	**.000**	**2.642**	**.542**	**1.487**	**.549**	**.436**	**1.536**	**1.326**	**1.246**	**1.095**	**1.654**	**1.813**	**2.770**	**1.531**	**1.165**	**2.030**	**1.487**	**2.156**
2: Nineveh	**2.642**	**.000**	**2.931**	**.749**	**1.710**	**2.302**	**1.025**	**2.274**	**1.086**	**.707**	**.883**	**1.310**	**.506**	**1.003**	**1.143**	**1.244**	**.970**	**.564**
3: Sulaymaniyah	**.542**	**2.931**	**.000**	**1.760**	**.253**	**1.343**	**2.317**	**2.020**	**1.374**	**1.393**	**2.377**	**2.594**	**3.125**	**1.620**	**.844**	**3.001**	**1.579**	**2.767**
4: Kirkuk	**1.487**	**.749**	**1.760**	**.000**	**1.039**	**1.192**	**1.121**	**1.259**	**1.279**	**.717**	**.937**	**1.571**	**1.766**	**1.447**	**1.072**	**.626**	**1.342**	**1.193**
5: Erbil	**.549**	**1.710**	**.253**	**1.039**	**.000**	**.936**	**1.294**	**1.718**	**.903**	**.692**	**1.739**	**1.704**	**2.180**	**1.070**	**.580**	**1.872**	**1.085**	**1.958**
6: Diyala	**.436**	**2.302**	**1.343**	**1.192**	**.936**	**.000**	**1.641**	**.879**	**1.927**	**1.457**	**2.011**	**2.275**	**2.985**	**2.318**	**1.755**	**1.455**	**1.838**	**2.383**
7: Anbar	**1.536**	**1.025**	**2.317**	**1.121**	**1.294**	**1.641**	**.000**	**2.109**	**.730**	**.239**	**1.083**	**.164**	**1.448**	**.703**	**1.507**	**.659**	**1.527**	**1.234**
8: Baghdad	**1.326**	**2.274**	**2.020**	**1.259**	**1.718**	**.879**	**2.109**	**.000**	**2.218**	**1.639**	**2.360**	**2.299**	**2.550**	**2.499**	**1.583**	**1.950**	**1.579**	**2.028**
9: Babel	**1.246**	**1.086**	**1.374**	**1.279**	**.903**	**1.927**	**.730**	**2.218**	**.000**	**.318**	**.561**	**.714**	**.963**	**.063**	**.814**	**1.555**	**1.105**	**1.024**
10: Karbala	**1.095**	**.707**	**1.393**	**.717**	**.692**	**1.457**	**.239**	**1.639**	**.318**	**.000**	**.702**	**.300**	**.897**	**.276**	**.578**	**.986**	**.722**	**.702**
11: Wasit	**1.654**	**.883**	**2.377**	**.937**	**1.739**	**2.011**	**1.083**	**2.360**	**.561**	**.702**	**.000**	**1.117**	**.947**	**.628**	**1.274**	**1.295**	**1.306**	**.580**
12: Salah al-Din	**1.813**	**1.310**	**2.594**	**1.571**	**1.704**	**2.275**	**.164**	**2.299**	**.714**	**.300**	**1.117**	**.000**	**1.256**	**.570**	**1.465**	**1.240**	**1.426**	**1.049**
13: Najaf	**2.770**	**.506**	**3.125**	**1.766**	**2.180**	**2.985**	**1.448**	**2.550**	**.963**	**.897**	**.947**	**1.256**	**.000**	**.726**	**.953**	**2.549**	**.560**	**.234**
14: Al Qadisiyah	**1.531**	**1.003**	**1.620**	**1.447**	**1.070**	**2.318**	**.703**	**2.499**	**.063**	**.276**	**.628**	**.570**	**.726**	**.000**	**.727**	**1.812**	**.926**	**.817**
15: Al Muthanna	**1.165**	**1.143**	**.844**	**1.072**	**.580**	**1.755**	**1.507**	**1.583**	**.814**	**.578**	**1.274**	**1.465**	**.953**	**.727**	**.000**	**2.495**	**.188**	**.777**
16: DhiQar	**2.030**	**1.244**	**3.001**	**.626**	**1.872**	**1.455**	**.659**	**1.950**	**1.555**	**.986**	**1.295**	**1.240**	**2.549**	**1.812**	**2.495**	**.000**	**2.678**	**2.048**
17: Maysan	**1.487**	**.970**	**1.579**	**1.342**	**1.085**	**1.838**	**1.527**	**1.579**	**1.105**	**.722**	**1.306**	**1.426**	**.560**	**.926**	**.188**	**2.678**	**.000**	**.426**
18: Basra	**2.156**	**.564**	**2.767**	**1.193**	**1.958**	**2.383**	**1.234**	**2.028**	**1.024**	**.702**	**.580**	**1.049**	**.234**	**.817**	**.777**	**2.048**	**.426**	**.000**

