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CHICKEN MEAT PRODUCTION TRENDS IN ROMANIA – A TWELVE-YEAR FORECAST

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Abstract

Chicken meat is an important source of protein and nutrition for many people worldwide and plays a crucial role in feeding growing populations and supporting local economies. In Romania, chicken meat production is an important sector of the country's economy, with a long tradition of poultry farming and modern facilities for efficient and sustainable production. In this regard, the aim of this study was to analyze the forecasted values for the chicken meat production, based on the empirical data collected form FAOSTAT, in the following twelve years. As a result, the data obtained showed a 5% increase in 2033 compared with 2021.

Keywords: chicken meat, production, forecast

1. INTRODUCTION

Chicken meat is one of the most consumed types of meat worldwide. One of the reasons is that represents a lean source of protein with less fat than beef and pork [1].
In addition to its nutritional and gastronomic benefits, poultry meat is a key economic driver in a number of nations.
The poultry industry is a substantial contributor to the economies of many nations, providing employment, income, and food for millions of people. Increasing demand for chicken and turkey meat, developments in breeding and feeding techniques, and improvements in distribution and transport networks have all led to the growth of the poultry (chicken, turkey, duck, and other specialised birds) industry.
Nonetheless, the production of poultry meat is not devoid of challenges. The threat of avian influenza is one of the greatest challenges facing the poultry industry.
Concerns regarding animal welfare, such as living conditions for birds on commercial farms and the use of antibiotics and growth hormones in poultry production, must also be addressed by the industry. Consumption of poultry meat is economically significant in more than 50 countries worldwide.
Regarding the worldwide situation, in 1996, poultry surpassed beef-veal to become the second most consumed meat in the planet. Currently, the world's most popular meat is pork [2].
In terms of gaining market share, integrating technologies, and being in a position to benefit major consumer food trends, poultry is by far the most dynamic industry. This dynamic strategy by poultry farmers and marketers gives a solid foundation for believing that chicken consumption will eventually surpass pork consumption. On the other hand, overtaking pork is a hard challenge, and it may be at least a decade before poultry becomes the most popular meat in the world, but the underlying numbers justify such an ambitious prediction [2].
The European Union (EU) is a significant producer, exporter, and importer of poultry meat. As consumption of poultry meat rises, the European and international markets require a greater supply of poultry meat [3].
In terms of poultry livestock, number of slaughtered birds, and slaughtered weight, Romania occupies a favourable position among EU producers [3].
The poultry meat sector is constantly evolving, mostly in industrial specialised units with current technological endowment, where superior technologies are used and production performance is high [3].
Conversely, due to the COVID-19 epidemic, 2020 and 2021 were challenging years, but 2022 has proven to be the most difficult year so far. The Ukraine conflict has directly affected global commodity prices for energy, fertiliser, and animal feed [4].
After decreasing in 2021 due to COVID-19 and outbreaks of Highly Pathogenic Avian Influenza (HPAI), the production of chicken meat in the EU is anticipated to resume increasing in 2022 and 2023.
Additionally, as consumption in hotels, restaurants, and institutions (HRI) is restarted, the demand for affordable chicken meat increases, particularly from Brazil and Thailand. The EU's decision to temporarily suspend import quotas and tariffs on Ukrainian foods is now also advantageous to imports of chicken meat into the EU [4].
The decline in EU chicken meat exports is mostly attributable to HPAI-related bans in some EU customer nations and increasing competition from other poultry exporters, such as Brazil, Ukraine, the United States, and Russia.
In the European Union, rising food prices and rising energy costs will continue to promote the consumption of chicken meat, as other animal proteins remain substantially more expensive [4].
The aim of this study was to analyse the trend of chicken meat production in Romania for the following 10 years, and to correlate the associated challenges and opportunities.

2. MATERIALS AND METHODS

The forecast analysis was based on Romania's chicken meat production empirical data collected between 2010 and 2021 (the data was not updated for 2022-2023) and presented on FAOSTAT Data Base [8].
Using Microsoft Excel, a 12-year analysis of forecasts based on the exponential smoothing method was conducted. This method utilizes the weighted average of past data to forecast future values.
Additionally, the smoothing parameters and performance metrics were calculated.

3. RESULTS AND DISCUSSIONS

The poultry industry in Romania is one of the most dynamic agricultural sectors in terms of growth, performance metrics, and export markets. Romania slaughtered around 300 million birds in 2019. According to data from the National Institute of Statistics (NIS), Romania produced 672,312 metric tons (MT) of liveweight poultry meat in 2019, of which 95% was chicken meat (70 percent broiler and 25 percent hens) [5]. Additionally, more than fifty-six percent of Romania's chicken meat production is located in the country's southern region, which is also the greatest grain-producing region. In 2019, the northeastern area of Romania generated approximately 18% of the country's poultry meat [5].
Conversely, due to the pandemic crisis, in 2019 the national production decreased (Figure 1).
Europe's post-COVID-19 economic condition has worsened due to the energy crisis exacerbated by the Ukraine war. In 2022 and 2023, conditions favored less expensive protein sources, which increased demand for chicken meat. While increased energy and feed prices are exerting upward pressure on chicken meat prices, the market will continue to support chicken as the primary animal protein source [4].

