

# Strategic Planning of Livestock: A Commercial Soft Technology Based on the Supply Chain Strategy in Golestan Provincinace

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**Abstract-**The aim of this study is strategic planning of poultry cluster to determine the leverage points based on the supply chain strategy and to offer approaches according to commercial soft technology maturity. The study was performed using field study and documentation between September 2017 and August 2018. The results highlight the leverage points regarding supply and demand management of chicken meat with an emphasis on export market and low maturity of business technology in Golestan poultry markets. Some solutions are presented with regard to the current situation of the markets which are basically based on business soft technology.

**Keywords:** *business strategic planning, commercial soft technology, supply chain strategy, livestock*

## 1. Introduction

Inventory management has frequently been targeted by researchers as one of the most pivotal problems in supply chain management. This paper aims to propose a strategic plan for poultry cluster business of Golestan province with an emphasis on commercial soft technology and supply chain strategy. In other words, it means to evaluate the current state of poultry industry in Golestan to find issues; and consequently, describe strategic solutions with an emphasis on business technologies. Strategic Planning is creation and implementation of decisions regarding future direction of the organization. The principles of strategic management are based on external and internal evaluations of the organization [1]. The first step in strategy creation is evaluation of the current state, definition of the future strategic direction, strengths and weaknesses of the organization, determining the permanent competitive advantages and the company's main function [2]. One of the tools to evaluate the outside environment is Porter five forces analysis. This model includes threat of new entrants, bargaining power of customers, bargaining power of suppliers, threat of substitute products or services, and competitive rivalry [2]. The internal analysis of the organization begins with identifying

advantages and disadvantages of the organization based on the current operations in the chain of the main and supportive operations. A strategic analysis of the poultry industry of Golestan province can be done using the aforementioned approach. Poultry industry in Golestan consists of 969 production units, 961 of which are small chicken farms and 8 are production chains. Their main product is chicken meat and subsidiary products are egg, fertilizer and feather. Poultry units have progressed over the recent years in Golestan regarding the number, capacity and technologies of production. This industry, in Golestan, produces 212 thousand tons of meat per year (equal to 10 percent of the meat produced in the whole country); so it is the second biggest producer of meat in the country (Ministry of Agriculture Jihad of Golestan). The capacity of small units is 16.86million pieces equal to 126 thousand tons (about %60). But, these units face challenges and problems in competition field; for example, small and medium chicken farms are fragile against market fluctuations and because of cash shortage fail to provide appropriate livestock and chicken input; so they have to sell their meat cheaper to slaughterhouses and poultry food factories. Hence, majority of the benefit is given to slaughterhouses and poultry food factories [3]. So, Poultry Industrial Cluster of Golestan province is designed and implemented. The results of a study about poultry cluster of Golestan province indicate that the majority of the problems of chicken farm owners result from lack of resource management and demand and supply management of the final product. These problems lead to over-supply and as a result decrease in the price and little profit from the products. This paper aims to clarify the main challenges in poultry industry and identify issues and correction of this business system with an emphasis on Business Soft Technology Criteria and Process. [4] sees technology as an action done by the organization and defines two aspects of

hardware (equipment and machinery) and software (knowledge and technique) for it. [5] believes that technology means tools, techniques and instrument systems. He also regards social instruments such as government, bureaucratic system and legal systems as technology. Soft technology is a kind of practical knowledge system derived from social science, unnatural science and non-scientific (traditional) knowledge and its purpose is to solve different practical problems [6]. Business soft technology is the technology of economic operations and improvement of economic operations including interactions technology, money technology, accounting technology, advertisement technology, management technology, financial technology, etc. [6]. [7] in Harvard Business Review talk about the increasing marketing technology and the role of marketing technologists and state that marketing technology is not mere marketing but it is a combination of strategy, information technology, etc. Also, Brinker and Heller who are chief managers of mckinsey.com, define marketing technologists as people who use technology in design and implementation of marketing and connect the consumer experience with market needs via different technologies. [8] sees the difference between the developed and developing countries in technologist workers- workers with theoretical knowledge and practical skill. [9] says management has three aspects of science, skill and art; and every manager needs to have theoretical knowledge alongside practical skill and the art of working with other human beings. With the increasing improvements of marketing technologists in the era of information, and the challenges of management and technologist workers in the 21<sup>st</sup> century as well as soft nature of the uses and operations of a business organization, we can conclude that they can be evaluated alongside business soft technology of poultry industry in Golestan province. An important component in system status evaluation is the maturity of organizational technologies including the management style of business organization. The evaluation of the level of technological maturity is related to readiness examining and technological development and it has multiple usages including evaluation of the present state of an existing technology, determination of technological bottleneck, determination of technology providing strategy, phasing, monitoring the plans and projects [8]. The evaluation of maturity level of technology started in