This is a dissimilarity matrix …

It is noted from Table (10) that the closest distance between the governorates was between Governorate (9) and represented by Babil Governorate and Governorate (14) and represented by Qadisiyah Governorate, according to the variables of livestock problems in Iraq as it reached (0.063) and according to the scale of the square Euclidean Distance.

Second: Agglomeration Schedule steps

To demonstrate the steps for grouping vocabulary (governorates) and how they relate to each other, the following tables were created:

.4Collection steps for goats :

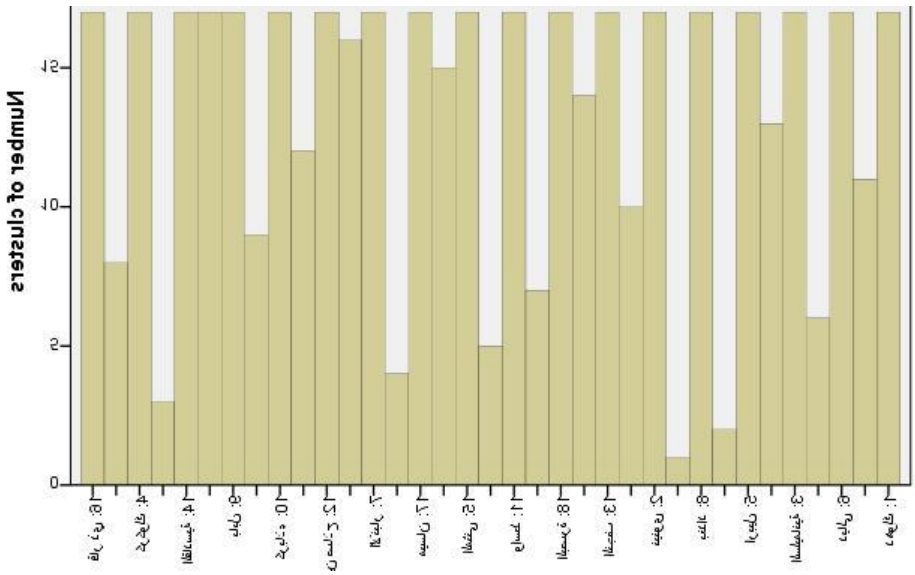
Table (15) shows collection steps for goats

