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Research Article

Impact of Covid-19 on the Poultry Sector in Morocco: An Empirical Analysis

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Abstract

This study emphasizes the impact of Covid-19 on the poultry sector, a Moroccan economic sector that, on the surface, seems untouched by the global health crisis. The poultry sector encompasses manufacturers of feed mill, hatcheries, industrial poultry slaughterers, producers of eggs, and producers of poultry meat; all of which are gathered under the aegis of the Interprofessional Federation of the Poultry Sector. The Covid-19 crisis provides an opportunity for professionals to question the sector's current economic model, which has shown its deficiencies during the pandemic. To analyze the deficiencies, semi-directive interviews with professionals have been performed, allowing for the collection of qualitative results under the interpretivist paradigm. Based on these interviews, it is clear that the Covid-19 health crisis has caused an economic and financial disruption that has affected the poultry sector in Morocco. The professionals must learn the right lessons from this crisis and question the current economic model of production and marketing. This article proposes that the sector should opt for a demand-based production model, according to market studies, instead of random production. The evolution of distribution (storage, packaging, slaughtering, freezing) is also crucial to the sector, especially during demand crises. The Ministry of Agriculture can be a catalyst for such changes.

Keywords: Covid-19, Poultry Sector, Interprofessional Federation, Economic Model.

Introduction

In the context of global health crisis of Covid-19, countries around the world announced the beginning of lockdown and a state of public health emergency in 2020. Consequently, several sectors stopped their economic activities. As a result of the economic halt, Covid-19 engendered an economic, financial, and social crisis, causing a turbulent (A. Greenspan, 2008), complex, and chaotic (Kotler P. 2004) global environment.

According to the press release from the Moroccan Interior Ministry, the state of emergency was not meant to stop the economy, but to take exceptional measures to limit the movement of citizens. In this same context, the Ministry of Agriculture, Maritime Fisheries, Rural Development, Water and Forests confirmed that food products would continue to be supplied in the Moroccan market despite the health crisis. The ministry assured the people that the poultry market would be supplied normally and that the increase in prices recorded in certain markets was due to the unusual influx of consumers after

the announcement of the state of emergency. The market situation returned to normal a few days after the announcement.

At first sight, the poultry sector seems to have been spared from the effects of the crisis; breeders continued to produce normally and to supply the national market, supported by the Interprofessional Federation of the Poultry Sector (FISA MOROCCO). In the other side, out-ofhome catering circuits such as collective catering, cafes, restaurants, hotels, events, snack bars and rotisseries were disappearing, the weekly rural souks were closing; many households became without income; and millions of tourists were lost as potential consumers after the closure of borders. In essence, demand was collapsing.

In this context, I chose to study the impact of Covid-19 on the poultry sector in Morocco. The Moroccan poultry sector has experienced considerable growth in recent decades, with an average growth rate of 6% in poultry meat production and 6.2% in egg production, and it contributes to over 40% of animal protein consumed by Moroccans (Source: Interprofessional Federation of the Poultry Sector FISA MOROCCO).

According to the Food and Agriculture Organization of the United Nations (FAO, 2020), the poultry sector is divided into four subsectors:

- An industrial production system with a very high level of biosecurity where poultry products are produced in large quantities.
- A commercial production system with a high average level of biosecurity.
- A commercial production system with a minimum level of biosecurity.
- Production backyard farming with a minimum level of biosecurity where poultry products are sold locally.

The poultry sector in Morocco includes compound feed manufacturers, hatcheries, industrial poultry slaughterers, table egg producers, and poultry meat producers. These different branches are grouped under the aegis of the Interprofessional Federation of the Poultry Sector (FISA). The sector is governed by Law 49/99, relating to the health protection of poultry farms, and the control of the production

and marketing of poultry products, which obliges the professionals in the sector to respect a very high level of biosecurity.

With this background acknowledged, my research aims to answer the following question:

"How has the Covid-19 health crisis impacted the poultry sector in Morocco?"

