

## **Food Market Analysis: A Case Study of the Glocal Methodology in the Dominican Republic**

**Teresa Briz, PhD**

Assistant Professor

Universidad Politécnica de Madrid

E.T.S.Ingenieros Agrónomos

Dept. Economía y Ciencias Sociales Agrarias

Avda. Complutense 3

28040 Madrid

**Isabel de Felipe, PhD**

Professor

Universidad Politécnica de Madrid

E.T.S. Ingenieros Agrónomos

Dept. Economía y Ciencias Sociales Agrarias

Avda. Complutense 3

28040 Madrid

### **Abstract**

*The present paper provides an insight into the food value chain of three specific sectors (fruit and vegetables, poultry and rice) in the Dominican Republic. The Glocal methodology used for the study combines a global view with local conditions and thus it can be applied to food markets. Each of these food chains is analyzed by following traditional industrial organization theory, based on structure, conduct and performance. Regarding the specific case of the Dominican Republic, different sources of information are used to analyze the weaknesses of the studied chains, including direct interviews. The food value chains of fruit and vegetables, poultry and rice in the Dominican Republic show a lack of structure and they are undergoing changes; however, they also have great opportunities to improve efficiency by making some changes.*

**Keywords:** Global, Local, Food Value Chain, Dominican Republic

### **1. Introduction**

The “Glocal” methodology aims to provide a framework analysis of the food value chain (FVC), by considering the existing instruments of study and the utility of combining a *global* view with *local* conditions.

The global view describes the evolution of the main flows between farmers and consumers, within the interaction of different links (farmers, manufacturers, wholesalers, retailers, restaurateurs and consumers).

Each flow includes products and services, finances and information, and the analysis is organized following traditional industrial organization theory (structure, conduct, performance) (Bain, 1958). In this paper, the local study focuses on the specific conditions of the Dominican Republic.

This paper has two sections. The first part is a theoretical focus on food chain research with a description of the Glocal methodology, while the second part is the application of the Glocal methodology to the case of Dominican Republic to three food sectors: rice, poultry and fruit and vegetables.

### **2. Glocal Methodology for Food Market (Fm) Research**

Analytical methods can be quantitative (with a need for numerical information and some scores in order to have evaluation criteria) or qualitative (with the use of non-numerical data to understand a particular attitude and/or behavior) (Bremmers, 2004).

In our case study, market research is used as a tool to understand the elements that influence the quality of life for citizens, in a friendly and sustainable environment where green areas play an important role. Utility may be extended to public and private institutions, firms and social organizations in order to evaluate food performance (Briz & De Felipe, 2013)

In order to reach the goals of established FM performance, it is necessary to follow a methodology that combines the available resources with the capacity to organize and use them.

We thus propose a Glocal approach, which means starting with a global view of all the existing problems in the urban area, including their interrelationships, origins and evolution, followed by a second step with the local analysis of some of the most relevant issues and with proposals for different solutions.

The Glocal methodology is a mixture of sector analysis, combining qualitative and quantitative techniques and looking for synergies according to specific and general goals (Johnson *et al.*, 2007; Weiss, 1971). The methodology runs as follows: a preliminary period is denominated exploratory or global, followed by a specified or local one, which provides information for the evaluation.

Under this framework, there are three scenarios to study: goods and services, information and economic/financial flows. Each of these has specific dimensions within the areas of structure, conduct and performance.

The qualitative analysis may be performed through the study of focus groups on how the activities and conduct of socioeconomic agents are developed (Bogdan & Taylor, 1978). The interaction among the participants of the focus groups allows us to capture their opinions, affinities and differences as well as their habits and other details, which may be difficult to ascertain through a regular enquiry. In some way, understanding the reaction of people to market situations is complementary to the quantitative analysis, with an orientation towards the structure and performance of society.

It is important to compare the experiences in other regions and countries, the problems and the solutions applied. This can be defined as a paradigm, recognized by a significant group of expertise, as the best way to analyze, understand and resolve the most important problems on a given date. However, market dynamics may outdate the paradigm and it may need to be updated with new information. In Figure 1, the main steps of the performed analysis are described.

#### *First Step. Introduction*

A short description about the origins and motives of the research is included in this section.

#### *Second Step. Socioeconomic framework*

This section includes the major economic and social dimensions under analysis in the FM. It may be an approach based on an historical evolution or a cross-sectional analysis on the situation of various scenarios in a given period. The analysis of the framework allows meeting the most significant problems that affect the sector, its social impact and its historical pathway.

#### *Third Step. Objectives of the study*

This stage is crucial for the achievement of a useful and efficient study. Firstly, the main priority has to be established and whether the objectives are general or specific must be decided. The method can be qualitative and/or quantitative, looking for the easiest way to conduct the study. It may have a commercial or economic dimension (income, sales, market share and risk), a social basis (creation of jobs, development of an area) or promote innovation and competitiveness.

#### *Fourth Step. Glocal methodology*

This methodology seeks to combine a global vision of the FM with a local specific performance. Although it offers the possibility to analyze them separately, according to the objectives and time and budget constraints, the ideal situation is to merge them in the Glocal situation.

A global vision includes three vertical scenarios that correspond to the different flows that run through the FM, from supplier to user/consumer and vice versa. Firstly, we can mention the movement of goods and services in which the supplier passes onto the designer, architect, builder and finally the user and/or consumer.

Secondly, the financial flow that moves in the opposite direction from the user/consumer to the supplier, paying for the goods and services received. Finally, the third one is the flow of information that moves in both directions and influences the functioning of the two previously mentioned streams.

The horizontal stage includes three groups of factors related to the organization and development of FMs: *structure*, *conduct* and *performance*. *Structure* refers to the organizational system in the FM, and this has a number of dimensions that allow evaluating and comparing different situations (Bain, 1958). *Conduct* includes the behavior of the social and economic agents that operate in the FM and, in many cases, this is related to ethical and moral issues. It involves the analysis of the conduct of the public and private actors involved in the FM as well as the interface between these agents and explains where we should evaluate their conflicts and frequency (Theuvsen, 2007). It also refers to the failure or absence of regulations in FMs. Evaluation should take into account food scandals, complaints by citizens and their social impact.

