

The poultry sector and its contribution to local development in the Bejaia region

شعبة تربية الدواجن ومساهماتها في التنمية المحلية بولاية بجاية

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Received: 12/01/2022**Accepted:** 23/03/2022**Published:** 31/03/2022**Abstract:**

Agriculture remains an important economic lever among other levers that can play an effective role in improving the living conditions of the population in Algeria. In this article, we illustrate the example of the modernization of the poultry sector and its contributions to local socioeconomic development in the Bejaia region. Our results confirm that the modernization of the poultry sector has played a considerable role in local development, particularly in terms of job creation, value added and the development of rural areas.

Keywords: Agriculture, Poultry farming, Local development, rural development, Poultry sector.

JEL Classification Codes: A13, O12, O13, O15, Q01, Q14

ملخص:

يظل القطاع الفلاحي أحد الركائز الاقتصادية المهمة التي يمكن أن تلعب دوراً فعالاً في تحسين الظروف المعيشية للسكان ودفع عجلة النمو في الجزائر. الهدف من هذا المقال هو عرض الدور الذي تلعبه تطور شعبة تربية الدواجن ومساهماتها الفعالة في التنمية الاقتصادية المحلية و تحسين الظروف المعيشية للسكان في منطقة بجاية. تؤكد نتائجنا أن تطوير هذا القطاع لعب دوراً كبيراً وفعالاً في التنمية المحلية في المنطقة، لاسيما من حيث خلق فرص العمل والقيمة المضافة والمساهمة في تحقيق التنمية خاصة المناطق الريفية.

كلمات مفتاحية: الفلاحة ، تربية الدواجن ، التنمية المحلية، التنمية الريفية ، شعبة تربية الدواجن

تصنيفات JEL: A13, O12, O13, O15, Q01, Q14

INTRODUCTION:

With the fluctuations of oil prices in Algeria, agriculture is an essential factor of economic growth and the development of agriculture is one of the most effective levers on which to rely to reduce poverty, create added value, improve incomes, reduce the import bill and feed the growing population.

In terms of agricultural development, poultry farming is undeniably the sector in the branch of animal production, has recorded in recent years the most remarkable development. Indeed, after independence, Algerian poultry farming was essentially farm-based, traditional and without particular organization. Agricultural production was based mainly on family breeding and a few small-scale farms and units (Fenardji, 1990, p.253).

In the Bejaia region, despite the predominance of hilly land and mountainous areas, the poultry industry has developed considerably in recent years. Indeed; according to data from the Ministry of Agriculture (2013), this region occupies the third position at the national level in terms of poultry production.

The modernization of the poultry industry in the region must inevitably provide food, income and work opportunities for the often growing human population. Nevertheless, this industrialization of poultry farming has certain negative effects on the development of the agricultural sector and the development of the rural environment. In this sense, the research question is as follows:

- **What are the contributions of modern poultry farming in the economic and social life of the Bejaia region?**

To provide answers to this research question, we formulate three hypotheses that we try to verify by relying on empirical data, particularly those from our field survey.

- **1st hypothesis-** The modernization of the poultry sector has played a role in the development of rural territories in the Bejaia region.
- **2nd hypothesis-** The industrialization of poultry farms has succeeded in creating an economic dynamic in the region.
- **3rd hypothesis-** Intensive poultry farming has only positive effects on the rural area.

It is important to deal with such a subject for many reasons:

- Compared to other sectors, this sector has made remarkable progress in a relatively short period of time.
- To study the organization, the functioning of this sector and the behavior of the various actors in this field of activity.
- To guide the public authorities to take adequate decisions to create a local economic dynamic.
- To help to take decisions to create a synergy between the agricultural sectors.

Based on the information from the field survey conducted in the first quarter of 2019 involving several actors operating within the poultry sector (farmers, sellers, slaughter units), the purpose of this contribution is to highlight the positive impact of the modernization of the poultry sector on the economic and social development in the province of Bejaia.

1- Literature review:

The term development is a vague and multidimensional concept. Unlike the concept of growth, which is quantitative and measurable, development remains difficult to define

through economic analysis, given its qualitative nature. The concept of "development" and the notion of "**underdeveloped country**" were used for the first time by the American president Harry Truman after the Second World War, in **1949**, during his State of the Union speech. For Truman, the developed Western countries had to support the other underdeveloped countries in order to stop the rise of communism.