Table 15

Agglomeration schedule for goats

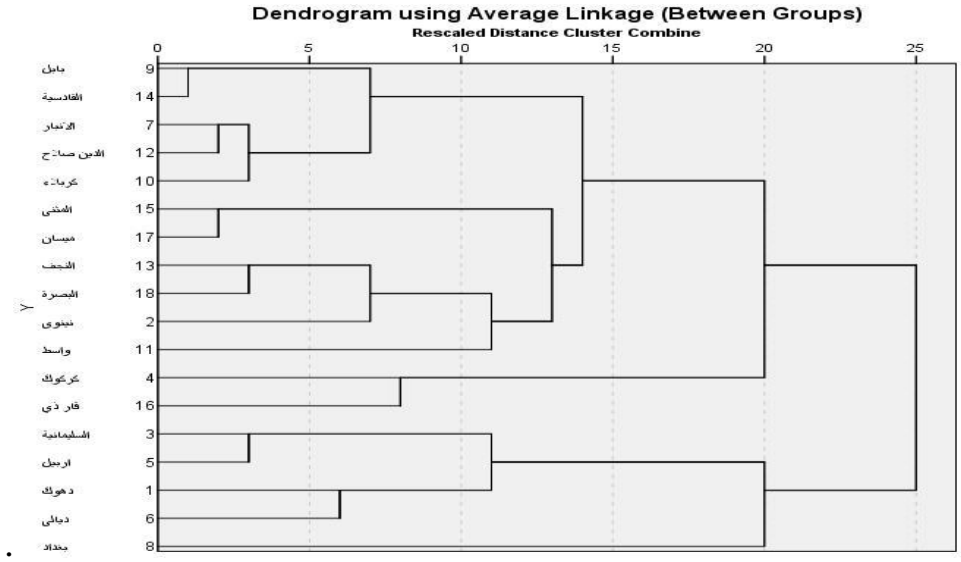
Agglomeration Schedule						
	Cluster Combined			Stage Cluster First Appears		
Stage	Cluster 1	Cluster 2	Coefficients	Cluster 1	Cluster 2	Next Stage
1	9	14	.063	0	0	9
2	7	12	.164	0	0	6
3	15	17	.188	0	0	13
4	13	18	.234	0	0	8
5	3	5	.253	0	0	12
6	7	10	.269	2	0	9
7	1	6	.436	0	0	12
8	2	13	.535	0	4	11
9	7	9	.552	6	1	14
10	4	16	.626	0	0	15
11	2	11	.803	8	0	13
12	1	3	.842	7	5	16
13	2	15	.926	11	3	14
14	2	7	1.004	13	9	15
15	2	4	1.443	14	10	17
16	1	8	1.486	12	0	17
17	1	2	1.846	16	15	0

It is noted from Table (15) that each of the two governorates Babel singles (9) and Qadisiyah singles (14) have been linked together due to the fact that the distance between them and the amount (0.063) measured in square meters is the smallest distance possible and that step (9) is the next step that will be Linking the seventh group consisting of the sixth step with group (9) consisting of step (1) and then move to step (14) to be linked group (2) consisting of step (13) with group (7) consisting of step (9) and after Then the move is taken to step (15) to link group (2) consisting of step (14) to group (4) consisting of step (10) to be then To move to step (17) to link the first group consisting of step (16) with the second group consisting of step (15) and so on to the rest of the groups, as this link can be represented according to the ice sheets and as shown in Figure (10)



Icicle plot for goats

Moreover, this connection can be represented according to the tree diagram and as shown in Figure 11



)Figure (11

Tree diagram of strapping for goats

Third: Cluster membership

After extracting the kinship matrix and grouping steps, the distribution of vocabulary was found as members of groups using the range of solutions (2,4) within the Statistic command option in the SPSS program as follows:

.4Distribution of vocabulary as members of groups in relation to goats

Table (20) shows the distribution of vocabulary as members of groups in relation to the goat variety:

Table 20

Distribute items as members of Cluster Membership groups

Cluster Membership			
Case	**4 Clusters**	**3 Clusters**	**2 Clusters**
1: Dohuk	**1**	**1**	**1**
2: Nineveh	**2**	**2**	**2**
3: Sulaymaniyah	**1**	**1**	**1**
4: Kirkuk	**3**	**2**	**2**
5: Erbil	**1**	**1**	**1**
6: Diyala	**1**	**1**	**1**

7: Anbar	**2**	**2**	**2**
8: Baghdad	**4**	**3**	**1**
9: Babel	**2**	**2**	**2**
10: Karbala	**2**	**2**	**2**
11: Wasit	**2**	**2**	**2**
12: Salah al-Din	**2**	**2**	**2**
13: Najaf	**2**	**2**	**2**
14: Al Qadisiyah	**2**	**2**	**2**
15: Al Muthanna	**2**	**2**	**2**
16: DhiQar	**3**	**2**	**2**
17: Maysan	**2**	**2**	**2**
18: Basra	**2**	**2**	**2**