Lastly, we have *performance*, which reflects the result of the elements of the FM. The challenge is to identify a set of criteria that may allow us to evaluate and compare various situations. Some of these are a) Effectiveness and efficiency in management; b) Transparency; c) Trust; d) Dynamism; e) Innovation; f) Adaptability; and g) Level of conflicts and food scandals. By crossing the horizontal and vertical stages mentioned before, we have the table shown in Table 1.

The Glocal methodology previously described combines the structural and conduct dimensions within a dynamic scenario, where logistics, financial flows and information overlap. This calls attention to the complexity of the transactions usually carried out in the FM. At the same time, those elements contribute to identifying problems as well as possible solutions.

The Global matrix of the FM is self-reliance with vertical and horizontal stresses. In the vertical sense, the intensity and efficiency of the flow of goods and services interface with information and financial flows. The strength of any one of them supports the better performance of the others. Similarly in the horizontal stresses, the structure of each of the mentioned streams affects their conduct and this, in turn, affects their performance. Sometimes, owing to a lack of time, knowledge or budget, studies are biased and thus their results and corresponding actions develop.

Some suggestions for further research in Glocal analysis include:

- The evaluation of the sustainability of the FVC according to the structural and time pressure in the market. The situation in the past decade, with the global financial crisis, means that we should pay special attention to this area of research.
- Social and legal acceptance of the performance of the FVC. Food is a strategic item in our society and the role of institutions and public and private forces under the existing regulations have to focus on improving the efficiency of the system.
- Identification of different scenarios for improving FVC performance, selection of strategies and coordination of synergies and transparency.
- Analysis of governance practices applied in the FVC decision-making process and the performance of existing programs.

The specific local approach aims to answer specific questions that concern the whole FM. There are different issues:

- A. Dynamic analysis of FM: Where do we come from? Where are we? Where are we going? Study of trends, seasonality, cycles or evolution of types of enterprises and their associations. The use of the Delphi method, that is, sequential interviews with experts, can help in the forecasts of the FM
- B. National or international comparative analysis with a selection of good institutional and business practices
- C. Analysis of competitiveness in different sectors of the FM taking into account the contributions of the so-called Competitiveness Diamond (Porter, 2008)
- D. Study of the interaction among actors in the FM. Contractual relations, model contracts and trust levels are aspects to be considered.

### *Fifth Step. Analysis of results*

In this stage, we proceed to evaluate the results of the applied methods (Glocal). To do this, we identify strengths, weaknesses, threats and opportunities (SWOT matrix) as well as other dimensions in line with the objectives set.

### *Sixth Step. Conclusions and proposals*

The study should highlight the key findings and subsequent proposals to achieve the planned objectives.

## **2.1 Application to the FVC in the Dominican Republic**

In this section, we specifically refer to the methodology used in the project “El modelo de cadena de valor como estrategia para el desarrollo rural: Aplicacion a la Republica Dominicana” sponsored by AECID (2011–2013). The research was designed as a qualitative analysis and the results cannot be extrapolated to the whole country. However, it may be considered to be a primary study that can later be followed by a quantitative analysis.

The sample was selected by convenience after a brief analysis of the different food chain links in two areas: Santo Domingo, the capital of the country and largest metropolitan area, and Dajabon, a marginal rural area located on the border with Haiti. In both areas, we carried out interviews with actors in all links of the food chains of the selected products (rice, poultry, fruit and vegetables).

In the framework of the Glocal methodology, the qualitative empirical analysis developed a set of activities with the food chain actors in these three sectors. The first step was 398 face-to-face interviews with farmers, manufacturers, wholesalers, restaurateurs, retailers, civil servants and consumers. The second step was the organization of focus groups with 32 participants from the previously mentioned sectors, integrating actors of all the links in the food chain. In the third step, as a complement of the others, we conducted two waves of interviews with experts in these three sectors. Secondary information was obtained from national and international sources.

## **3. Results**

Some of the highlights of the commentaries and criticisms obtained in the third step are described in this section.

### **3.1 Results of the Fruit and Vegetables Sector**

#### *Structure:*

Some of the structural problems of the fruit and vegetables sector are the high cost of supply inputs (fertilizers, fuel) and pesticides for intensive farming as well as communication problems between the different links (farmers, manufacturers, retailers). Logistics management and organization are other dimensions highlighted as problematic. (See Figure 3)

#### *Conduct:*

On the five-point scale, two aspects relating to consumers were the most relevant: the ability to differentiate quality and the identification of new products. Respondents considered the hygiene and safety conditions in the market to be very important and discussed the growing competition from foreign products. (See Figure 4)

#### *Performance:*

The main acknowledged problems here are within the area of administrative action by omission and low performance of their interventions and responsibilities.

The category of “very important” includes a lack of planning and regulation of prices and markets, the absence of an expiration date on the labels and the need to incorporate new action in the food chain. In addition to price instability, another concern is the current environment, with widespread pessimism. (See Figure 5)

### **3.2. Results of the Poultry Sector**

#### *Structure:*

The highest concerns deal with the high costs of inputs, price instability and free trade agreement that may allow the entry of more competitive products. In addition, there are also concerns regarding the lack of research institutions, problems of intensive production and evolution of quality in food and services. The low emphasis shown on fraud control, or on the lack of technical support, is surprising. Somehow, this is a relatively standard agro-industrial sector with modern production techniques focused on intensive production. (See Figure 6)

### *Conduct*

The main problems are related to hygiene conditions and limited information in the markets. There are malpractices in storage and transport systems, where the lack of continuity in the cold chain may cause serious problems. Similarly, national products are uncompetitive in comparison with foreign countries' products, which is consistent with the aversion to free trade in the structure. Dimensions related to consumers are not considered at all and ranked as low. (See Figure 7).

