

## Investigation of Factors and Mortality Rate of Broiler Chickens in Poultry Farms in Maymana City

Mohammad Ayoub Hanif<sup>1</sup> and Farahuddin Larghani<sup>2</sup>

<sup>1</sup>Faculty of Agriculture, Department of Animal Science, Faryab University, AFGHANISTAN.

<sup>2</sup>Faculty of Agriculture, Department of Animal Science, Faryab University, AFGHANISTAN

<sup>1</sup>Corresponding Author: mohammadayoubhanif135@gmail.com



www.jrasb.com || Vol. 2 No. 5 (2023): October Issue

Received: 09-10-2023

Revised: 19-10-2023

Accepted: 29-10-2023

### ABSTRACT

The subject of this research article is the investigation of factors and the rate of mortality in broiler chickens in poultry farms in Maymana city. This article examines the technical, technological, and managerial factors related to poultry farms and aims to assess their impact on the mortality rate of broiler chickens in Maymana city farms. This research can contribute to improving the conditions of chick rearing and reducing mortality rates in the broiler poultry industry.

The investigation of factors and the rate of mortality in broiler chickens in poultry farms in Maymana city holds great importance in the broiler poultry industry. The mortality of chicks in the early stages of the production chain leads to profitability and performance decline in poultry farms due to technical, technological, and managerial issues. A detailed examination of these factors and the determination of appropriate strategies to reduce chick mortality can enhance the performance and efficiency of the broiler poultry industry. Therefore, this subject is of significant importance and contributes to sustainable development and improvement in the quality of broiler chicken rearing.

The objective of this research article is to investigate the technical, technological, and managerial factors and their impact on the mortality rate of broiler chickens in poultry farms in Maymana city.

In this research, using a descriptive research method, the status of the poultry rearing industry and the relationship of its dependent variables were examined. After preliminary investigations, 17 active poultry farms were selected using the systematic sampling method (SD) for conducting face-to-face interviews and completing questionnaires.

The results showed that many of the examined farms did not reach a satisfactory level in terms of technical, technological, and managerial factors. The influence of each of these factors on animal losses in broiler farms was 31.71%, 33.08%, and 34.19%, respectively. Additionally, disease factors also had an impact on animal losses. The common diseases in broiler farms in Maymana city included Newcastle disease, avian influenza, and Gumboro, which caused significant losses in the chickens.

**Keywords-** Broiler chickens, Investigation, Managerial factors, Maymana, Mortality rate, Poultry farms, Technical factors.

### I. INTRODUCTION

In the poultry industry, the mortality rate of chicks in the early stages of the production chain is one of the fundamental challenges that significantly affects the profitability and performance of poultry farms. Broiler chickens play a vital role as a major source of animal protein in meeting the nutritional needs of society. However, high mortality rates in broiler chicks may occur due to technical, technological, and managerial issues in poultry farms.

Various factors can influence chick mortality in this industry. Among these factors are technical factors, which include issues related to the purchase and selection of eggs, proper handling and transportation of chicks, nutrition, and the rearing environment. Additionally, technological factors also play a crucial role in chick mortality, such as the use of advanced production technologies, providing balanced and optimal nutrition, and utilizing appropriate equipment for the rearing environment. Furthermore, managerial factors can also have an impact on chick mortality, including precise planning, continuous monitoring, and staff training.

A comprehensive investigation and identification of appropriate strategies to reduce chick mortality are of great importance. By accurately identifying the causes of mortality, actions can be taken to improve the performance and efficiency of the broiler chicken industry. This research aims to examine the impact of technical, technological, and managerial factors related to broiler chicken farming on chick mortality in Maymana poultry farms. The objective of this research is to improve the conditions for chick rearing and reduce the mortality rate in the broiler chicken industry. This research can contribute to sustainable development and improvement in the quality of broiler chicken farming in Maymana poultry farms. Considering the significance of this issue, this research can also aid in the development of the broiler chicken industry in this region and improve the overall food supply for the community. By utilizing quantitative and qualitative research methods, this study collects and analyzes the necessary information to identify effective solutions for reducing chick mortality in Maymana poultry farms. In summary, this research focuses on providing practical and scientific solutions to improve the conditions of chick rearing and reduce the mortality rate in the broiler chicken industry.

## II. OBJECTIVE

The objective is to examine the technical, technological, and managerial factors and their impact on the mortality rates of broiler chicks in poultry farms in Maymana City.