1980s. It later developed into <sup>1</sup>Technology Maturity Model (TMM), readiness model and procedural maturity of technology (hard). Also, maturity of research process and technology model and marketing process maturity model [9] is developed by researchers as a process of business soft technology. Furthermore, different methods for evaluation of maturity level of technology including Technology Readiness Levels (TRL), Manufacturing Readiness Levels (MRL), Design Maturity Levels (DML), System Readiness Levels (SRL), and Interface Maturity Levels (IML) are presented; any of which tries to cover one aspect of the technological maturity. The progressive role of the technology in competitive statuses, especially in Information Age justifies the need for performing this research. The importance of this study is that technology offers the organization a competitive advantage. The technological strategy aims to offer a permanent technological advantage with a specific competitive advantage [10]. In fact, one can say that technology in general and business soft technology in particular in the third wave of Industrial Revolution has a leading effect in competitive advantage of the business. So, evaluation and definition of the role of business soft technology is important in high quality production and implementation of business strategy. In the strategic evaluation of business, the primary step us defining and analysis of the external environment and evaluation of the internal strong and weak points. Thus, the main problem of the research begins as follows:

What are the main challenges of poultry industry in Golestan province? What are the system's leverage points? In order to correct business system, what process and components of the technology need to be focused? The main purpose of the research, is designing strategic plans for poultry businesses in Golestan province with an emphasis on commercial soft technology. In the other words, the present research evaluates the internal and external challenges of poultry business and defines key components and processes in order to correct the system. So, the main question of the research is:

What does strategic planning of Golestan province include? And subsidiary questions include?

What are the main challenges for poultry industry business in Golestan? In the studied business, what are the main strategies? What is the role of soft technology in the strategic plans?

## 2. Research findings

### 2.1 The analysis of the supply chain strategy

With the introduction of the concept of supply chain management in the early 1980s, inventory management was also recognized as one of the most important drivers of supply chain. Golestan province poultry business produces different productions including broiler, one-day old chicken, poultry food, etc. But, because of the nature of poultry cluster, the main product of poultry business is chicken meat. Also, subsidiary products of the cluster include egg, chicken waste, the powder of slaughter waste and feather. The poultry industry of Golestan had a dynamic and progressive process from 2008 to 2017. There are 969 chicken farms in Golestan that are able to produce 212 thousand tons of meat per year which is 10 percent of the whole 2300 thousand tons of meat produced in the whole country annually. Gorgan and Gonbad contain 20 percent and 18 percent of the units in this province respectively [3]. Definition and analysis of the external environment of poultry industry of Golestan is a primary step in evaluation of business which is performed using the Porter 5 forces model. The evaluation using model showed that bargaining power of the customer (mostly slaughter houses and big markets) is very high. Also, the bargaining power of the suppliers (poultry food factories and medicine input) is high. Also, since chicken meat is cheaper than red meat (65000 Rials versus 430000 Rials; %15 of red meat price at the time of the research), replacement power of other goods has been low and threat power of the newcomers has been assessed to be average by the experts. Also, the existing rivals have high market share, practical experience and financial power (Table 1).