### *Performance*

The biggest concern is the refusal of the authorities to establish certain standards of regulation, resulting in a lack of adequate labeling and inappropriate institutional performance. Price instability is the greatest concern. With respect to consumption and the future performance of the food chain, respondents were relatively pessimistic, getting lower ratings. (See Figure 8)

## **3.3 Results of the Rice Sector**

### *Structure:*

Once again, there was a trilogy of problems relating to the structure of the sector, as previously described for the other products (high costs, inadequate logistics and negative effects of international trade liberalization). The rice sector is missing a more proactive role of groups of farmers and efficient cooperatives who could improve their low bargaining power. The use of pesticides or availability of research centers and promotional activities are not among the most significant problems. (See Figure 9)

### *Conduct:*

The most important factors here are the lack of information between actors in the different links of the chain and low competitiveness of the Dominican Republic in foreign markets. In addition, consumers cannot distinguish the quality of the product, and they are not willing to pay higher prices, which would help design a clear strategy of market segmentation. This assessment is confirmed by the fact that consumers are not receptive to new products. This is an area of special interest for further analysis since it can be considered to be a barrier to market dynamics. There is also a poor perception about the efficiency of economic agents, especially cooperatives, as well as techniques for crop collection and transportation systems. (See Figure 10)

### *Performance:*

The main problems in this area are related to administrative inefficiencies, a lack of planning and labeling, a lack of awareness on the importance of including an expiration date on the label and the existence taste or smell problems in their products. Finally, price instability is another distorting element. In general, the rice segment is not considered to be relevant at all in the near future. (See Figure 11).

## **4. Discussion**

The models used for this study are a simplification of the real world to facilitate the comparative analysis and examine the results. They work simultaneously with overlapping and dynamic scenarios and refer to macro- and microeconomic variables. There are interpretation barriers and biases in the perceptions. Other difficulties come from the literature review used, sources of information and statistics available, which influence the final results. Finally, we must mention the profile of the researchers. Their fields of work (technicians, economists, social workers) will prioritize fields where they have greater knowledge. These models are useful tools to infer and predict behavior in markets and in the FVC. However, we must be cautious when interpreting and applying the results.

In the case of the Glocal methodology, the challenge is to combine sequential and differentiated actions between the global and local approaches. The global scenario includes an analysis of the corporate organizational structure and its behavior, cost/benefit systems and financial aspects that affect FMs.

National and international socioeconomic policies influence FMs and they should be taken into account in global and local analysis. Nevertheless, the available statistical and economic instruments are usually limited and detailed, and local analysis is focused on specific problems; hence, special research must be carried out. The challenge is how to coordinate global and local analysis in a complementary way, avoiding overlapping and opposing situations. In the case of the analysis of the FVC in the Dominican Republic, the following statements are the results of the qualitative analysis carried out.

FVC performance is poor, but it would be feasible to see an improvement. The studied areas (metropolitan areas of Santo Domingo and rural Dajabón) have common basic problems but others are specific to each area. As the common denominator, there are deficiencies in infrastructure, transparency and market conditions.

Of the three sectors studied (fruit and vegetables, poultry and rice), the poultry sector has more dynamic behavior, since it has recently started intensive production. The controls along the poultry food chain tend to be more efficient and its productive structure responds to an oligopolistic model.

The fruit and vegetables sector is a traditional one with perishable products, small suppliers and strong differences in retail chains. This is the same situation faced by the rice sector. The possibilities of the expansion of demand require special attention, which are explained as follows: strong tradition in cultivation and consumption as a basic commodity; inertia for change due to the protectionism of domestic markets; inadequate transport and storage infrastructure; poor differentiation of the product, marketing and market segmentation; and low competitiveness in international markets that have better quality and lower prices.

There are some recommendations for improving the efficiency of the FVC. In the first place, regarding the first link of the FVC, namely producers, a supply restructure is needed to adapt to the needs of the current and potential demand in quality and quantity. This should be done by restructuring the supply raising yields and leaving irrigated land for crops with a greater value added (fruit and vegetables).

In general, vertical integration in both sectors should be stimulated, which would encourage the creation of cooperatives in the most atomized links (farmers and retailers). This would help balance the bargaining power of the weakest links (farmer, consumers). Additionally, it is necessary to improve controls on quality and traceability in the food chain. It is crucial to stimulate good practices in agricultural, industrial and commercial activities, and there is a need to promote transparent development in contractual relations through standardized contracts. Therefore, existing Agricultural Extension Services should be multidisciplinary, thereby covering several links of the FVC.

The industrial link has a different structure depending on the sector. The poultry sector is relatively concentrated and companies are modern and apply new technologies. Its weaknesses include a strong external dependency on raw materials and the changeability of supply and prices, which affects monetary change. It has growing demand, especially in the young population strata. The rice industry has a traditional character, with a smallholding. Its challenge is modernizing and adapting to the new demands of different quality trademarks.

The link with retailers needs special attention. Intensive labor is decisive for local employment: they promote their associations and improve negotiating capacity, especially vocational training, for better communication on information to pass onto the consumer.

The wholesale sector is undergoing transformation. Santo Domingo has a new wholesale market built in collaboration with MERCASA, and this has solved the problems of the old market located in the centre of the city; however, it faces problems of acceptance by some traditional wholesalers. In Dajabon, the wholesale sector is characterized by the existence of the binational market, which caters for the Haitian border.

The importance of the wholesale market, whose commercial ratio exceeds the Metropolitan area, must be noted, especially the formation of the prices of other transactions outside the domestic market. Therefore, it is essential to boost prices and market information services.

Regarding the link with consumers, this sector is structurally disorganized. Indeed, the stakeholders in the food chain did not mention consumer behavior in their interviews. Hygiene and nutritional issues should be improved through information campaigns to consumers. However, there is a large difference between touristic areas and the rest of the country, since there are differences in income, social organization and geography. Hotels and restaurants face problems of supply, especially in the fruit and vegetables sector, owing to seasonality, and this must be solved.