## III. RESEARCH QUESTIONS

1. Does improving the structure and technical equipment in poultry farms have a significant impact on reducing the mortality rates of broiler chicks?
2. Can the use of innovative technologies such as smart monitoring and control systems in poultry farms improve the environmental conditions and reduce the mortality rates of chicks?
3. Can optimal management of resources, equipment, and human resources in poultry farms help reduce the mortality rates of broiler chicks?

## IV. HYPOTHESES

1. Improving the structure and technical equipment in poultry farms can lead to a reduction in the mortality rates of broiler chicks.
2. The use of innovative technologies such as smart monitoring and control systems in poultry farms can help improve environmental conditions and reduce the mortality rates of chicks.
3. Optimal management of resources, equipment, and human resources in poultry farms can help reduce the mortality rates of broiler chicks.

## V. LITERATURE REVIEW

The mortality of broiler chickens in poultry farms can be influenced by various factors. To review the scientific evidence in this area, several relevant studies have been conducted that provide useful findings.

One important study in this field is titled "Analysis of Factors Affecting Mortality of Broiler Chickens in Industrial Poultry Farms," which examines the relationship between various factors and chicken mortality (Farshchi et al., 2019).

In another study titled "Analysis of Factors Affecting Mortality of Broiler Chickens in Backyard Poultry Farms," the impact of factors such as improper housing, inadequate nutrition, technical deficiencies, and unfavorable environmental conditions on chicken mortality is investigated (Sabaghi et al., 2018).

Additionally, in a study titled "Analysis of Factors Affecting Mortality of Broiler Chickens in Breeding Poultry Farms," the influence of factors such as respiratory infections, vitamin and mineral deficiencies, and unfavorable environmental conditions on chicken mortality is examined (Mahmoudi et al., 2019).

These research studies indicate that various factors can affect the mortality of broiler chickens in poultry farms. Improving environmental conditions, providing appropriate nutrition, implementing proper management practices, and preventing diseases and stress can help reduce chicken mortality. Furthermore, increased education and awareness regarding proper care and management can play a significant role in reducing chicken mortality.

## VI. TECHNICAL FACTORS

According to research, technical factors can play a significant role in reducing the mortality of chicks in the broiler chicken industry. For example, the use of high-quality and healthy eggs can contribute to reducing chick mortality (Smith, 2010). Additionally, proper nutrition and appropriate farm management can also help reduce chick mortality in the poultry industry (Jones & Brown, 2015). A study conducted by Johnson (2018) also demonstrated that technical factors such as proper handling and transportation of chicks can aid in reducing their mortality.

In general, scientific studies indicate that technical factors such as eggs, nutrition, the number of poultry farms, and proper handling and transportation of chicks can help reduce chick mortality in the broiler chicken industry.

## VII. TECHNOLOGICAL FACTORS

Scientific research in the field of technological factors and chick mortality in the broiler chicken industry has shown that various technologies can have a significant

improvement in reducing chick mortality. One important factor is the use of high-quality and healthy eggs as a source of chicks. High-quality eggs without defects produce healthier and stronger chicks with the highest chance of survival (Smith, 2010). Additionally, proper nutrition and appropriate farm management also have a significant impact on reducing chick mortality. Proper nutrition using data-based feeding formulations and automation in the feeding process improves chick survival and growth (Jones & Brown, 2015). Furthermore, providing sufficient space for each chick and creating suitable conditions in poultry farms can also help reduce chick mortality.

Moreover, the use of smart and strategic systems can also be effective in improving farming performance and reducing chick mortality. Smart systems measure environmental data in the farming environment using sensors and network-connected devices, providing producers with valuable information. This information can help in early detection of problems and improving performance.

Furthermore, adherence to hygiene principles in the care and transportation of chicks is also of utmost importance. The use of farm management systems and real-time data transfer can provide producers with useful information about the status of chicks and their farming performance, helping in making optimal decisions.

In general, technological factors can have a significant improvement in reducing chick mortality in the broiler chicken industry. Scientific studies in the field of technological factors and chick mortality indicate that the use of high-quality and healthy eggs, proper nutrition, and appropriate farm management can help reduce chick mortality in the broiler chicken industry. These studies show that the use of high-quality and defect-free eggs as a source of chicks can have a significant improvement in their survival. Additionally, proper nutrition and providing sufficient space for each chick contribute to reducing their mortality. Moreover, adherence to hygiene principles in the care and transportation of chicks can minimize their mortality. Finally, the use of smart and strategic systems can also be effective in improving performance and reducing chick mortality.