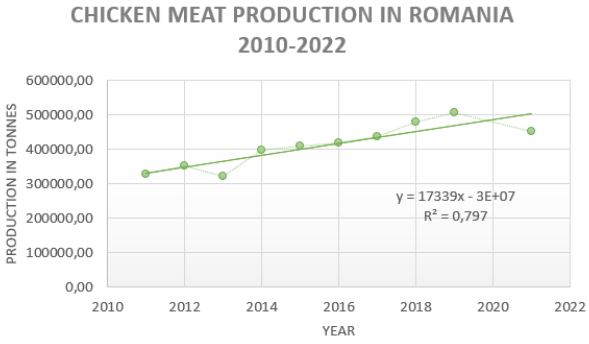


Figure 1. Chicken meat production in Romania (2010-2022)

For the chicken meat forecast analysis, Alpha (α) had a value of 0.10, Beta (β) was 0, and Gamma 0.90 (γ). This means that the forecasted values are 10% higher or lower than the average of the actual values in the training set and the forecasted values have 90% of the seasonality found in the actual values.
Additionally, the forecasted values have an average error of 0.03% when compared to the actual values regarding Symmetric Mean Absolute Percentage Error. Moreover, Mean Absolute Error indicates that the forecasted values have an average error of 12.927,79 units, and the Root Mean Squared Error of 17.695,15 units.

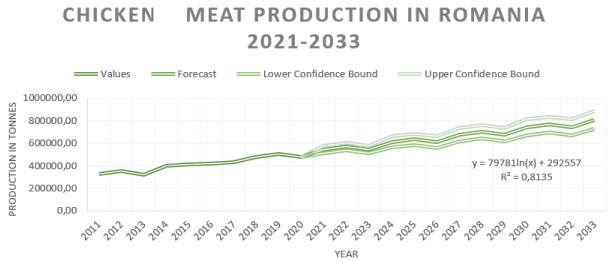


Figure 2. Chicken meat production forecast in Romania (2023-2033)

Moreover, as it is presented in Figure 2, the value of $R^2 = 0.8135$ means that 81.35% of the variation in the dependent variable y is explained by the independent variable x through this regression model. This is considered a relatively high R^2 value, indicating a strong relationship between y and x.

Table 1. Chicken meat production forecast in Romania in metric tonnes (2023-2033)

Timeline	Production (Metric tons)
2022	515275,0582
2023	532400,6077
2024	549526,1572
2025	566651,7068
2026	583777,2563
2027	600902,8058
2028	618028,3554
2029	635153,9049
2030	652279,4544
2031	669405,0039
2032	686530,5535
2033	703656,103

As it is presented in Table 1, the chicken meat production is forecasted to increase, reaching 5% in 2033.
On the other hand, the chicken meat sector in Romania is probably going to undergo both output increases and decreases, because of factors such as customer demand, technological improvements and government regulations. On the one hand, increased populations and rising affluence in emerging economies are expected to continue to drive an increase in chicken meat consumption among consumers. This increased demand is anticipated to result in a rise in the production of chicken meat in Romania, as farmers seek to meet the rising demand for this popular protein source.
However, there are a number of reasons that may limit the production. One of the most significant aspects is the growing emphasis on sustainability and animal welfare, which has led to an increase in the chicken meat industry's

scrutiny. As a result, producers may be subjected to more regulations and higher expenses associated with satisfying stricter sustainability and animal welfare criteria [6].
In addition, technological advancements and increased automation in the chicken meat sector are anticipated to result in greater efficiency and cheaper costs over the long term, but may limit productivity in the short term as producers make investments in new technologies [7-9].

4. CONCLUSIONS

In conclusion, the chicken meat production industry in Romania has been growing rapidly in recent years, driven by increasing consumer demand. However, this growth has been accompanied by challenges, including increased regulation, higher costs, and changing consumer preferences. In addition, Covid-19 pandemic, the Ukrainian war and the HPAI (Highly Pathogenic Avian Influenza) outbreaks are still major factors that can influence the future production.
To remain competitive in this rapidly evolving industry, chicken producers in Romania will need to adopt new technologies and sustainable production practices. This will require investments in research and development, as well as the implementation of best practices in areas such as animal welfare, feed efficiency, and disease management.
In addition, the chicken meat industry in Romania will need to be responsive to changing consumer preferences, including the demand for sustainably and ethically produced food. Producers will need to adopt environmentally friendly feed sources, reduce the use of antibiotics and hormones, and improve the living conditions for chickens.
Ultimately, the success of the chicken meat production industry in Romania will depend on the ability of producers to respond to these challenges and continue to provide consumers with high quality, sustainable, and affordable chicken meat. With the right investments and commitment, the chicken meat industry in Romania has the potential to continue to grow and thrive over the next decade and beyond.

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