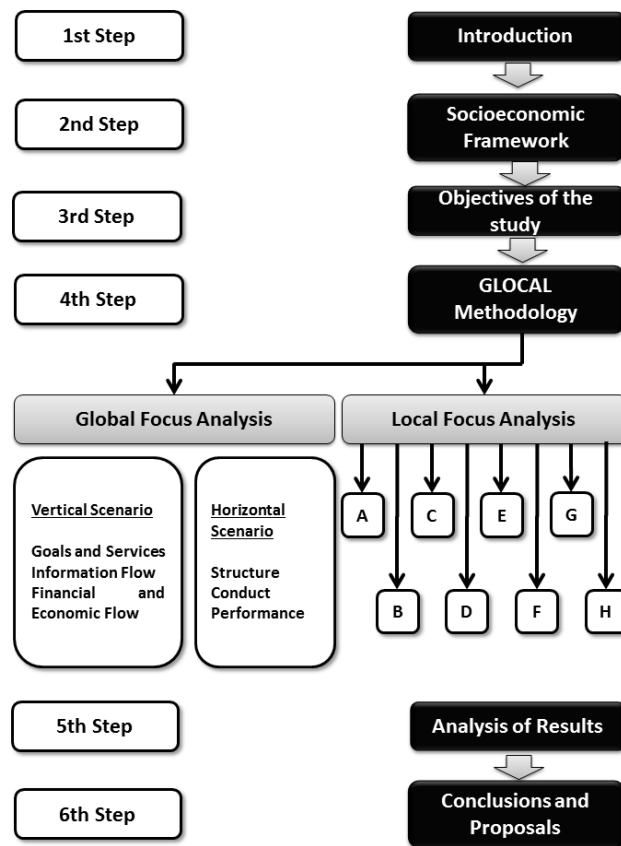
Finally, both public and private institutions have an important role in the improvement of the food chain. Their actions can engage two scenarios: mandatory regulations and voluntary monitoring guidelines. It is important to search for synergies between public and private services operating in the food chain.

In conclusion, the food chain in the Dominican Republic will experience convulsions in its adaptation process to the coming changes.

The quantitative expansion of demand, owing to an increasing population and greater purchasing power, must be accompanied by an improvement in conditions and commercial quality. The consumption of the tourist segment deserves special attention. The next steps to improve the food chain must include parallel restructuring, both in equipment and through the application of good management practices. The development of road infrastructure and new markets must also be accompanied by the best use of existing ones, especially in the channels of communication and information.

**References**

Bain JS, (1958). Industrial organization. Wiley and Sons. New York. 684 pp.  
 Bogdan R; Taylor SJ, (1978): Introduction to qualitative research method. Wiley and Sons. New York. 266 pp.  
 Bremmers HJ, (2004). Dynamics in Chains and Networks. Wageningen Academic Publisher. The Netherlands.  
 Briz J; De Felipe I, (2013). Metodología y funcionamiento de la cadena de valor alimentaria: un enfoque pluridisciplinar e internacional. 568 pp.  
 Johnson RB; Onwuegbuzie AJ, Turner LA, (2007). Toward a definition of mixed methods research. Journal of Mixed Method Research (2) 1. 112–133  
 Porter ME, (2008). The Five Competitive Forces That Shape Strategy. Harvard Business Review, January.  
 Theuvsen L, (2007). Quality Management in Food Chains. Wageningen Academic Publisher. The Netherlands.  
 Weiss L, (1971). Quantitative Studies of Industrial Organization. Frontiers of Quantitative Economics, North Holland.



**Figure 1: Methodological study of the Food Market**

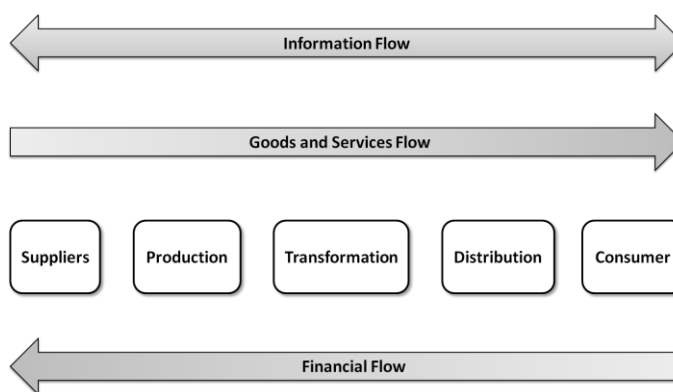


Figure 2.-Value Chain Scheme

Table 1: Basic Matrix of the Food Market

Basic matrix of the Food Market			
	Structure	Conduct	Performance
Flow of goods and services. Logistics	M11	M12	M13
Flow of information	M21	M22	M23
Financial economic flow	M31	M32	M33