The economic literature identifies several definitions of development. Indeed, this concept is very complex and difficult to define despite the existence of multiple writings on the subject. Faced with this observation, we thought it would be useful to present a few attempts at definitions attributed to this concept drawn from the literature in order to contribute to a better understanding of this term.

According to (F. Perroux, 1981, p.155), development is considered to be the combination of mental and social changes in a given population that enable it to increase its overall real productive potential in a cumulative and lasting manner. As for the conception of the territorial approach to development, it is beginning to take hold little by little with the awareness of economists of the unequal diffusion of development and progress in different spaces. Local development also suffers from the same difficulties in being identified as development on a national scale; it is perceived as being economic, social, human and ecological...

As for the local conception of development, it is linked to the territory with all the complexity that this concept complexity in relation to the diversity of its perception by the different local actors and by experts and local actors and by experts and researchers from different organizations and disciplines.

Local development suffers from the same difficulties in being identified as development on a national development on a national scale, it is, as well, perceived as being economic, social human. The only characteristic that differentiates it is that it requires proximity work between actors (K. Boudedja, 2013, P.39).

We can thus understand the diversity of definitions of local development depending on the theoretical approach adopted and used. In view of this, we thought it would be useful to present a few attempted definitions of this concept drawn from the literature in order to contribute to a better understanding of this term.

The social sphere is not treated in a special way, but is integrated is integrated with other spheres, particularly the economic sphere. In the definition given by Jean-Louis, we see the joint treatment of economic and social questions: "local development is the expression of local solidarity, which creates new social relations and shows the will of the inhabitants of a micro-region to make the most of local resources, which creates economic development" (Guigou, 1998, P.36-37).

Local development can also be defined as any process of mobilization of actors that leads to the elaboration of a strategy of adaptation to external constraints, based on a collective identification with a culture and a territory.

The definition thus includes three statements, each of which would require lengthy elaboration. In short, territorial development cannot be decreed and remains a construction of actors, even if appropriate public policies can stimulate it over time. (Pecqueur, 2005, p. 298) If we stick to a first general approximation, everyone agrees that local development is above

all an economic and social, or even cultural, dynamic, more or less concerted, driven by individual and collective actors in a given territory. Going further, it can be defined as a process that allows priorities to mature, to choose actions based on the knowledge and proposals of the population groups living in a given territory and to implement the resources available to satisfy these proposals. Local development encourages giving priority to actors rather than infrastructures, to networks rather than established institutions, in order to give the people and groups directly concerned a decision-making function over the actions they carry out (Hudson, 2011, P 6-7).

Given this range of definitions, local development can therefore be seen from several angles. However, we know that all these definitions converge to consider local development as a process allowing the creation of an environment conducive to local initiatives, which boost local potential to hope for a sustainable development including economic, social and cultural dimensions

2- Empirical research:

2-1 Presentation of the study area:

The province of Bejaia is inserted between the great massifs of the Djurdjura, the Bibans and the Babors, these great mountainous sets are separated by plains which constitute a narrow band in the form of a corridor between these two mountainous massifs, and which is connected with the plain of the coastal region. This region is characterized by the predominance of mountainous areas, with a majority of its surface consisting of sloping land that occupies almost three quarters of the total area.

2-2 Selection of the survey area:

The choice of this study area was dictated at least by the following reasons:

- The large volume of poultry production in this province, which is ranked third nationally.
- The presence of all the links involved in the poultry industry in this region (importers of inputs, importers of veterinary products, breeders, slaughter units, food manufacturers ...);
- This area also offers us more facilities to carry out this field survey, i.e. it is a region that we know best (place of residence).

With the lack of information and previous work on this area, the use of the field survey was the optimal tool to meet our research requirements. In this sense, it is a priority to explain and clarify the methodological approach used to achieve the objectives outlined above. To this end, we developed questionnaires for farmers and conducted interviews with stakeholders in the poultry industry such as feed manufacturers and veterinarians.

2-3 Sampling:

Before determining the sample to be studied, we must first determine the parent population, which will then serve as the basis for sampling. In our case, the parent population is represented by all poultry farmers operating in the territory of the region of Bejaia and all industrial units processing poultry products located in the same region.