**Table1.** Evaluation of the environmental state of the cluster with Porter five force model

Item	Title	Evaluation of every criterion
1	bargaining power of customers	High
2	bargaining power of suppliers	High
3	threat of substitute products or services	Low
4	threat of new entrants	Average
5	competitive rivalry	High
Cluster level of poultry industry		Average to high

### 2.2 The analysis of internal environment

The livestock supply chain includes the processes and steps associated with nurturing the animal from birth until slaughter; while the cold supply chain refers to the processes and steps that take place after slaughter. The evaluation of the internal environment of the organization consists of studying strong points of the organization and weak points of the business. The internal elements include financial issues, marketing communications (strong goods distribution system, brand, etc), physical resources (facilities and equipment of the organization, company's location), human resources (staff, organization brand's fans). SWOT model was used to analyze the poultry system of Golestan. SWOT evaluation results of Golestan show that the strong points are technical and professional knowledge of chicken farm management and the possibility of using the available capacity in the current units. The weak points include the problems with providing input and the net cost of products. Opportunities include greater climate for poultry production, availability of production technology and advanced operation of chicken farms and threats include outbreaks due to low efficiency of some drugs and vaccines and problems with inputs regarding the price (Table 2).

**Table2.** Broiler SWOT matrix in Golestan province

External elements	Opportunities	Threats
	<ul style="list-style-type: none"> <li>- The possibility to develop units by means of new technologies of poultry production (cage systems, feeder lids, automatic drinking cups)</li> <li>- Extraction to Russia and Saudi Arabia especially using Haj season</li> <li>- great climate for poultry production</li> </ul>	<ul style="list-style-type: none"> <li>- Outbreaks dues to low efficiency of drugs and vaccines</li> <li>- Production problems regarding inputs</li> <li>- increase in production prices dues to increase in energy costs</li> <li>- Low efficiency of the current feeder lids available at the market</li> <li>- limitations for product price</li> </ul>
Strengths	<ul style="list-style-type: none"> <li>- The existence of more than 800 units in the province</li> <li>- The existence of technology and knowledge for running chicken coops</li> </ul>	
Weaknesses	<ul style="list-style-type: none"> <li>- low efficiency</li> <li>- low production capacity of the majority of units</li> <li>- high costs</li> <li>- weak financial supply</li> <li>- high cost of inputs (chicken food, chicken, drugs)</li> <li>- High fixed price in compare with rivals in the region and in the world</li> </ul>	

### 3. Research methodology

Documentation, library, and field study were used to gather information. Library study includes investigation of reports [11], [12].

For field study, chicken farm owners, managers, small and medium industry experts, poultry cluster developers, export companies' workers (more than 20 people, sometimes more than once). There were numerous meetings with experts individually and as groups.

The method of doing research was according to the industrial cluster development methodology of the United Nations Industrial Development Organization (UNIDO). The literature of poultry industry and the history of the studies of poultry cluster were reviewed in the country. Primary information was collected from the poultry industry in the world, Iran, and Golestan. Then, the information was provided to the experts in form of individual meetings as well as group meetings step by step. Then, the necessary feedbacks were received. To assess the SWAT table and the five Porter Force, a questionnaire was filled by the experts. The data from the questionnaire, interviews and library study results were reviewed and criticized by experts at the frequent meetings. The research has two stages in practical terms. The first one was a cognitive study of Golestan poultry cluster and the development of the business development strategy. The second stage was the analysis of the content of the action plans and the developed strategies. Therefore, information gathering, including expert opinions, was done in two steps; in the first step, for creating the strategy of the poultry industry, and in the second step, to analyze the content of the designed strategy. The present study, in terms of methodology, is considered as an extension of the research goal (providing strategic planning for the poultry industry). Also, since the objective of the conceptual model is to improve the status and performance of business units, this research can be considered as an applied one. Also, according to the data collection method, this research is a non-experimental research that intends to explain the important components of strategic planning with an emphasis on soft technology of the poultry industry. Therefore, the research method is descriptive. Also, the present study is a qualitative research in terms of the nature of data. It was conducted from the autumn of 2016 to the summer of 2018. It should be noted that SWAT technique

and five Porter forces were used to formulate the strategy.