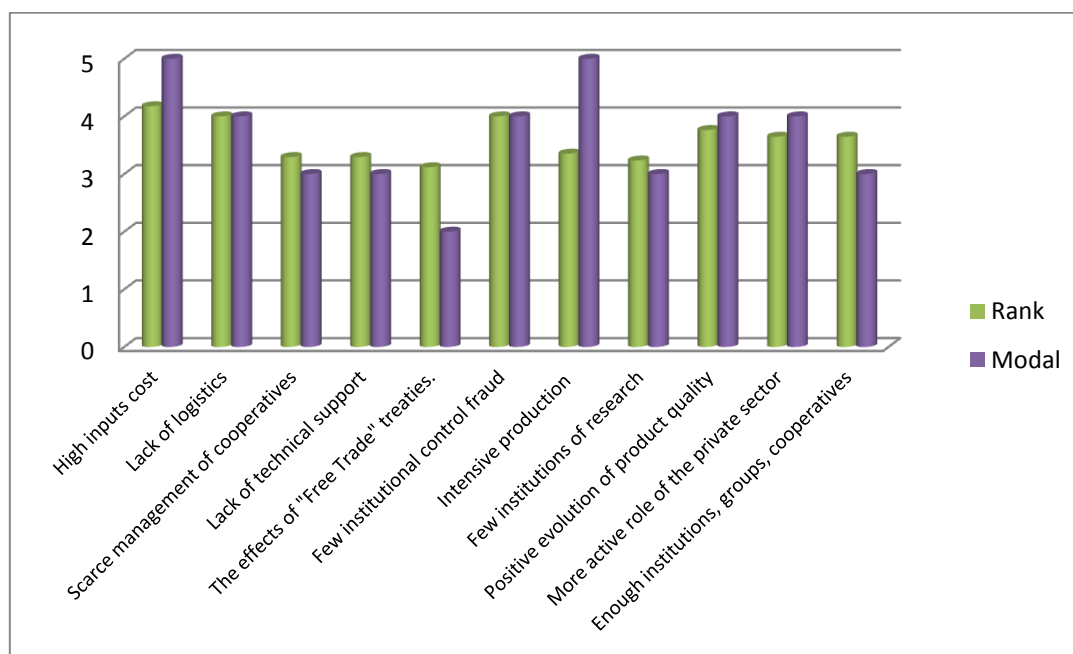


Figure 3: Structural Problems in the Fruit and Vegetables Sector



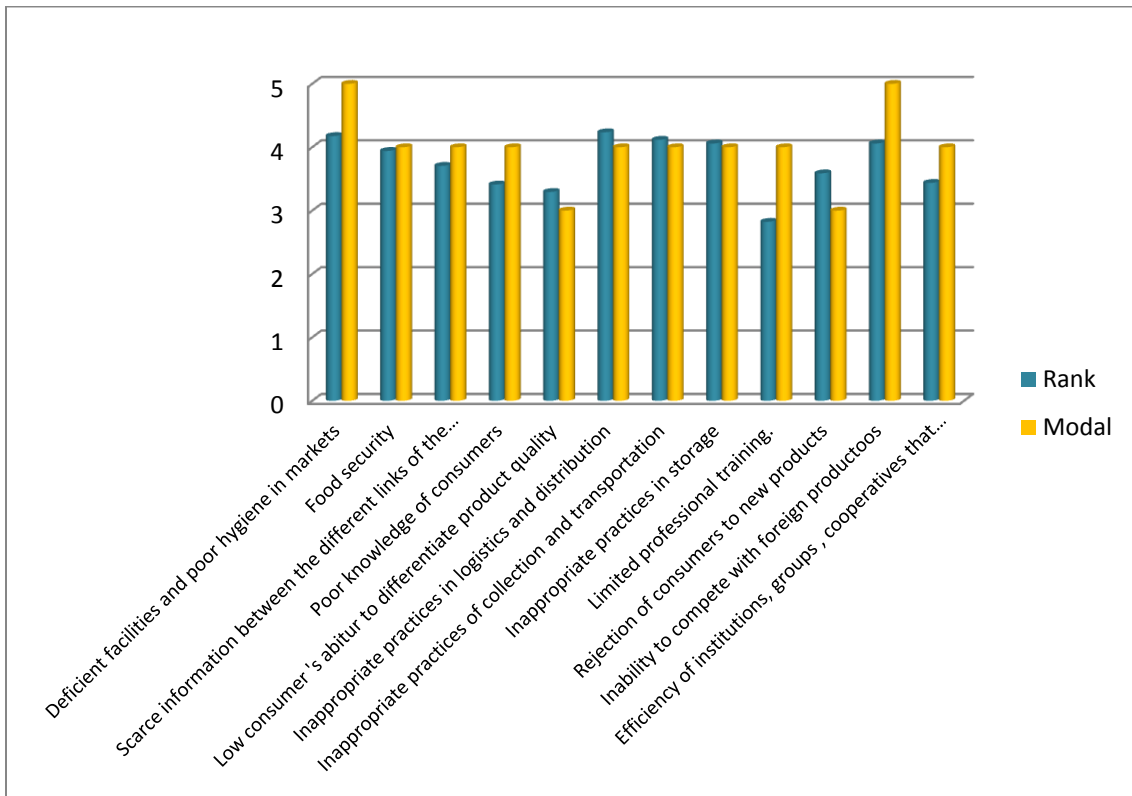


Figure 4: Behavior Problems