To obtain a perfect sample, the sample must include the entire parent population, but in our situation, it is almost impossible to achieve this in the field. We resorted to the use of quota sampling to cover all the subdivisions of the Bejaia region. In other words, we made sure to distribute a certain number of questionnaires to each agricultural subdivision in order to

The poultry sector and its contribution to local development in the Bejaia region

represent these subdivisions. In this sense, we have selected the communes that offer us more facilities in each subdivision of the region. This initiative allowed us to cover a large territory of the survey area and to save time and resources to achieve the objective.

The surveys by questionnaire with 119 poultry farmers, the questionnaires are distributed randomly in the targeted regions.

The questionnaire survey is consolidated by others surveys such as interviews with some operators in this field such as veterinarians.

2-3-1 Geographical distribution of the sample for the egg-laying segment :

The objective of this survey is to cover the entire territory of the Bejaia region, to see the functioning and environment of this sector throughout the investigation area, but the difficulties encountered in the field have made this impossible.

After long hesitations about the delimitation of our sample size, we have opted for a small sample of 63 poultry farmers, which represents 37.27% of the opted for a small sample size of 63 poultry farmers, which represents 37.27% of the population that served as the basis for the sampling. This choice was made based on the following criteria:

- Attempt to represent all existing agricultural subdivisions in the region;
- Attempt to distribute a maximum of 10 questionnaires to each existing subdivision in the area of investigation, for which we chose the communes that offer us more

We chose the communes that offered us the most facilities for conducting our field survey.

The table (1) provides information on the geographical distribution of the sample of laying hen farmers, the main communes targeted, the number of questionnaires distributed and the number collected for each municipality.

Table (1): Information on the sample of egg-laying poultry farmers

Agricultural Subdivision	Questionnaires Distributed	Completed and retrieved questionnaires
BEJAIA	10	08
EL KSEUR	07	05
AMIZOUR	10	07
TIMZRIT	08	06
SIDI AICH	10	10
SEDOUK	10	10
AKBOU	10	10
TAZMALT	08	07
TOTAL	73	63

Source: Developed on the basis of the survey

As already mentioned, our goal is to cover the entire territory of the investigation area. In this sense, we opted for the distribution of 10 questionnaires by each agricultural subdivision of the region, each subdivision being represented by a selected commune taking into consideration the realities of the field.

2-3-2 Geographical distribution of the sample for the broiler segment:

To determine the sampling frame, we opted for the same method as in the case of the egg-laying segment. In this approach, we chose to distribute 08 questionnaires on each subdivision, these subdivisions which are represented by municipalities that offer us more facilities to conduct our investigation. After having explained our methodology to determine the population that will serve as a sampling base, we counted a mother population of 201 poultry farmers that will serve as a sampling base. We then managed to distribute 87 questionnaires, which represents 43.28% of the base population.

- In some subdivisions the number of questionnaires did not reach the desired number.
- Some subdivisions, such as ADKAR, were not affected by this sample.
- We did not recover a considerable number of distributed questionnaires, i.e. more than 16% of the questionnaires were not recovered.

Despite the difficulties encountered in this segment, we managed to distribute 87 and recover 56 questionnaires, for a rate of 64.36% of questionnaires recovered. The table (2) provides information on the geographic distribution of the sample of broiler farmers.

Table (2): Sample information on the questionnaire distributed to broiler farmers

Agricultural Subdivision	Questionnaires Distributed	Completed and retrieved questionnaires
BEJAIA	12	07
EL KSEUR	12	05
AMIZOUR	12	06
SIDI AICH	07	07
TIMZRIT	10	06
SEDOUK	12	10
AKBOU	12	10
TAZMALT	10	05
TOTAL	87	56

Source: Developed on the basis of the survey

It is also important to point out that broiler farming in the region is largely done illegally and locating the breeding sites is a difficult task

3-Results and discussion :

3-1 The modernization of poultry farms:

The development of the poultry sector and the modernization of breeding techniques have led to an improvement in production and productivity in this sector in recent years in the Bejaia region.

This observation also constitutes an improvement in production and productivity for the agricultural sector in general. The poultry farmers questioned affirm that they have invested in this field for several reasons:

- To have a stable job;
- The important and stable gains that this activity generates compared to other agricultural production sectors;
- The small amount of space required for this activity compared to other agricultural activities;
- The little time and effort that this activity requires.