The research is structured into two essential sections. The first section provides a synthesis of the literature on three important axes for the treatment of the subject of research. The first axis focuses on the chaos that results from systemic crises such as the Covid-19 crisis; the second axis focuses on the evolutionary approach and the fractal vision which means a pattern that the laws of nature repeat at different scales. Finally, the third axis emphasizes the management of innovation, which is both a crisis factor and a source of growth. The second section of this article presents the results of an empirical study carried out among professionals in the Moroccan poultry sector in order to fully understand the impact of Covid-19 on the sector. This study is exploratory and its main objective is to improve understanding of the impact of Covid-19 on the economic activity and commercial performance of poultry companies; the study alsp aims to assess the possibilities emerging from crisis through innovation management.

Literature Review: Chaos, Evolution, And **Innovation Management**

Chaos, Towards Collapse or Emergence

Chaos theory concerns the study of nonlinear phenomena governed by simple deterministic laws whose behavior, under certain conditions, becomes unpredictable. This theory well explains the current health crisis: an unexpected pandemic that engendered a global systemic crisis. In this context, the notion of crisis refers to the innumerable, the varied, and the complex. Currently, this crisis demonstrates the principle of butterfly effect (Lorenz E.N. 2005), as a "small" crisis, finding favorable conditions for its amplification, becomes a global crisis. Indeed, a health crisis can lead to an economic and financial crisis, which in turn leads to a social crisis. The conceptualization of the covid-19 crisis requires a systemic view, in which, the system is "a whole organized by the interrelation of its constituents" (Morin E. 1976, P.150). The concept of crisis is thus linked to the negentropic principle inherent in all systems, especially living

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ones. This principle contains two essential components, he notion of disturbance, which refers to the disruption of the principles of regulation, often resulting from processes produced by the organization; the notion of disorder, which is consubstantial with any system that "functions in spite of the disorder, because of the disorder, with the disorder" (Morin E. 1976, P.156). In this context, it is important to remember that chaos will occasionally reach strategic inflection points that require the dissolution of the firm's old business model and the emergence of a new one (P. Kotler, JA Caslione, 2004, p110).

With Covid-19, the world experiencing a systemic crisis. It must be understood that the world is itself a system that oscillates around equilibrium without ever straying too far from it. To understand this principal, it is interesting to discuss two worldviews. One is a linear vision, according to which the individual attempts to understand phenomena in order to establish forecasts and control situations. Through this worldview, the individual tries to distinguish the present from the past in order to predict and control the future. However, at certain points in history, reality diverges from the pre-established predictions of a linear vision. An unpredictable event, such as the Covid-19 pandemic, arises and, leads to other unforeseen events: this chain reaction creates a snowball effect, following the accumulation of many unexpected phenomena. Today, the world is chaotic; a few thousand deaths have triggered the lockdown of almost half of the world's population. Once the system has entered a chaotic state, it cannot return to the prior state. A new equilibrium will emerge in this case. This inability to revert results in two probable post-chaos scenarios, collapse (second law of thermodynamics) or emergence into a more complex system. Humanity as a whole can either witness a civilizational, economic, and psychological collapse, or it can work on individual and collective emergence. Similarly, the Moroccan poultry sector, being part of the system, can either witness a collapse or experience the emergence of a new economic and commercial order.

Post-Crisis Evolution Requires A Fractal Vision

Evolutionary theory states that the organization is a system directed by routines, which allow for the development of organizational learning. Organizations regularly experienced crises. In the context of crises, leaders must learn to release control so that their companies can