in the Fruit and Vegetables Sector

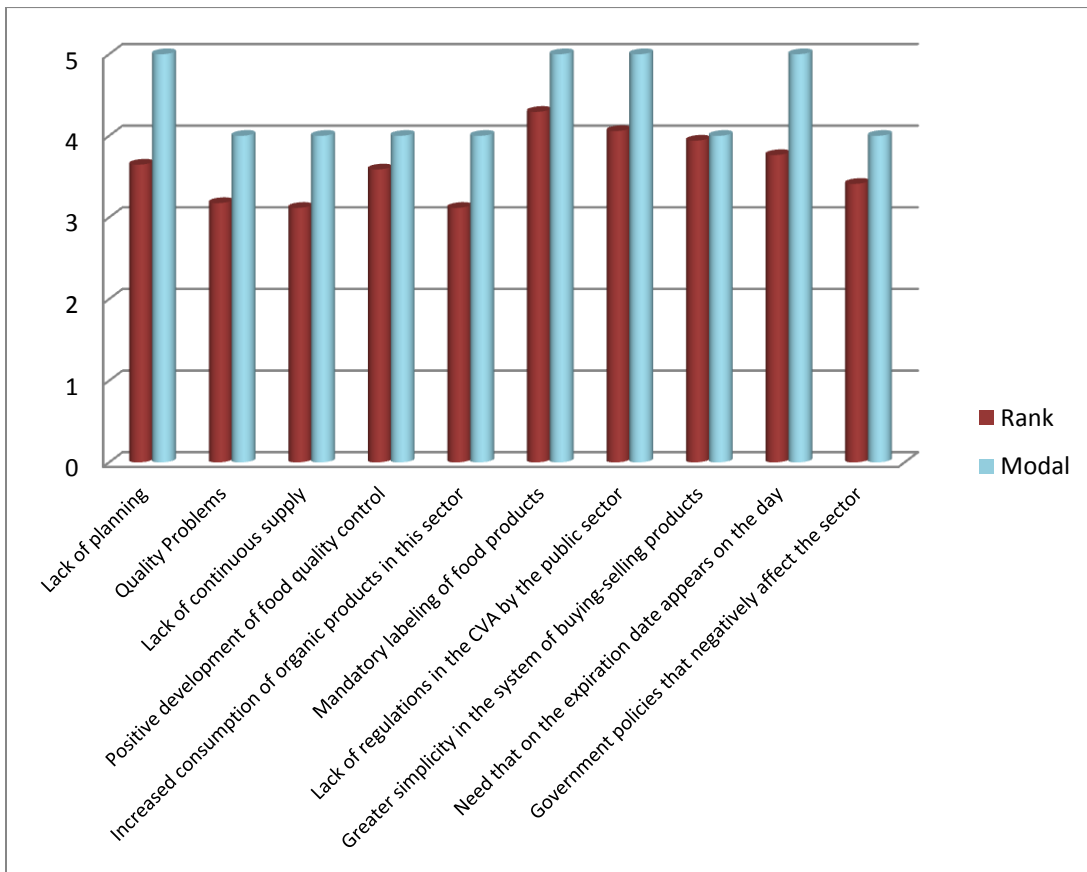


Figure 5: Performance Problems in the Fruit and Vegetables Sector

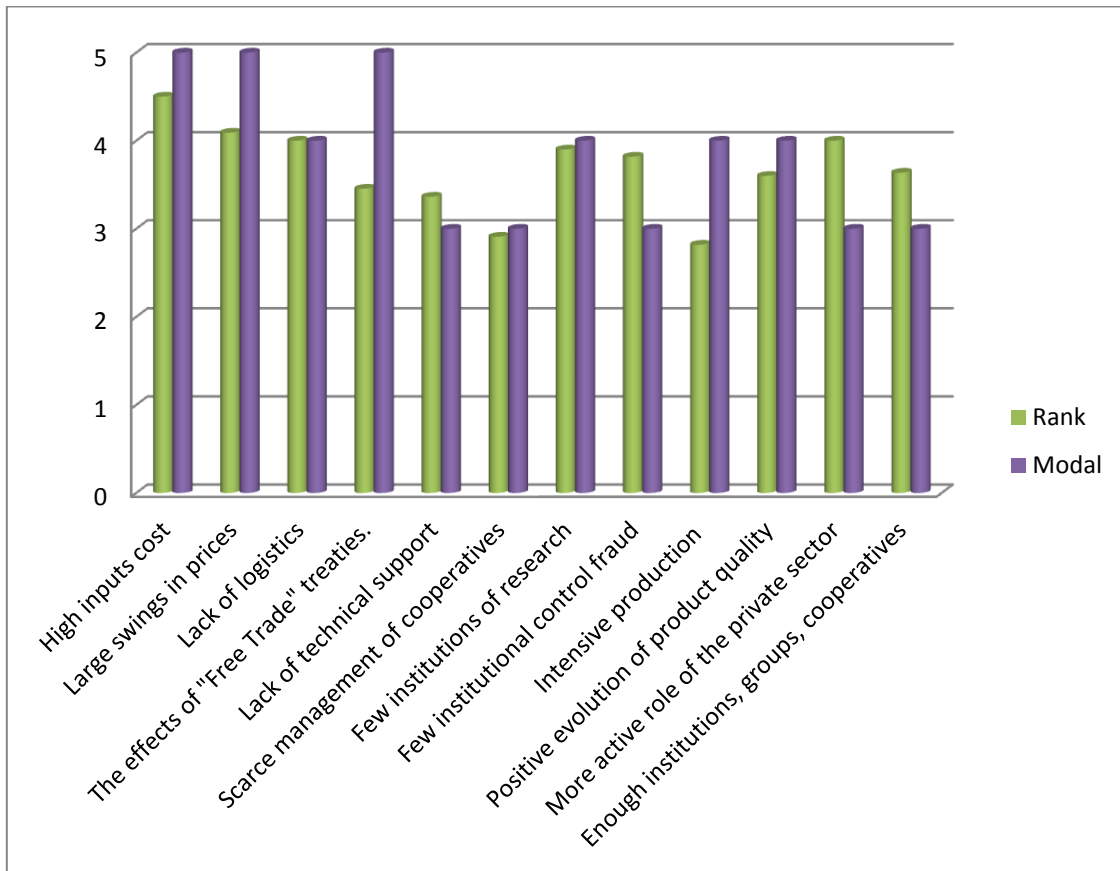