3-2 Employment on poultry farms:

In developing countries, where the place of agriculture holds an important place in their economy through, in particular, the share of this sector in the national production and the considerable rate of the active population working in this sector (Kirouani, 2020, P.291). Poultry farms offer opportunities for job creation. Analysis of the data collected from the poultry farms surveyed indicates that the majority of these farms require permanent or occasional labor during the year. A significant number of permanent jobs are created by these poultry farms.

This represents a rate of 88%, or 94 poultry farmers among the 119 surveyed who require permanent labor; but 88.3% of this labor force works in the informal sector.

In addition, all of the poultry farmers surveyed also use casual labor or family labor. Indeed, it is interesting to note that farms help each other. According to the poultry farmers interviewed, this phenomenon is widespread and is often used during peaks in workloads, particularly during culling of hens, cleaning of poultry houses, vaccination periods, etc.

It should also be noted that part of the income obtained in this activity is reinvested in other areas of economic activity. It is interesting to note that despite the employment generated by this sector, which offers several alternatives to the rural population of this region in terms of creating added value. Nevertheless, the informal work is very dominant in this field of activity.

3-3 The poultry industry in the development of the territory:

3-3-1 The opening up of rural areas:

The region of Bejaia as it has already been reported is characterized by its hilly terrain and mountainous areas. Poultry farms are generally built in areas that are far from homes, these areas are characterized in general by a flagrant lack of road infrastructure, tracks and passages. In other words, these areas are landlocked. So in order to open up their breeding sites and facilitate the supply of inputs (feed, water, chicks, pullets, etc.). Poultry farmers resort to building new tracks or repairing existing tracks by their own means. According to this survey, 11 of the 119 poultry farmers questioned said they were involved in repairing existing runways and 04 said they were involved in opening new runways with their own resources.

These newly constructed and repaired trails are of great importance for the development of other agricultural activities. These tracks are used and borrowed by local residents to facilitate the passage to their farms and their properties.

These tracks are of great use for the development of agricultural activity in the region. Indeed, they play a major role since:

- They allow the opening up of certain areas and farms that were previously isolated.
- The use of these tracks by other farmers and for other agricultural purposes.
- They also allow the use of new production methods such as tractors, combines, new transport equipment, etc.
- To reduce the damage caused by fire outbreaks which are very frequent in the region.

3-3-2 Productive use of marginal lands:

The region of Bejaia as it has already been emphasized is characterized by the predominance of mountain areas and by its physical character often hilly. The activity of the

breeding is practiced out of ground i.e. in cages (batteries) with three or four floors for the poultry laying on the ground for the broiler.

The land used for the construction of these breeding sites is generally fallow land, and their use for the production of other agricultural goods will not give productivity as important and high as their current use.

In fact, the use of intensive poultry farming has contributed to many lands and plots of land remaining fallow until now without alternative uses to become useful, productive and creating employment and income.

3-3-4 Reduction of the rural exodus:

The jobs and income generated by this sector and the contribution of this sector to the improvement of living conditions in rural areas have contributed significantly to the reduction of the rural exodus. In this perspective, the survey confirms the existence of:

- 6% of the poultry farmers questioned reside in urban areas, and they have invested in poultry farming in rural areas. In fact, the poultry sector is currently a real opportunity for investment and wealth creation for certain economic operators from neighboring towns who have accumulated financial capital in other economic sectors.

- Many young people have also created their own small businesses in the poultry industry and particularly in the marketing of eggs for consumption. These young sellers generally have means of transport and travel throughout the region to sell their goods. In turn, it is useful to note that most of these vendors work in the informal sector. Nevertheless, this activity allows them to have income to cover their needs.

3-4 Agricultural equipment:

Farm equipment is generally rented, borrowed, or exchanged between different farmers and residents, and the survey revealed that many poultry farmers, like many other farmers, use these practices.

These practices of lending, renting, and exchanging farm equipment are illustrated in Table (3).

Table (3) - Agricultural Equipment Loans and Trade-ins

Type of transaction	Number of poultry farmers
Farm equipment loans	119
Exchange of farm equipment	65
Farm equipment rental	19

Source: Developed on the basis of the survey

The exchange of agricultural equipment is a very frequent practice among the poultry farmers surveyed. In fact, all of the poultry farmers stated that they had lent their equipment at least once during the year to other farmers raising ruminants or to neighboring farmers and peasants.