evolve through the crises. Based on chaos theory, it is true that nothing is guaranteed, but companies must allow themselves the opportunity to emerge by surrendering control of the effects of crisis. For example, during turbulent times, it is crucial for companies to remember that customers will likely change their spending habits, and, consequently, to adjust their offerings according to the new trends. It is not enough to reduce costs; it is also necessary for companies to adjust product lines and service offerings (P. Kotler, J.A. Caslione, 2004, p150). Pest-crisis evolution requires a fractal vision. Fractals are sets that never appear smoothly (like a straight line or a Euclidean curve), but rather appear as jagged, pointed, or curved, almost equally at all scales. The real world sometimes corresponds to classical approximations, but it is more often fractal. Thus, leaders must therefore wear fractal glasses, which allow them to see infinity in the finite. In this context, the Covid-19 crisis corresponds to a fractal structure. The Covid-19 pandemic is a phenomenon of selfamplification, or a snowball phenomenon. The world in the time of Covid-19 can be frightening due to it due to its complexity that surpasses linear, geometric, and rigid predictions. Ad a result, however, this environment offers a historic opportunity for individual and collective reinvention.

Management Of Innovation for The Benefit Of Crisis Exit And Economic Emergence

In a chaotic context, there is always form of hidden order, which is called a strange attractor. Through the chaos of the pandemic, the world can find order in an individually and collectively created dream, a new vision that ill help society to weather the storm and emerge. This vision could include an opening towards Africa in terms of investments and economic presence, the digitalization of operations, or the development of the differentiation of poultry products based on quality and safety criteria development of egg products, diversification of breeding systems, etc.). There is a need for poultry companies and their federation to update the sector's dreams and visions.

Schumpeter (1942) defends the idea that entrepreneurs embody the gamble of innovation, and theirdynamism ensures its success. Shumpeter also claims that innovation is both a source of growth and a factor of crisis, this idea is what Schumpeter summarizes as "creative destruction". Crises are not the consequences of the economy. Rather, they are inherent to the

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internal logic of capitalism and are necessary for economic progress. In "The Age of Turbulence: Adventures in a New World," Alain Greenspan (2008) approaches the subject of innovation from a capitalist point of view, saying, "it is probably the very message of capitalism: the 'creative destruction", scrapping old technology and old ways of doing things for what's new - is the only way to increase productivity and therefore the only way to raise the average standard of living on a sustained basis".In the effort to innovate, the development of contracts as an alternative to spot sales could be explored by the Moroccan poultry sector. In France, contracts have enabled French poultry companies to achieve their performance objectives, master risks, and exercise a real power on the market because the prices and the margins are already determined in the contract. Additionally, contracts are ubiquitous in French poultry farming, where 95% of poultry meat production and over 50% of egg production involve production contract. In the United States animal production represents 60% of production contracts, with 90% of poultry produced under contract (Bouamra-Mechemache Z., Duvaleix-Tréguer S. et Ridier A., 2015). To conclude, it may be interesting for the Moroccan poultry sector to start working with contracts in order to master the risk of market price's fluctuations.

Qualitative Study

Methodology

In order to answer the question posed by this study, individual interviews were performed with professionals in the poultry sector, including poultry breeders, laying hen breeders, and manufacturers of food intended for poultry consumption, as well as hatchery and slaughterhouse managers. I also interviewed the board members of the Interprofessional Federation of the Poultry Sector (FISA MOROCCO). It should be notes that this study functions within the interpretivist paradigm; in this context, we chose the qualitative approach of individual interviews with professionals in the

The Choice of a Semi-Directive Interview

The semi-directive interview was chosen because it allows the collection of qualitative results while also permitting the interviewee to develop and direct their statements, through the freedom of expression provided during the interview. An interview guide was developed to define the main lines of the discussion. This guide began with questions about the impact of Covid-19 on the economic activity and commercial performance of poultry businesses, followed questions about the sector's crisis management. In the interview guide, we discussed the management of innovation and its role in overcoming the crisis and the emergence of a new economic model for the poultry sector.

Constitution Of the Sample

The recruitment of respondents was first implemented according to the membership of one of the professional associations of the Interprofessional Federation of the Poultry Sector; then the choices were made according to the experience each candidate had in the sector and the size of their poultry businesses.