Figure 6: Structural Problems in the Poultry Sector

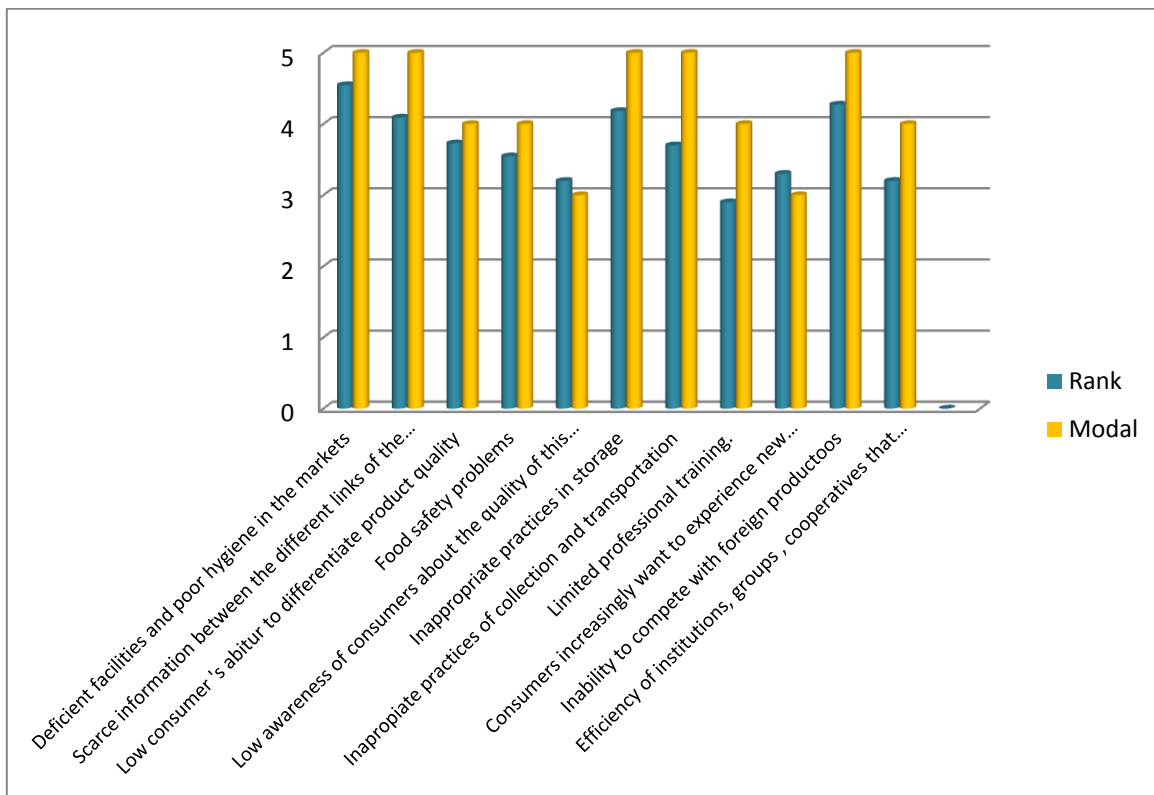
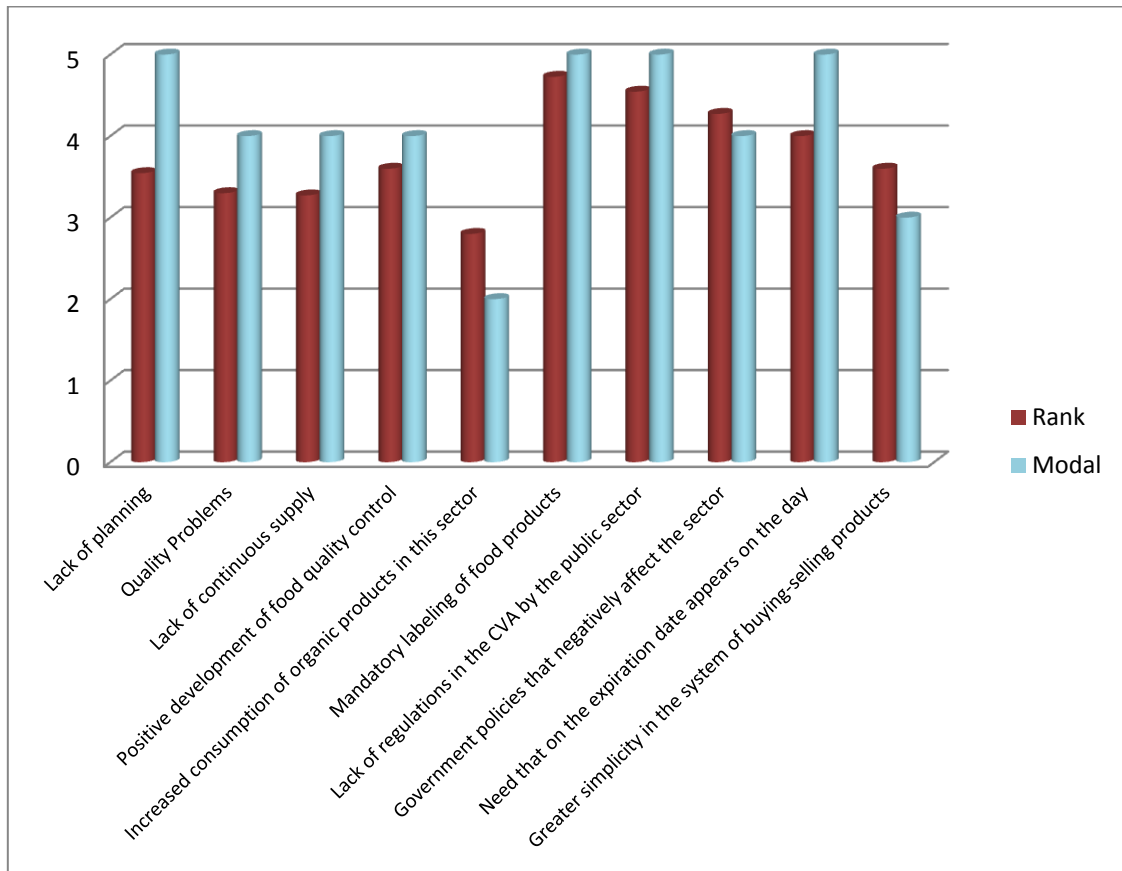
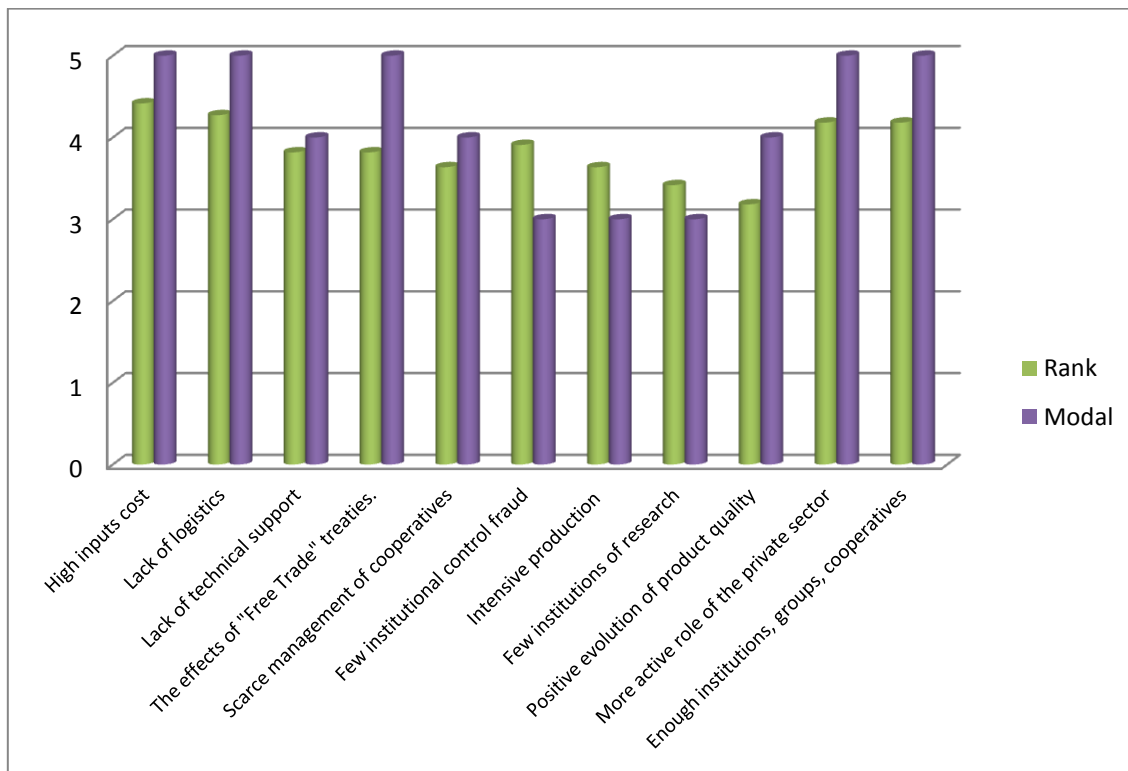