### 4. Results: Analysis of strategic issues and leverage points of Golestan Poultry Industry

Though the cold supply chain processes and steps are important, more than 80% of the time needed from the first step of supply chain until delivery of the final product to the customer occurs when the inventory is still alive. According to the study, the country's poultry meat supply was 2.3 million tons and demand was 2.1 million tons. The production capacity of Golestan province is 212 thousand tons, 70 percent of which is sent out of the province [13]. So the poultry industry has a surplus that is expected to remain in for the upcoming years. Therefore, the main leverage point of the poultry industry of Golestan province is lack of proper supply and demand management and lack of export approach. Based on this, a proper management of the supply and demand system with a focus on the three components of the price, slaughter technology and packaging is required. It should be noted that the determination of leverage points and strategic issues in the poultry industry of Golestan poultry business was carried out using supply chain components (upper, internal and lower components of the supply chain).

#### 4.1 Upper Supply Chain Challenges:

Price fluctuations of feed, dependence on the production of chicken, one-day old chicken, low quality of medicine and vaccine, low quality of feed, and price fluctuations of one-day-old chicks

#### 4.2 The problems of the internal supply chain

1. Large casualties: Normal casualties for broiler chickens are usually %10 here, but in advanced countries it is %2.
2. High age of slaughter: The maintenance age in Iran is about 50 days, but in advanced countries, it is about 40-42 days.
3. Feed conversion coefficient: The weight of chicken feed to live poultry is about 2 to 1.2 kg in Iran, but in advanced countries it is about 1.8 kg.
4. Inappropriate storage and production conditions: ventilation, use of drugs and vaccines with low efficiency, etc. in medium units (10-50 thousand units), causes a high incidence of chicken casualties [14-18].
5. The lack of a coherent organization in the industry chain: The lack of organized political and

economic structures in the poultry industry has led to the development and production of poultry without any knowledge about related sections.

6. Inefficient government support of the poultry industry: government support is not systemic and structural, and it is more focused on consumers. In addition, various taxes at different stages of the production and processing of the poultry industry increase the price of chicken meat.

### 4.3 Lower Supply Chain Challenges

1. Slaughterhouse quality challenge is one of the problems of the poultry industry in the province that leads to quality loss in the final product that is incompatible with the standard export target markets such as Russia.

2. One of the current procedures is the problem of financing the chicken coops. Chicken farm owners receive chicken feed from poultry chain owners (including poultry slaughterhouses and poultry feed factories); but instead they have to give chicken meat to them under the market price.

3. Lack of planning and product supply system: Lack of chicken supply and production planning and the lack of a coherent supply chain system for price management is another industry challenge.

4. Consumer Market Challenges: One of the features of the domestic market is lack of sufficient attention to branding by producers, and the lack of customer loyalty to the brand of chicken meat.

### 4.4 Summing up of poultry cluster leverage points in Golestan province

According to studies, Golestan province is one of leading provinces in terms of fixed price and production system efficiency. It is necessary to achieve such quality in comparison with rival countries. In fact, the problems of supplying inputs, low quality slaughter technology and low production efficiency lead to high price of chicken meat in comparison to competing countries loss of competitive advantage against countries like Turkey. In general, considering the supply and

production capacity of chicken meat in the country and in the Golestan province, as well as estimating surplus supply in the years to come, as well as the need to obtain a share of the demand market for poultry meat in neighboring countries, such as Iraq and Saudi Arabia (about 1.7 million tons) and according to the main leverage point of the system we need to export chicken meat. Therefore, proper management of the domestic supply and export supply system is essential to achieve this goal, and we need to focus on the three components of the price, slaughter technology and packaging method. To manage the main leverage point and improve the quality of the product, three areas related to the main leverage points of the Golestan province's poultry industry need to be reorganized. They include the upper supply chain (supply of cluster inputs including feed, one-day old chickens, etc.) and domestic supply chain (product quality, technology leverage point, etc.) and lower supply chain (low slaughter technology, weakness of market segment, etc.).

### 4.5 Cluster development strategies

#### 4.5.1 Cluster perspective

Golestan's poultry perspective is: becoming the best brand and industry in the country as well as prevailing in export market of the area [19].

#### 4.5.2 Cluster aims

In order to attain cluster perspective and becoming the best poultry brand in the country, the following quantitative objectives need to be attained:

1. The ability to produce 250 thousand tons of chicken meat in perspective of 2020 (index of 2017 was 212 thousand tons).
2. Production share of 150 thousand tons by small and medium chicken farms (Index of 2017 was 132 thousand tons).
3. Increasing chicken meat export to 10 thousand tons per year (Index of 2017 was 3 thousand tons) (Table 2).