## VIII. MANAGEMENT FACTORS

Management factors also play a crucial role in reducing chick mortality in the broiler chicken industry. Proper and efficient management in poultry farms can lead to a significant improvement in chick survival. In this regard, scientific studies have shown that the following management factors can help reduce chick mortality.

**Proper planning:** Accurate and comprehensive planning for chick rearing, including nutrition, vaccination, and sanitation programs, can be effective in reducing chick mortality (Dee et al., 2006). Regular and precise planning for preventive measures and healthcare

can assist in early detection of problems and taking necessary actions.

**Continuous care and monitoring:** Continuous monitoring of chicks and identifying any health and behavioral issues can facilitate rapid improvement and treatment (Kettlewell & Mitchell, 2000). Additionally, careful care and monitoring of environmental conditions such as temperature, humidity, and ventilation can help reduce chick mortality.

**Education and awareness:** Providing training to staff on proper care, nutrition, hygiene, and management of chicks can have a positive impact on reducing their mortality (Dee et al., 2006). Staff members with sufficient knowledge about preventive and healthcare methods can observe chicks more accurately and identify any problems in the early stages.

**Stress management:** Environmental stresses such as temperature fluctuations, humidity, or nutritional disturbances can be factors leading to chick mortality (Estevez, 2007). Proper stress management and creating suitable environmental conditions can contribute to a significant improvement in chick survival.

## IX. MATERIALS AND METHODS

In this research, the impact of technical, technological, and managerial factors on animal losses in poultry farms in the city of Maymana was examined. The aim of this research is to identify and determine the contribution of these factors to poultry losses. By identifying the percentage contribution of these factors to mortality, necessary measures can be taken to reduce losses and explore avenues for the development and expansion of the poultry industry in Maymana.

To investigate these objectives, a descriptive study was conducted to identify and determine the influential factors on animal losses and assess the relationship between dependent variables. Descriptive research includes a set of methods aimed at describing conditions or phenomena under study to gain a better understanding of existing conditions or assist in the decision-making process. In this study, with the cooperation of the Agriculture and Livestock Department of Faryab Province, statistics on poultry farms were collected. Poultry farms in Maymana consist of both egg-laying and meat-producing farms, with meat-producing farms accounting for more than 90% of them. These meat-producing farms have the highest capacity and incur the highest current and fixed costs and losses. Therefore, the population studied in this research was limited to meat-producing farms.

Based on the available statistics from the Agriculture and Livestock Department of Faryab Province, in 1398 (2019), there were 35 active meat-producing units in Maymana, while the statistics of 1401 (2022) indicate that 42 poultry farms are registered in Faryab Province. According to officials from the

department, it is likely that there are more than 250 farms in Faryab Province. A purposive sampling method was used to determine the number of study areas. First, the characteristics of meat-producing farms in the regions of Maymana were sorted based on their capacity and the percentage of capacities in each region. Eight regions with poultry farms were selected for the study. These regions include the first, second, fourth, fifth, sixth, seventh, eighth, and ninth regions, located in the east, north, west, and south of Maymana, respectively, and they provide suitable geographical coverage for the study.

After initial investigations, it was found that some farms had ceased their activities. Ultimately, a total of 17 active poultry farms were selected using a selection design approach, representing 40% of all registered meat-producing farms in Faryab Province. The distribution of farms within each region was determined, and then, based on the number of poultry farming centers in the four

geographical directions of each region (north, south, east, west) and considering the active meat-producing farms in these four directions, the selected farms were chosen for face-to-face interviews, observations, and completion of questionnaires.

## X. RESULTS

Broiler farming is widespread in almost all areas of Maymana city, but the number of farms varies in different regions. There are no active poultry farms in the third and tenth regions.

According to this research, it has been determined that there are 17 active farms in Maymana city, with 5 farms operating seasonally and 12 farms operating throughout the year. The details are shown in Table 1.