Figure 7: Behavior Problems in the Poultry Sector



**Figure 8: Performance problems in the Poultry Industry**



**Figure 9: Structural Problems in the Rice Sector**

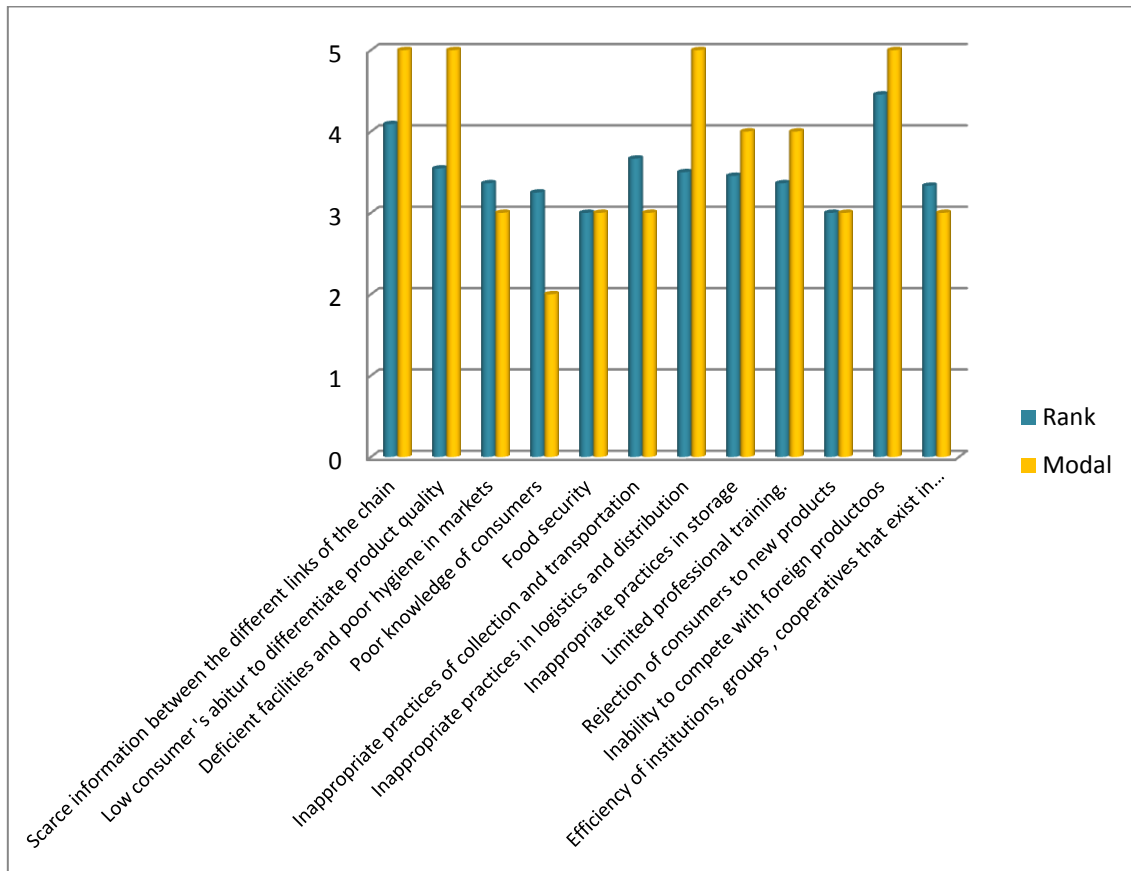


Figure 10: Behavior Problems in the Rice Sector

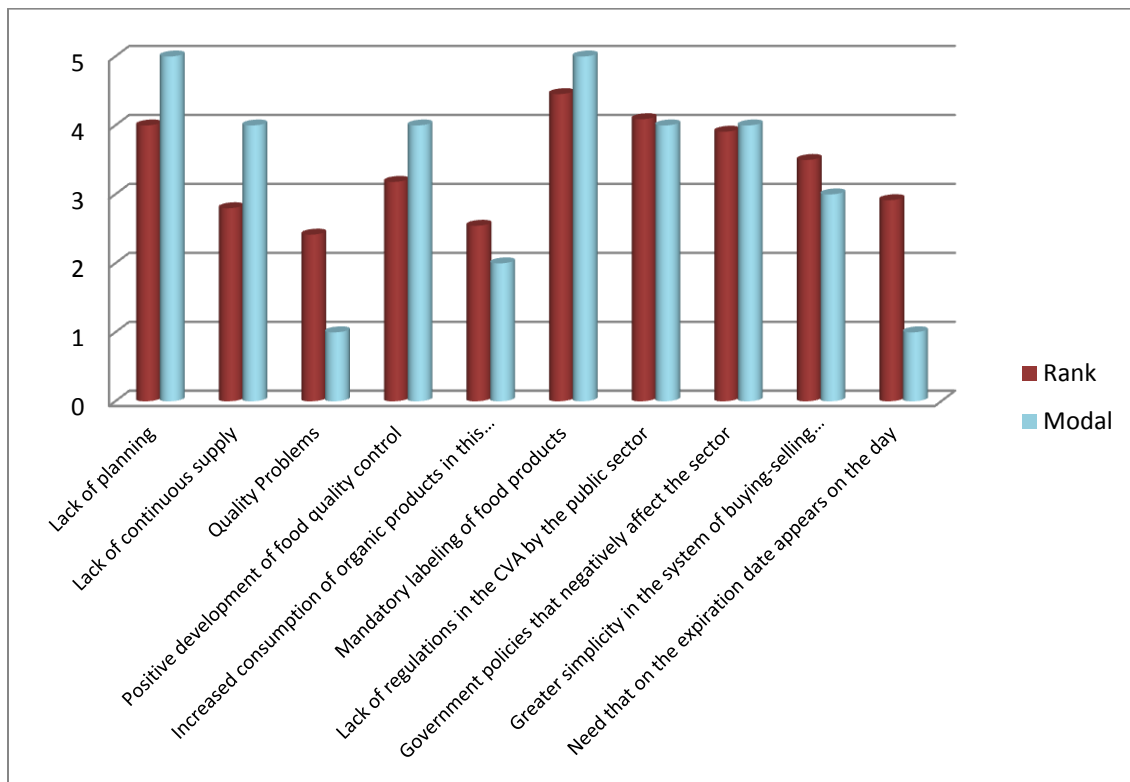


Figure 11: Performance Problems in the Rice Sector