The sample of the qualitative study was composed of 10 professionals. All of the professionals interviewed were men, given the nature of the sector. The interviewees were mostly CEOs, and those who were not had a minimum rank of senior managers. Participants also occupied important positions within the Interprofessional Federation of the Poultry Sector and its associations (i.e., presidents and Vice presidents). Given their position and their experience, the majority of interviewees were 40 vears of age or older. The interviews lasted between 1 h and 1h 30 min and were all transcribed and analyzed. Table 1 summarizes the profiles of the respondents.

Profession	Number belonging to a FISA association	Number not belonging to a FISA association
Hatchery managers	1	
Compound feed manufacturers	3	1
Poultry slaughterers	1	
Poultry breeders	2	
Egg producers	1	
Industry stakeholders		1

Table 1: Respondents' profiles (Qualitative analysis)

Results And Discussions

Impact Of Covid-19 On the Economic Activity and The Commercial Performance of Poultry Companies

From the beginning of the Covid-19 crisis, the Moroccan government took several measures to control the spread of the virus. Among these measures, were the restriction of movement and the closure of businesses. As a result of these restrictions of these restrictions. consumption of poultry products (chickens, turkeys, and eggs) dropped significantly. Indeed, there has been a sudden disappearance of out-ofhome catering circuits (collective catering, cafes, restaurants, hotels, events, snack bars, and rotisseries) and live food circuits (mainly the weekly rural souks). In addition, there has been a collapse in purchasing power due to unemployment, which has been observed in various fields. Furthermore, million tourists were lost as potential consumers after the closing of borders. All these dysfunctions have led to a significant economic loss in the poultry sector.

Impact of the Health Crisis on The Poultry Sector

Regarding chickens farming alone, Covid-19 has greatly reduced this domain's distribution and marketing networks, which has forced farmers to store their livestock. This change has led to an increase in the weight of chickens, further increasing the already abundant supply. These stocks have led to an imbalance of supply and demand. Consequently, the selling prices at the farm level reached a low of 6_8 dh/kg, while the cost of production rose from 11.5 dh/kg to 14 dh/kg due to additional charges of feed during the sales crisis. The chicken farming sector thus experienced losses estimated at 1,200 million dirhams between March and June 2020. The

turkey farming sector has experienced similar effects. Indeed, the health crisis coincided with abundant supply: all farms were at full capacity, with a record turkey placement of 1.3_1.5 million/month in the latter half of 2019. In sum, the sector has experienced a combination of strong supply expansion, and severe demand suppression. The impact of Covid-19 on the turkey farming sector has been estimated by the Association of Poultry Meat Producers (APV) at a loss of nearly 300 million dirhams between the middle of March and the end of June 2020. This crisis also has not spared egg producers; the price of eggs dropped significantly due to the decrease in demand, and the losses have been valued at 350 million dirhams in the period between 20 March 2020 and 30 June 2020. In the same context, hatcheries have experienced a sharp drop in demand. All of this decreasing demand has led to a crisis of collapsing prices. Some producers have had to sell their chicks for a few cents, while the cost price varies between 3 and 3.5 dirhams/chick. In normal conditions, poultry slaughterhouses have not managed to surpass even 10% of the controlled chicken slaughter in Morocco. If slaughterhouses are subjects to very strict and regular health checks by the National Food Safety Office (ONSSA), as well as strong constraints on employees' protection, preservation of the cold chain... they still find themselves in 2020 faced to a very large uncontrolled live market. Already facing such difficult circumstances in normal times, the Covid-19 crisis has accentuated the struggles of slaughterhouses.

For food manufacturers, the effect of the crisis takes on another dimension. The supply of breeders' meal feed has continued, but the solvency of breeders can be questioned in the pandemic context. After the euphoria of the beginning of covid-19 (high demand), comes the harsh reality (low consumption). Breeders have

built up a large stock of meal after the announcement of the emergency state in Morocco. The prices of poultry and eggs have increased due to the unusual supply of food products during times of general panic. Farmers then optimistically overestimated demand. This demand later decreased after a few days of the emergency state; as a result, prices dropped and prevented farmers from being able to cover their costs, and honor their depts toward feed mill companies.