**Table 1: Specifications of broiler farms in Maymana city, categorized by seasonal and year-round activities**

Number	Valid	Count	Percentage	Valid Percentage	Cumulative Percentage
1	Seasonal Farms	5	24.7	24.7	24.7
2	Year-round Farms	12	75.3	75.3	100.0
3	Total	17	100.0	100.0	

### Technical Factors

To investigate the factors contributing to mortality and losses of broiler chickens in poultry farms in Maymana city, various technical, technological, and management factors were identified and examined. For each of these factors, a score was assigned based on specific and adaptable standards, with a general average score of 10. According to Table 2, one farm scored 3 out of 10, four farms scored 4 out of 10, eleven farms scored 5 out of 10, and one farm scored 6 out of 10, resulting in an overall average technical score of 4.71% for the farms in Maymana city.

The investigation revealed that most of the examined farms were located in different areas and at different elevations. The majority of farms were located near the residences of the farm managers, which could contribute to the transmission of disease-causing agents and losses. Additionally, some farms were situated in

close proximity to each other, which could be a factor in the losses, while others were located in mountainous areas.

In terms of adherence to technical standards, most farms performed poorly, with only a few having sufficient knowledge in this regard. The majority of farm owners were illiterate, which is a major factor in the lack of compliance with technical standards.

The majority of farm workers were inexperienced and unaware of proper poultry rearing methods, and the managers also lacked sufficient attention to this matter, resulting in losses of the chickens.

Regarding carcass disposal, most farms had proper practices and had dug disposal pits at a distance from the rearing farms, burying all carcasses in these pits

In terms of bedding, most broiler farms used suitable bedding and sold it to the local community after the chickens were removed from the farms.

**Table 2: Specifications of technical factors based on the examined criteria**

Number	Valid	Number of Farms	Percentage	Valid Percentage	Cumulative Percentage
1	3	1	5.9	5.9	5.9
2	4	4	23.5	23.5	29.4
3	5	11	64.7	64.7	94.1
4	6	1	5.9	5.9	100.0
Mean	4.71	17	100.0	100.0	

### Technical Factors

The investigation focused on the factors contributing to mortality and losses of broiler chickens in

poultry farms in Maymana city, specifically examining the use of various technologies. In terms of technology, the following scores were assigned: according to Table 3,

seven farms scored 4 out of 10, nine farms scored 5 out of 10, and one farm scored 6 out of 10, indicating a mean score of 4.62, as mentioned in Table 6.

Suitability of chicks to the capacity of the poultry houses: Most farms raised fewer chicks than the capacity of their houses could accommodate.

Use of proper ventilation systems: The majority of farms examined had weak and basic ventilation systems, relying on natural ventilation and air extraction.

Vaccination and treatment equipment: Most poultry farms administered vaccinations and treatments

by dissolving vaccines and medications in water and transferring them through farm waterers. Some farms used sprayers for certain vaccines, albeit in the early days of the rearing period.

Application of disinfection technology in the poultry houses: Most farms used bleach as a disinfectant, while some used more advanced disinfectants such as formalin. In a rearing cycle, farms only disinfected with bleach once, and they disinfected farm utensils with disinfectants in each cycle.

**Table 3: Specifications of technical factors based on the examined criteria**

Number	Valid	Number of Farms	Percentage	Valid Percentage	Cumulative Percentage
1	4	7	41.2	41.2	41.2
2	5	9	52.9	52.9	94.1
3	6	1	5.9	5.9	100.0
Mean	4.62	17	100.0	100.0	

**Management Factors**

The scores obtained from management factors are as follows: ten farms scored 4, six farms scored 5, and one farm scored 6 on a scale of 1 to 10. The average score is 4.47, as shown in Table 3.

Familiarity with poultry farm management: In the examined farms, most managers did not have formal education and relied solely on their personal experiences.

Determining the frequency of placing chicks per year: The specifications of poultry farms in Maymana city, based on season and the entire year, are presented in Table 4. The frequency of placing chicks per year is the responsibility of the farm manager, and the duration between two placements in the studied farms varied from

one week to three months. Adjusting chick density in the house: As mentioned earlier, most poultry farmers do not have formal education and are unaware of international standards. Proper adjustment of chick density has a significant impact on their growth and development.

Familiarity with international standards regarding chick mortality: Most managers were unfamiliar with international standards regarding chick mortality and considered any minor losses as unacceptable. However, some poultry farms had minimal knowledge of international standards and were aware that no production cycle is without losses, and there are standards for chick mortality in each production cycle.