**Table 2.** cluster perspective in 2020

Item	Province	Country	Province share (percent)	rank	Cluster perspective by 2020		
					Province share (percent)	Production quantity	Exporn quantity
Chicken meat (Thousand tons)	212	2300	10	2	12	250 thousand tons	10 thousand tons

### 4.5.3 The strategies of poultry cluster

According to the main leverage point of the system, the export of the product and the proper management of the supply and delivery system for chicken meat and focus on the three components of the price, slaughter technology and packaging method, the poultry cluster strategies can be organized into three groups as follows:

- 1-Partnership strategy including, (a) confidence building and sensitization in cluster members, (b) network creation
2. Product development strategy including, (a) quantitative and qualitative promotion of raw materials; (b) technology level improvement and product quality
3. Market development strategy, including, (a) market promotion and development, (b) production of organic export products, in the appropriate size and weight

### 4.5.4 Expected results from operational programs in poultry cluster

Due to the multiple objectives of the cluster, a three-year action plan was designed with quantitative objectives. These goals lead to action to change the situation of Golestan poultry business. The aforementioned sets of measures are mainly based on business soft technology components.

#### 4.5.5 Upper supply chain

1. Creating shopping networks among cluster members
2. Reinforcing the existing networks for drug and feeding inputs
3. Creating a reference lab to determine the quality of requires materials including chicken feed and drug.
4. Permanent and reliable supply of drug and input for poultry industry

#### 4.5.6 Internal chain supply

1. Improving saloon technologies
2. Using smart systems to raise and keep poultry
3. Creating cooperative networks between cluster member to exchange experience and techniques

#### 4.5.7 Lower supply chain

1. Designing and building modern slaughter houses to improve chicken slaughter according to international standards
2. Packaging the products according to international standards
3. Creating export networks

4. Reinforcing guild networks for chicken farm owners and service providing companies of poultry industry [20- 22].

## 5. Discussion and Conclusion

The supply chain of protein products is amongst the most important and influential supply chains human beings must deal with. In some protein products' supply chains including red meat, fish meat, and chicken meat, the inventory flow is divided into two parts: livestock inventory flow and cold inventory flow. All the steps from birth, and even before birth, involved in delivering protein goods such as packaged meat, eggs, and sausages, are part of this supply chain. Strategic planning of poultry industry and objectives and operational plans are created according to research findings and advice of experts. Studies from the point of view of maturity level of business indicate that the maturity level and technology of business operations in poultry business in the upper supply chain are at their primary level of maturity. In order to prove this, we need to refer to designed programs in the upper supply chain. These plans indicate the need to form a common purchasing network, reinforcing the existing networks. They illustrate the grave weaknesses of poultry businesses in the context of organized activities and organizational maturity. This topic has been repeatedly acknowledged at the expert meetings as a critical point of activity in the high-end supply chain and the need for network operation for small and medium businesses is emphasized. In the domestic supply chain challenges, the promotion of manufacturing technologies, including hardware and software, has been emphasized. However, the results of the study indicate that in recent years, the major part of the poultry industry of Golestan province has experienced a hardware promotion. But in the area of soft business technologies such as network and group work, resource management, product planning and supply, the level of maturity of business technology is at primary level. This issue has been referred to in the meetings of experts in the poultry industry repeatedly as the need for optimal resource management, proper planning and product supply. Finally, we need to state that the main challenges and system leverage points are mainly based on soft organizational components. Therefore, action plans have been designed to promote and improve the maturity of soft business technologies of poultry cluster of Golestan province. These items include the formation of

joint purchasing networks and the formation of consortiums and an export networks. Yet, a few of the plans are based on hardware technologies, such as building modern poultry slaughterhouses. In fact, according to the results of the research, in order to develop and promote poultry industry of Golestan soft organizational dimensions need to be improved. And based on this, the strategic planning of the poultry industry in Golestan province is designed with the approach of promoting the maturity of business soft technology. In other words, strategies have been designed to develop the soft technology maturity level of cluster members.

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