We note from the table (20) above, that the governorate of (Baghdad) belongs to the fourth group in the case of classification into four groups, and belongs to the third group in the case of classification into three groups, and to the first group in the case of classification into two groups, as for each of the two governorates (Kirkuk, DhiQar) It belongs to the third group in the case of classification into four groups, and to the second group in the case of classification into three groups and two groups, while each of the provinces of (Duhok, Sulaymaniyah, Erbil, Diyala) were belonging to the first group in the case of Classification is divided into four groups, three groups, or two groups As for the rest of the governorates, it belongs to the second group in the case of classification into two or three groups or four groups. Estimation results using the hierarchical method of the variables

In this analysis, the variables of the deprivation guide are used, and here the search variables are gathered, and the governorates are not used to know which of these variables are related to each other in the form of groups where the method of linking between groups was used. My agencies: First: the kinship matrix with respect to the variables

The scale that was used in calculating the kinship matrix is the simple correlation coefficient and according to the variables of livestock problems in Iraq, as follows: .4The kinship matrix with respect to the goat variety:

Table 25
The kinship matrix for the goat variety

Proximity Matrix								
	Matrix File Input							
Case	Hands	genetic	fodder	treatmen	price	marketing	Irrigations	**others**
the hands	**1.000**	**.082**	**.466**	**.115**	**.474**	**.005**	**.507**	**.020**
Heredita ry	**.082**	**1.000**	**.632**	**.263**	**.194**	**.249**	**.407**	**.394**
Fodder	**.466**	**.632**	**1.000**	**.556**	**.035**	**.516**	**.751**	**.321**
treatmen t	**.115**	**.263**	**.556**	**1.000**	**.001**	**.353**	**.189**	**.251**
the prices	**.474**	**.194**	**.035**	**.001**	**1.000**	**.404**	**.354**	**.231**
marketin g	**.005**	**.249**	**.516**	**.353**	**.404**	**1.000**	**.065**	**.002**
Quench	**.507**	**.407**	**.751**	**.189**	**.354**	**.065**	**1.000**	**.377**
Others	**.020**	**.394**	**.321**	**.251**	**.231**	**.002**	**.377**	**1.000**

It is noted from Table (25) that the highest simple correlation coefficient between the variables of livestock problems for the goat class was between (lack of feed, irrigation of animals) as the value for it reached (0.751.)
Second: Agglomeration Schedule steps

To demonstrate the steps for grouping vocabulary (governorates) and how they relate to each other, the following tables were created:

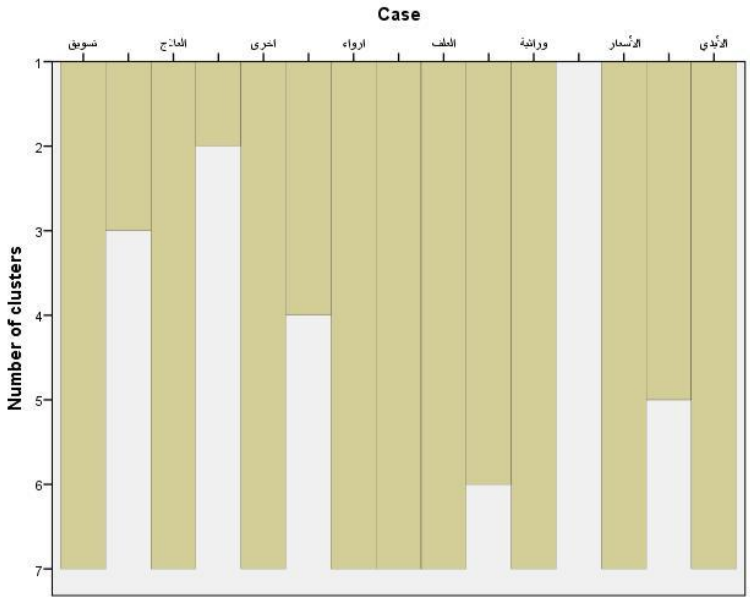
.4Collection steps for goats

Table (30) shows collection steps for goats:

)Table (30
Agglomeration schedule for goats

Agglomeration Schedule						
	Cluster Combined			Stage Cluster First Appears		
Stage	Cluster 1	Cluster 2	Coefficients	Cluster 1	Cluster 2	Next Stage
1	3	7	.751	0	0	2
2	2	3	.519	0	1	4
3	1	5	.474	0	0	7
4	2	8	.364	2	0	6
5	4	6	.353	0	0	6
6	2	4	.261	4	5	7
7	1	2	.201	3	6	0