**Table 4: Specifications of management factors based on the examined criteria**

Number	Valid	Number of Farms	Percentage	Valid Percentage	Cumulative Percentage
1	4	10	58.8	58.8	58.8
2	5	6	35.3	35.3	94.1
3	6	1	5.9	5.9	100.0
Mean	4.47	17	100.0	100.0	

**Mortality and Losses**

This study included 17 farms with an average chick placement of 2,618 chicks. The minimum number of chick placements was 400, while the maximum was 6,000. The total number of chicks placed in a production cycle in Maymana city is 44,500.

The average losses in Maymana farms are 403 chicks, with a minimum of 50 losses and a maximum of 1,500. Additionally, the total number of losses in a cycle in Maymana farms reaches 6,850 chicks, as mentioned in Table 5.

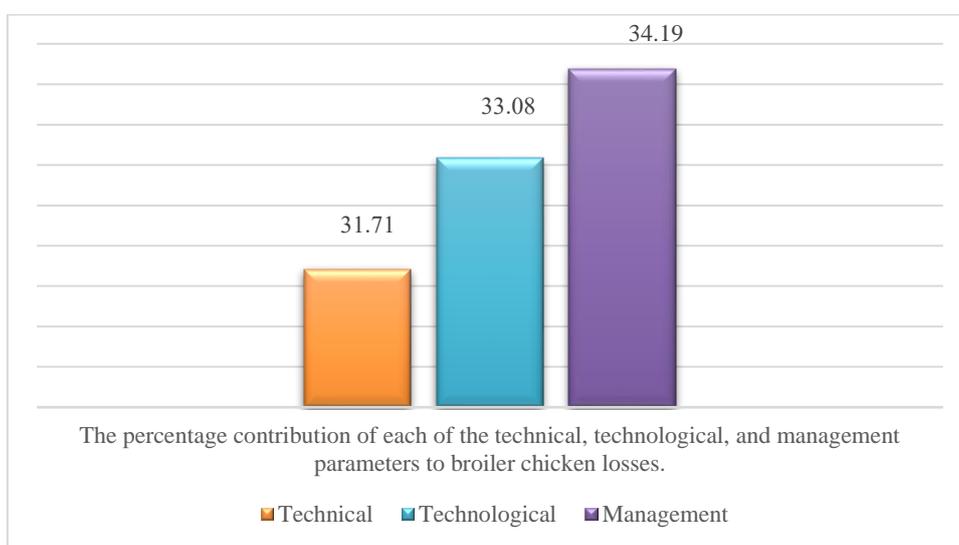
**Table 5: Status/specifications of poultry farms in Maymana city considering the studied parameters.**

Index	Number of Animal Losses	Technical	Technological	Management	Number of Chick Placements per Cycle	Number of Cycles
Number of Farms	17	17	17	17	17	17

Lost	0	0	0	0	0	0
Mean	402.94	4.71	4.65	4.47	2617.65	1.00
Minimum	50	3	4	4	400	1
Maximum	1500	6	6	6	6000	1
Total	6850	80	79	76	44500	17

In the investigation of various farms, it has been observed that the technical, technological, and management factors were not in a satisfactory condition in many of them, with each of these variables contributing 31.71%, 33.08%, and 34.19% to the losses of broiler chickens, respectively. This figure is shown in Graph (1).

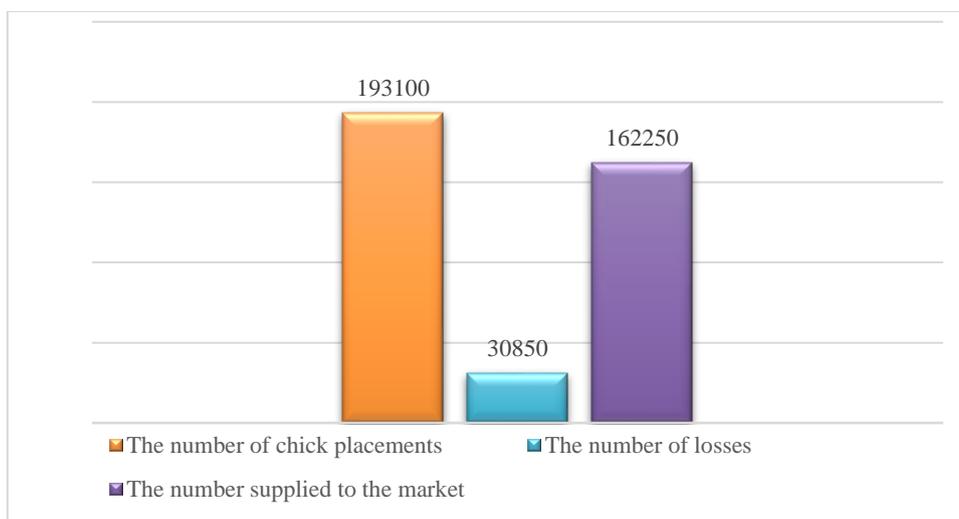
Additionally, disease factors have also had a significant impact on animal losses. Common diseases in these farms include Newcastle disease, avian influenza, and Gumboro, which have caused significant losses in chickens in Maymana city.