To conclude, it clear that, in the context of a systemic crisis, the failure of one link in the sector leads to the failure of the others. However, the poultry sector has experienced other health crises in the past. It is useful to examine sector professionals have learned from prior crises.

Health Crisis Management Within the Poultry Sector Between Evolution And Innovation

Differences Between The Impact Of The Avian Influenza (H2n9) And Covid-19 On The Poultry

In 2016, the poultry sector was effected by the avian flu "H2N9" crisis. The avian flu induced enormous mortalities among poultry a decrease in egg's' laying rate. However, this flu that affected poultry had no impact on humans. This difference is crucial difference in analyzing the avian flu crisis as compared to the Covid-19 crisis. Economically, the avian flu generated benefits for breeders: the increase in the selling price of chickens and eggs and the long-term high demand largely compensated for the bird mortalities and the egg's' production drop, leading to positive economic and financial results. Moreover. the Interprofessional Federation of the Poultry Sector's positive use of media surrounding the crisis emphasized the fact that the flu did not affect human health, making it possible to maintain demand at the usual levels. By contrast, the opposite scenario occurred in the case of Covid-19: the abundance of supply and the drop in demand induced very low selling prices that did not cover production costs. In this way, the Covid-19 health crisis has differed from differed from the avian flu crisis and has negatively influenced the economic and financial health of the poultry sector.

Similarities Between The Impact Of The Avian Influenza And Covid-19 On The Poultry Sector

Despite the differences between the current health crisis and the avian flu crisis, there are some similarities to explore. For example, the advent of H2N9 in 2016 obliged the professionals in the poultry sector to be more vigilant about

hygiene rules. During this period, breeders had to confine workers to the farm to avoid contamination. Visits to the farm were also restricted to protect poultry from potential contamination. Adherence to quarantine was for professionals, mandatory especially veterinarians. Indeed, a veterinarian visiting a poultry farm was not permitted to have visited another farm in the 48 hours preceding the visit. In this manner, the health measures taken during the Covid-19 crisis were not new for professionals in the poultry sector. Further precautions have been taken to protect employees' health, but basic hygiene rules have already been in place for several years. The only Covid-19 regulation that was new to poultry units mandatory masking. In order to help poultry farmers, implement this new rule, the federation ensured the supply of poultry companies with masks since the beginning of the health measures through a direct partnership of FISA MOROCCO with mask suppliers at national scale. To conclude, there are many similarities between the two crisis which means that the professionals of the poultry sector in Morocco already knew the impact that a health crisis could have on the businesses and that was a plus for this sector the face Covid-19 in a better way.

The Dichotomy Between Production And Distribution In The Poultry Sector

The poultry sector is governed by Law 49/99, which relates to the health protection of poultry farms, and the control of the production and marketing of poultry products, promulgated by Dahir No. 1-02-119 of 1 Rabii Il 1423 (13 June 2002).

Breeders must respect the law above in order to preserve the health of their poultry, and, consequently, the health of the consumers. This law guarantees not only the health and safety of poultry farms, but also encourages undeniable levels of performance. In fact, the respect of hygiene rules ensures chicks' health protection which allows to have a good weigh gain and also a better eggs' production rate for the breeders. It is not surprising that Moroccan poultry farms, for example, have been nominated as the best units in the world in terms of the number of eggs laid per hen. However, this context caused, farmers to make overly optimistic estimations for the future of the sector by investing heavily in the construction of new units. These strategic decisions led to an abundant supply exceeding demand. Furthermore, the sector lacks strong organization in terms of storage, packaging, and distribution. The issue of overproduction began in 2019 and worsened with Covid-19. In

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developed countries, such issues are rare because efficient packaging centers allow the storage of eggs in good conditions. In Morocco, by contrast, there are only 18approved centers throughout the country. Therefore, unlike in developed countries there is a strong dichotomy in Morocco between the production and the distribution of eggs.