It is noted from Table (30) that each of the two items (lack of feed, irrigation of animals) has been combined in the first step, since the value of the simple correlation coefficient between them and the amount (0.751) is the largest possible, then move to the second step to merge the second item And represented by (bad genetic factors) in the third group consisting of the first step, then the transition to the fourth step is to be combined with the second group consisting of the second step with the eighth item represented by other problems, then to move to the sixth step in which the second group consisting of the step is linked the fourth The fourth group consisting of the fifth step, after which the transition to the seventh step is carried out so that the first group consisting of the third step is linked to the second group consisting of the sixth step, and so on to the rest of the groups, and this linking process can also be represented according to the ice sheet chart shown in the following figure (20)



)Figure (20
Ice sheets for livestock problem variables for the goat variety

Also, this linking process can be represented according to the tree diagram shown in the following figure 21` :

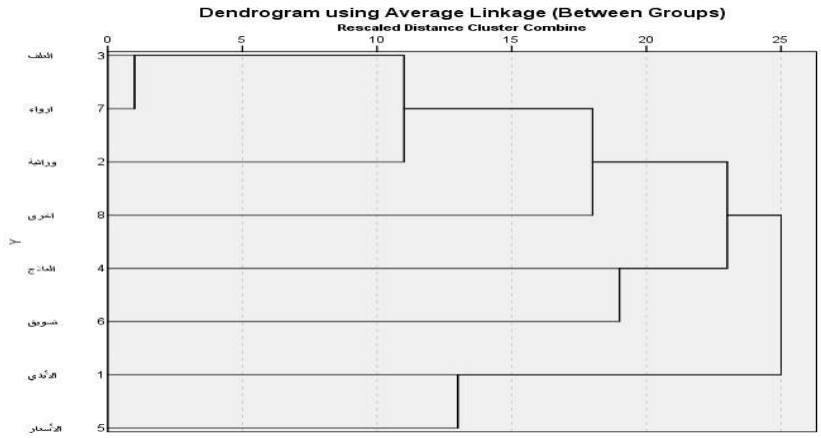


Table 35
Distribute items as members of Cluster Membership groups

Cluster Membership			
Case	**4 Clusters**	**3 Clusters**	**2 Clusters**
the hands	**1**	1	**1**
Hereditary	**2**	2	**2**
Fodder	**2**	2	**2**
treatment	**3**	3	**2**
the prices	**1**	1	**1**
marketing	**4**	3	**2**
Quench	**2**	2	**2**
Others	**2**	2	**2**

It is noted from Table (35) that a variable (an inefficient marketing system) falls in the fourth group in the case of classification into four groups, in the third group when classification into three groups and in the second group in the case of classification into two groups, while the variable (lack of treatment) is located In the third group in the case of classification into four groups or two groups in the case of classification into three groups and falls in the second group in the case of classification into two groups, while each of (bad genetic factors, lack of feed, irrigation, other) it falls in the second group in Classification status into four groups, or three groups or two groups, while The variable (lack of manpower) falls in the first group in the case of classification into four groups, three groups or two groups.

Analysis results using the K-means method

In order to apply this method, the following must be extracted:

First: the distribution of vocabulary as members of groups and after the singularity from the Cluster membership

In order to classify the governorates according to their totals and to measure after each individual for the group to which they belong, the following results were found:

4. Distribution of vocabulary as members of groups and after the singularity from the group position in relation to livestock problems of the goat variety

In order to classify the governorates according to their totals and to measure after each individual for the group to which they belong in relation to the livestock problems in Iraq for the goat variety, create the following table:

Table (43)

Distribution of vocabulary as members of groups and after the term for the group's Cluster membership for livestock problems in Iraq for goats

Cluster Membership			
Case Number	Governorate	**Cluster**	**Distance**
1	Dohuk	**3**	**1.933**
2	Nineveh	**4**	**2.290**
3	Sulaymaniyah	**3**	**1.401**
4	Kirkuk	**2**	**1.903**
5	Erbil	**3**	**1.122**
6	Diyala	**1**	**1.587**