The exchange and loan of agricultural equipment is an example of informal, voluntary and non-market relations between these operators. The exchange concerns agricultural equipment that is used periodically (trailers, tankers, tractors, etc.)

Poultry farmers also rent their equipment to neighboring farmers and peasants, this equipment mainly concerns tractors. Poultry farmers in turn ask neighboring farmers and residents to use their equipment.

This practice has significantly improved the availability of agricultural equipment in the region at reasonable prices, and has also contributed to the creation of additional value-added and the reduction of poverty in the rural areas.

3-5 Feed production and livestock buildings:

3-5-1 Production of animal feed:

Private feed manufacturing units are generally set up to meet the growing needs and important demand of the poultry industry. These feed manufacturing units not only cover their own needs in feed, but they are also solicited by other breeders active in cattle and sheep breeding. In fact, these feed manufacturing units initially set up to cover the needs of the poultry industry are requested by local residents and farmers to cover the feed needs of their farms.

3-5-2 Livestock buildings:

All of the poultry farmers interviewed stated that their farms were privately owned. For these 119 poultry farmers, there are 123 breeding buildings in operation, an average of 1.03 hen houses for each farmer. It should also be noted that the breeding buildings in the region are small since the number of poultry it should also be noted that the number of animals in the region is small, since the number of animals varies between 2,400 and 10,800 for the laying hen sector and an average of about 2,100 for broilers. The production capacity for laying hens does not only depend on the surface area of the rearing building, but it also depends on the existing batteries (cages) and the density of the number of birds in the cages. As far as broiler rearing is concerned, this type of rearing is practiced exclusively on the floor on wood chips. Thus, the modernization and adaptation of the buildings and equipment of breeding today constitute the key factors of the competitiveness and the sustainability of the activity of the farms.

In addition to their functions as breeding sites, poultry houses are used for other purposes and other agricultural roles, including serving as storage facilities during the olive harvest. A significant number of the poultry farmers interviewed (80.32%) stated that their poultry houses are used for other purposes. These sites are often used to store olive crops by other farmers and peasants who own fields or farms near their farm buildings.

3-6 Modernization in the agricultural sector and reduction of the import bill:

3-6-1 Modernization in the agricultural sector:

In the past, animal husbandry was practiced with other agricultural crops. In fact, farmers used to join the breeding of several species of animals with other agricultural practices, this mixture of practices in the agricultural sector does not improve productivity in this sector.

The advent of modern poultry farming has led much more to practices of specialization, these practices have helped to improve productivity, perfection and mastery in this field by operators activating in this sector.

In addition, the methods used in poultry farming currently in the region of Bejaia are generally recent and sophisticated such as improved feeds, intensive breeding in batteries and the use of other modern inputs.

3-6-2 Reduce the import bill:

Algeria is currently highly dependent on its external means of payment for its food supplies. If the decline in these resources were to continue over the next few years - all other things being equal - there would be a great political risk that the country would be unable to pay its food bill. The strategic objective is to reduce the country's food vulnerability, while the economic challenge is to develop the agricultural and agro-food sectors in a context marked by the decline in the State's financial resources (Bessaoud and others, 2020, P 23-24)

. The modernization of breeding methods and the use of intensive poultry farming have contributed significantly to reducing the import bill for poultry products such as eggs and poultry meat. Indeed, the poultry sector participates significantly in satisfying the increased local demand for animal products due to strong population growth, accelerated urbanization and rising incomes in the cities. Despite its dependence on external inputs, this sector is an example for other agricultural sectors to follow. In particular, the cereal sector should be able to satisfy the growing local demand for food products and preserve the increasingly scarce currency.

3-7 Exchanges between agricultural operators:

3-7-1 Mutual aid between poultry farmers and other farmers:

In the study area, mutual aid is a practice that is often carried out between farmers who have a neighborhood, family or friendship link. Mutual aid is a perfect example of informal, voluntary and non-market relationships between people, generally consisting of giving a helping hand during peak work periods.