Moreover, slaughterhouses in Morocco operate in an unfavorable and hostile environment, due to the unfair competition with the informal live chicken market, which monopolizes 90% of the distribution channel. In Tunisia, the government intervenes through the interprofessional organization GIPAC to organize the storage of chicken in times of abundant supply and falling prices. In the Tunisian model, in which production is associated with distribution, and, by extension demand, the impact of a demand crisis like Covid-19 is easily controlled.

In sum, the Covid-19 crisis has highlighted the importance of structuring distribution (packaging, slaughtering, freezing) in order to deal with potential crises. Such structures are no longer luxury, but necessity. It is also necessary to further innovate in this field; for instance, some farmers have already started home delivery after the closure of traditional points of sale.

The Interprofessional Federation Of The Poultry Sector (Fisa Morocco), A Guarantor Of Poultry Farmers' Interests In All Circumstances

The Interprofessional Federation of the Poultry Sector (FISA MOROCCO) actively defends the interests of poultry farmers. The first battle of FISA MOROCCO was to change the status of the breeders from simple merchants to farmers, a status, that has advantageous tax benefits. FISA MOROCCO recently succeeded in this endeavor. The federation also militates for the abolition of value added tax on egg products in order to increase their competitiveness. In addition to that, the federation is currently negotiating with the ministry in order to activate the interprofessional law proposed by the Moroccan Green Plan. This law will allow the FISA MOROCCO to benefit from a self-financing system through a withholding of tax on imports of raw materials used in poultry feed, allowing the federation to have more funds and thus gain influence and impact. Finally, FISA MOROCCO defends the interests of the poultry slaughterhouses that have never had the opportunity to work in a healthy competitive environment. Indeed, since their creation,

poultry slaughterhouses have suffered from unfair competition from live poultry markets called "Ryachats," which monopolize the poultry market without any regard for the regulations; thus, putting the health of citizens at risk. In this context, Covid-19 required the required the monitoring of diseases transmissible to humans by animals especially that Covid-19 started in Wuhan live animals' market. It should be noted that even China, the country with the most live poultry markets, has announced a vast program to abolish the sale of live poultry.

Study Limitations

The main limitation of this study was the restricted access to professionals for the interviews. The qualitative study contains 10 semi-directive interviews with the professionals of the poultry sector; it would have been interesting to perform more interviews. Additionally, time was a limitation. The study needed to be completed over a short span of time to ensure its validity, but this time span was a constraint that have affected the quality of the research. In fact, if I had more time, I would analyze the article much better or added an additional study such as a quantitative analysis or a documentary one.

Conclusion

To conclude, the Covid-19 pandemic has caused an economic and financial crisis (Kotler P. 2004) that has affected the poultry sector in Morocco. It is important for professionals to learn from this crisis and question the sector's current "economic" model of production and marketing. For instance, the sector could opt to plan production according to demand predictions from market studies. Instead of a random production model, a medium long-term vision common to the entire sector could be adopted. A unified vision would allow for development and improved resilience to unpredictable disasters that may occur. It is also necessary to highlight the importance of the development of distribution (storage, packaging, slaughtering, freezing), whose value is more visible during crises. The Ministry of Agriculture should also dare to take a more proactive approach in instigating change by supporting companies that would commit to this in new economic model. Finally, it is well known that the development of the poultry sector cannot happen without contractual relations between the partners in the sector. These relations must be based on the honoring of commitments, equity, and solidarity

in case of crisis; this unity could occur under the aegis of the Interprofessional Federation of the Poultry Sector (FISA MOROCCO). In addition to contract-based production (Bouamra-Mechemache Z., Duvaleix-Tréguer S. et Ridier A. 2015), digitalization is also crucial for real development in the future. Finally, if the poultry sector manages to emerge from the Covid-19 pandemic with a new economic model, this crisis can be considered to have had a positive impact. The Moroccan poultry sector should take the opportunity to ensure its strength and ability to resist the crises that may arise in the future.

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