7	Anbar	**2**	**1.972**
8	Baghdad	**1**	**1.587**
9	Babylon	**4**	**1.912**
10	Karbala	**4**	**1.399**
11	Wasit	**4**	**2.175**
12	Salahuddin	**4**	**2.409**
13	Najaf	**4**	**1.957**
14	Al-Qadisiyah	**4**	**1.590**
15	Double	**3**	**2.134**
16	DhiQar	**2**	**1.405**
17	Maysan	**4**	**2.335**
18	Basra	**4**	**1.745**

It is noted from Table (43) that each of the governorates (Nineveh, Babil, Karbala, Wasit, Salah al-Din, Najaf, Al-Qadisiyah, Maysan, Basra) belong to the fourth group and that Salah al-Din Governorate is the most distant from the center of this group where the distance corresponding to it (2.409) according to the variables of livestock problems in Iraq, while each of the governorates (Dohuk, Sulaymaniyah, and Muthanna) belongs to the third group and that the Muthanna Governorate is the furthest single from the center of this group, as the corresponding distance to it (2.134), and that Each of the provinces (Kirkuk, Anbar, DhiQar) belongs to the second group. As for the rest of the governorates, which are represented in the province of (Diyala, Baghdad), they fall into the first group, as shown in table (44).

Table (44)
Classification of governorates by groups

fourth	third	second	The first,	Provence
, Nineveh, Babil, Karbala, Wasit, Salahuddin, Najaf, Qadisiyah, Maysan, Basra	Dohuk, Sulaimaniya, Muthanna	Kirkuk, Anbar, DhiQar	Diyala, Baghdad	

Second: The averages of the variables in the different groups

The variables were distributed in four groups as follows:

.4The mean of the variables in the different groups in relation to the livestock problems of the goat class

Table (50) shows the averages of the variables in the different groups in relation to the livestock problems of the goats

Table 50
The averages of the variables in the different groups

Final Cluster Centers				
	Cluster			
	1	**2**	**3**	**4**
Zscore (hands)	**-.63473-**	**-.47878-**	**1.29818**	**-.27633-**
Zscore (genetic)	**2.41684**	**-.05142-**	**-.07071-**	**-.48851-**
Zscore (feed)	**-1.29147-**	**-.31178-**	**-.91910-**	**.79941**
Zscore (treatment)	**.50121**	**.62877**	**.28668**	**-.44838-**
Zscore (prices)	**.28078**	**1.26599**	**-.96057-**	**-.05747-**
Zscore (Marketing)	**.50818**	**1.32722**	**.04595**	**-.57576-**
Zscore (watering)	**1.00511**	**-.70990-**	**1.19489**	**-.51778-**
Zscore (other)	**1.10062**	**-.29217-**	**.54231**	**-.38822-**

It is noted from Table (50) that the highest average for the variable of the lack of manpower was within the governorates of the third group, as it reached (1.29818) from the standard deviation. As for bad genetic factors, it reached its highest average in the governorates of the first group, as it reached (2.41684) From the standard deviation, and for the variable for lack of fodder, it reached its highest mean (0.79941) from the standard deviation in the governorates of the fourth group, and for the variable of the lack of treatment it was the highest average for it (0.62877) from the standard deviation in the governorates of the second group, as for fluctuation Prices were the highest average (1.26599) of the deviation For the second group governorates, and for an

inefficient marketing system, its highest average (1.32722) was from the standard deviation in the second group governorates, and for the lack of irrigation variable it was the highest average (1.19489) of the standard deviation in the governorates of the third group, Also, the variable of other factors was the highest average in the governorates of the first group, as it reached (1.10062) from the standard deviation. Third: The distance between the groups centers Distances between Final Cluster Centers

In order to measure the distance between the centers of the groups in the governorates in order to know the extent of the proximity or separation of these groups from each other, the following was found:

Third: The distance between the groups centers Distances between Final Cluster Centers

In order to measure the distance between the centers of the groups in the governorates in order to know the extent of the proximity or separation of these groups from each other, the following has been found: .4The distance between group centers in relation to the livestock problems of the goat variety

Table (55) shows the distance between group centers in relation to the livestock problems in Iraq for the goat variety:

Table 55
The distance between group centers

Distances between Final Cluster Centers				
Cluster	1	2	3	4
1		3.690	3.494	4.435
2	3.690		3.817	2.837
3	3.494	3.817		3.339
4	4.435	2.837	3.339	

It is noted from the table (55) above that the average of the fourth group is far from (4,435) from the governorates of the first group. Whereas, the average of the second group governorates is closer to (2.837) than the fourth group governorates.