This practice is very common in the study area, essentially during peak work periods. Indeed, during these periods, poultry farmers ask for help from their neighbors. In general, during the periods of cleaning of the breeding buildings, the periods of culling and vaccination of laying hens

3-7-2 Exchange of advice, services and information:

The exchange of advice and information between poultry farmers and local residents is a very common practice in this region. This exchange is often done between farmers and poultry farmers who have a family or friendly relationship with each other; this practice consists of sharing the latest news and information concerning the agricultural sector and the region.

The absence of agricultural associations and cooperatives observed in this area has considerably enhanced this practice, which is very useful for the development of the local agricultural sector.

3-7-3 Financing of agricultural investments:

In recent years, the perception of informal finance has changed significantly. Long considered an economic anomaly to be eradicated, it is now seen more as an integral component of the agricultural finance system that plays a positive role in the economy. It is now seen as an integral part of the agricultural financing system, which plays a positive role in the economy. In particular in improving access to credit for small farmers and improving their income (Ngalawa and Viegi, 2013, P.1-2).

The reforms of agricultural credit systems initiated in the late 1980s in most developing countries did not, however, lead to the creation of rural financial markets offering services adapted to all categories of actors.

This failure has been explained by the lack of institutional frameworks necessary for the proper functioning of the markets.

The risks of default (non-repayment) are often the main obstacle to the development of agricultural credit. The traditional solutions to these risks (material guarantees and often high interest rates) and frequently high interest rates) generally make credit inaccessible the majority of farmers to access credit farmers. In Algeria, for example, less than 3% of farmers had access to credit in 2015 (Daoudi, 2016, P.20).

In the region studied, the same observation was made. In fact, the lack of involvement of banks and insurance companies in the agricultural sector and the scarcity of sources of financing in the rural world push farmers to resort to other means of financing.

These farmers and peasants solicit financing from their colleagues, relatives and acquaintances. This practice is very popular since it is combined with the farmer's own means to cover almost all the financing needs in the agricultural sector and rural areas.

Table (4): Informal financing and poultry farming

Financing sources	Number of poultry farmers
Poultry farmers who applied for funding	26
Poultry farmer who financed other economic operators	58
Total	84

Source: Developed on the basis of the survey

According to Table (4), a considerable number of the poultry farmers surveyed played a role in informal financing.

The results of our survey inform us that 26 of the 119 poultry farmers surveyed, or 21%, helped their farmer neighbors. In return, 58 of those surveyed contributed in some way to covering the financing needs of other farmers and peasants.

It is interesting to note that the credits and financing between these agricultural operators are almost exclusively in cash and without interest

3-8 The poultry sector and veterinarians:

The veterinarians interviewed stated that poultry farming is the agricultural sector that offers them the most job opportunities and significant income. The majority of veterinarians interviewed (four out of five) said that their activity depends on this sector, since most of their income comes from it. Actors in other animal sectors rarely request their services.

Conclusion:

With the fluctuations and uncertainties observed in recent years on the oil market, Algeria is beginning to realize that agriculture is a strategic sector that can play an important role in national economic development policies. Indeed, the modernization of this sector can

contribute to the socio-economic development of rural populations, particularly through the creation of added value, the revitalization of rural territories and the improvement of the living conditions of rural populations, the reduction of the national food bill and an important source of currency.

By comparing with other sectors, the poultry sector in Algeria is one that has recorded a spectacular development since the 1980s thanks in particular to the intervention of the State. Based on the data of the field survey conducted in the region of Bejaia, we have tried in this article to highlight the positive impact of the modernization of the poultry industry on the socioeconomic development of rural areas. The results of the survey have revealed as previously indicated the importance of economic and social weight that this sector plays in the region.

In addition, the positive impact of this modernization can be summarized by productivity gains, specialization, job creation, the fight against poverty, the development of rural areas, and the contribution to boosting friendly relations with the establishment of a system of mutual aid between farmers and the fight against rural exodus. Nevertheless, this sector suffers from several handicaps, such as its dependence on external markets for inputs and the lack of organization. The results obtained in this study confirm the first and second hypotheses.

Through this contribution, we have tried to highlight the positive effects of the modernization of the poultry sector on local development in the Bejaia region. However, this study has some limitations and opens in parallel some research perspectives such as shedding light on the negative impact of poultry farms modernization on the rural world. In this sense, we can reject the third hypothesis.

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