**Graph 1: Represents the percentage contribution of each of the technical, technological, and management parameters to broiler chicken losses.**

Based on Graph 2, it can be seen that the number of chick placements, losses, and supply to the market in a production year in Maymana city were 193,100, 30,850, and 162,250 chicks, respectively. From the findings of

this study, it has been determined that the percentage of broiler chicken losses in poultry farms in Maymana city is 15.4% of the total chick placements in a production year.



**Graph 2: Represents the level of chick placements, production, and losses in a production year.**

## XI. DISCUSSION

High mortality and losses of broiler chickens in poultry farms in Maymana is one of the challenges that has affected poultry farmers in this city. According to the findings of this research, the mortality rate of chickens in Maymana is 15.4%. This is significant considering that broiler farming is a large and profitable industry worldwide. However, one of the factors that farmers in developing countries complain about is the high mortality of broiler chicks compared to international standards. According to research conducted, chicken losses in Tehran (20.77%) and Mazandaran (6.84%), with an average of 13.80% nationwide in Iran, have been reported (Moeminzadeh & Shahvali, 2007, pp. 333-347), and other sources report figures between 9% and 10.5%.

Furthermore, the results of a national study on broiler farms in Iran show that animal losses in poultry farms are three times higher than international standards. According to this study, some of the factors contributing to these losses are the lack of knowledge and skills of the managers. The results of this research, conducted in Fars province, showed that the implementation of a training program had a significant impact, as it reduced losses in broiler farms and led to a decrease in the total cost of weight gain per unit (Veli & Rahimi, 2006, pp. 25-39). It is expected that factors such as the lack of knowledge and skills of managers in this field have been effective in the high mortality rate of broiler chickens in poultry farms in Maymana. These findings are consistent with the results of the aforementioned research.

In a study conducted to investigate the mortality rate, causes, and the impact of environmental, managerial, and health conditions on broiler chick mortality during the rearing period in the Mashhad district, over 178 poultry farms, it was found that there is a 23.5% correlation between managerial factors and mortality rate (Azizzadeh, 2013, pp. 45-49). However, according to the findings of this research, there is a 32.46% correlation between managerial factors and mortality rate in broiler farms in the city of Maymana. This high percentage of losses is attributed to the fact that broiler farming in Maymana has less than two decades of history and farmers lack sufficient experience and expertise in the management sector. It is expected that with the improvement of farm management in Maymana, the level of losses will significantly decrease. The most common cause of losses in the farms studied (in the Mashhad district) was reported to be avian influenza (1 A), followed by Newcastle disease (ND). The condition of the disinfection pool and the season of chick hatching had a significant relationship with mortality rate. Farms with an active disinfection pool had an average of 5.7% fewer losses compared to farms without an active pool. Additionally, the mortality rate was higher in the summer and fall seasons, with 10.4% and 7.2% more losses than the winter season. This study identified environmental and managerial factors, as well as efforts to improve them,

as important factors in reducing losses in broiler farms (Azizzadeh, 2013, pp. 45-49).

Another study examined the relationship between general and specific characteristics of poultry farms in the Qom region and the frequency of losses leading to compensation claims. The study used data from all poultry hatcheries in the Qom province from 1391 to 1392. The losses in the farms were compared to the general and specific characteristics of the hatcheries as a binary variable (claims reported vs. no claims reported), and the factors under investigation were compared as odds ratios with a reference level. The average percentage of losses in the affected farms was 27.7% and 46.1%, respectively. This study identified the season and unlucky circumstances for the poultry farmer as the worst factors affecting losses. Additionally, the losses in different regions of the Qom province had minor differences, and the type of shed and ownership had no significant impact on the frequency of losses. According to this study, water supply had fewer losses compared to other types of losses. Farms with good and very good technical grades had higher losses compared to farms with excellent, acceptable, and unacceptable grades. This study also showed lower losses in single-shed farms. The results of this study indicated that environmental and managerial factors, especially the season of chick hatching, the type of drinking water, and the behavior of poultry farmers during chick hatching, played a significant role in the likelihood of losses (Biki, 2015, pp. 51-58). Based on the above statements, it can be seen that multiple factors such as the season, type of drinking water, poor technical grade, multiple sheds, environmental and managerial factors, chick hatching season, and behavior of poultry farmers have contributed to the increase in chick mortality rates. Therefore, by improving the conditions of the factors influencing losses in poultry farms in Maymana, it is expected that the level of losses will decrease and play a significant role in the development and advancement of the poultry farming industry in this city.