Fourth: The analysis of variance

The table of one-way analysis of variance was calculated for the variables of livestock problems in Iraq as follows:

Table of one-way analysis of variance with regard to livestock problems of the goat variety

Table (60) shows a one-way analysis of variance with respect to livestock problems of the goat variety:

Table 60
Table of analysis of variance in relation to livestock problems of goats

ANOVA						
	Cluster		Error			
	Mean Square	df	Mean Square	df	F	Sig.
Zscore (hands)	**2.974**	**3**	**.577**	**14**	**5.154**	**.013**
Zscore (genetic)	**4.619**	**3**	**.224**	**14**	**20.583**	**.000**
Zscore (feed)	**4.253**	**3**	**.303**	**14**	**14.035**	**.000**
Zscore (treatment)	**1.276**	**3**	**.941**	**14**	**1.356**	**.297**
Zscore (prices)	**2.895**	**3**	**.594**	**14**	**4.876**	**.016**
Zscore (Marketing)	**2.931**	**3**	**.586**	**14**	**5.000**	**.015**
Zscore (hands)	**3.885**	**3**	**.382**	**14**	**10.180**	**.001**
Zscore (genetic)	**1.737**	**3**	**.842**	**14**	**2.063**	**.151**

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

- **It** is noted from Table (60) that the average livestock problems of the variable (lack of treatment) have the least differences between groups and with an equivalent of (1.356), whereas the average (bad genetic factors) has the largest differences between groups and with an equivalent of (20,583) knowing that all the variables Moral under level (0.05) except for the variables (lack of treatment, other factors) and this means that there are significant differences between groups and heterogeneous in relation to most variables of livestock problems in Iraq in relation to the goat variety.

Conclusions

- From the results found in the body of the research, the following points were reached
- The Iraqi governorates were classified into four groups according to the livestock problems in Iraq and by category
- The animal is as follows:
- Regarding the livestock problems of the goat variety, the Iraqi governorates were classified into:

fourth	third	second	The first,	Provence
, Nineveh, Babil, Karbala, Wasit, Salahuddin, Najaf, Qadisiyah, Maysan, Basra	Dohuk, Sulaimaniya, Muthanna	Kirkuk, Anbar, DhiQar	Diyala, Baghdad	

The highest average of livestock problems in Iraq was classified for each of the groups of Iraqi portfolios according to the animal category as follows:

Group 4	**Group 3**	**Group 2**	**Group 1**	**Provinces groups** / **Animal classification**
lack of feed, and other factors	lack of hands, animal irrigation	, lack of treatment, price fluctuations, inefficient marketing system	Bad genetic factors	**GOAT**

Recommendations

Depending on the results reached, the researchers recommend the following- :

1. The necessity of controlling the process of buying and selling goats in the second group's provinces, by putting an end to the prices of those animals, as well as facilitating the process of commercial exchange from the provinces in which those animals are available to the provinces that suffer from this problem.
2. Attention to providing manpower for animals (goats) for the governorates of the third group.
3. To address the lack of feed for animals, goats) for the governorates of the fourth group, by increasing the areas of green pastures, which leads to an increase in the productivity of one animal from meat and dairy, as well as spreading cultural awareness among animal husbandry regarding the provision of green fodder, as it is still A large number of breeders depend mainly on the food of their animals for grazing on public pastures.
4. Attention to providing treatment and increasing the number of veterinarians in the governorates of the first group for animals (goats) for the governorates of the second group.
5. Addressing drought in the first group governorates for animals, goats) for the third group governorates.
6. Providing a surplus for export, in addition to providing a decent standard of living for livestock breeders in particular, and those working in the agricultural sector in general for animals (and goats) for the fourth group governorates.

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