A research conducted to investigate the management factors affecting the mortality rate in broiler farms in the districts of Ramian and Azadshahr, Golestan province, Iran, for comparing the average of two attributes of mortality in the first week and the percentage of total mortality at different levels of management factors shows that the mortality rate in farms in Ramian district is lower than Azadshahr district, and in general, the high capacity and large area of the poultry farms have led to an increase in mortality. Increasing the number of chick placements has also led to an increase in mortality. The distance of the farms from the city, village, and neighboring poultry farms did not have a significant effect on the mortality rate. Additionally, strain, rearing season, manager's age, and experience in this field did not have a significant effect on the mortality rate. Mortality was significantly influenced by the manager's level of education, and farms managed by university-educated managers had lower mortality rates. The presence of

diseases significantly increased mortality, while the type of feed did not have a significant effect on mortality. However, the source of feed had a significant effect on mortality, and farms that prepared their feed from factories had lower mortality rates. This study emphasized that the capacity and area of the poultry farm, number of chick placements, manager's education level, and presence of diseases were among the most influential management factors on the mortality rate (Rajabli et al., 2021, pp. 180-186).

In this study, the level of education of the manager was considered as one of the factors affecting mortality in poultry farms, while the age and experience of the manager were found to be ineffective in animal losses. Since the level of education can be effective on management factors, farms managed by highly educated managers experienced lower levels of losses. These results are consistent with the findings of previous research. However, according to the results of this study, the experience of managers was positively correlated with the level of losses. Since a high percentage of losses in urban farms are caused by various diseases, experienced managers can reduce the level of mortality by identifying disease transmission factors and prevention methods. Based on this research, the mortality rate of broiler chickens in urban farms in Maymana is estimated to be 32.46% due to management factors. Therefore, the results of these two studies differ regarding the level of manager's experience.

According to a report by Abdul Razzaq in 2017, the owner of a poultry farm with a capacity of 5000 chickens in Herat, the mortality rate of chickens is stated to be negligible without mentioning the percentage. He attributed the low mortality rate to the farm being covered by clinic services. Considering the above statements, it can be seen that clinic and health services coverage had a significant effect in preventing losses. The highest percentage of mortality in Maymana farms is also due to the lack of health and veterinary services. Therefore, the results of this study are consistent with the mentioned website's ([www.dari.wadsam.com](http://www.dari.wadsam.com), 2017) report.

## XII. CONCLUSION

The technical factors have a significant impact on the mortality of poultry in the city of Maymana. These factors include ventilation systems, nutrition, and water supply. Deficiencies in the ventilation system lead to a decrease in oxygen levels in the rearing environment, causing stress and respiratory failure in the chicks, ultimately resulting in their death. Inadequate nutrition also leads to insufficient nourishment for the chicks, reducing their immunity and resistance to diseases, leading to mortality. Additionally, deficiencies in the water supply system result in inadequate access to sufficient clean water for the chicks, causing dehydration and health problems, leading to their death. Overall,

technical factors account for 31.71% of poultry losses in the city of Maymana.

Technological factors also play a significant role in the mortality of broiler chicks. These factors contribute to 33.08% of poultry losses in broiler farms in Maymana. The use of ineffective or inappropriate vaccines and the utilization of inadequate and substandard equipment are among the factors that contribute to the mortality of chicks in these farms.

Management factors also have an important role in the mortality of broiler chicks. Neglecting environmental hygiene and failing to implement regular health and disinfection programs can lead to the spread of diseases in poultry farms, resulting in the death of chicks. Furthermore, the lack of sufficient training and skills among poultry farmers leads to errors and mistakes in chick management and care, increasing poultry losses. The contribution of these management factors to broiler losses is 34.19%.

In general, a combination of technical, technological, and management factors can contribute to the mortality of broiler chicks in poultry farms in Maymana. These factors reduce the immunity and resistance of chicks to diseases and microbial factors, resulting in their mortality. Therefore, improving technical, technological, and management factors in poultry farms can lead to a reduction in chick mortality and an increase in productivity in the broiler industry.

## SUGGESTIONS

1. Detailed examination of technical, technological, and managerial factors: It is recommended that future research focuses on a more detailed and comprehensive analysis of the technical, technological, and managerial factors in poultry farms in Maymana. This investigation can help identify suitable solutions to improve the conditions of chick rearing and reduce mortality in poultry farms.
2. Identification of appropriate solutions: It is suggested to examine and evaluate solutions for reducing chick mortality in poultry farms in Maymana. These solutions may include technical changes, utilization of new technologies, and improvement of operational management in poultry production.
3. Enhancing performance and efficiency in the poultry industry: Attention should be given to improving the performance and efficiency of the poultry industry in Maymana's poultry farms. It is recommended to explore solutions for increasing resource efficiency, optimizing production processes, and enhancing the performance of farms.
4. Further research on sustainable development in the poultry industry: It is proposed to conduct further research on improving the quality of poultry rearing and reducing chick mortality in poultry farms in Maymana. Such research can contribute to the sustainable development of the poultry industry and enhance industrial performance in this field.

## REFERENCES

- [1] Azizzadeh, M. (2013). The rate of losses and influencing factors in insured broiler farms in Mashhad city. *Veterinary Journal*, 45-49.
- [2] Biki, M. (2015). Analysis of losses in broiler farms in Qom province using logistic regression. *Scientific-Research Journal of the National Institute of Animal Science*, 51-58.
- [3] Dee, S. A., O'Connor, A. M., Deen, J., & Morrow, W. E. M. (2006). An overview of techniques for appraising qualitative research. *Journal of the Royal Society of Medicine*, 99(2), 73-77.
- [4] Estevez, I. (2007). Density allowances for broilers: where to set the limits? *Poultry Science*, 86(6), 1265-1272.
- [5] Farshchi, M., Taheri, S., Afshar, M., Nazarpour, R., & Abbasi, M. (2019). Analysis of disease factors on mortality of broiler chickens in industrial poultry farms. *Iranian Journal of Animal Science*, 50(1), 75-85.
- [6] Johnson, D. (2018). The importance of proper handling and transportation of chicks in reducing mortality rates. *Poultry Research Quarterly*, 42(3), 112-125.
- [7] Jones, B., & Brown, C. (2015). The effect of proper nutrition and adequate housing on chick survival rates. *Poultry Care and Management*, 30(4), 78-89.
- [8] Kettlewell, P. J., & Mitchell, M. A. (2000). Production-related mortality in broiler chickens. *British Poultry Science*, 41(1), 54-61.
- [9] Mahmoudi, M., Kheirkhah, M., & Shahbazian, M. (2019). Analysis of disease factors on mortality of broiler chickens in broiler breeder farms. *Journal of Animal and Aquatic Production*, 9(3), 75-83.
- [10] Moeinizadeh, H., & Shahvali, M. (2007). Study of factors affecting animal losses in broiler farms in the country. *Iranian Journal of Agricultural Sciences*, 333-347.
- [11] Rajabali, H., Bahri Beyanbaj, F., Maqsoudloo, S., & Rah Chemeni. (2021). Determining the effective management factors on mortality rate in broiler farms (case study: Ramian and Azadshahr counties). *Journal of Animal Production Research*, 180-186.
- [12] Sabaghi, M., Amiri, M., & Kordi, N. (2018). Analysis of disease factors on mortality of broiler chickens in backyard poultry farms. *Journal of Veterinary Research*, 74(4), 379-387.
- [13] Smith, A. (2010). The impact of quality eggs on chick mortality in the poultry industry. *Journal of Poultry Science*, 25(2), 45-56.
- [14] Vali, M. Sh., & Rahimi, N. (2006). Study of the effectiveness of training on reducing losses and wastage in broiler farms in Fars province: Presenting a training model. *Iranian Journal of Agricultural Extension and Education*, 25-39
- [15] Wideman Jr, R. F. (2001). Introduction to the avian respiratory system. *The Journal of Experimental Biology*, 204(22), 3957-3964.