

FOOD SAFETY AND FOOD SECURITY

FOOD SAFETY AND QUALITY ASSURANCE KEY DRIVERS OF COMPETITIVENESS

*Agribusiness approach, Argentina food system,
Three cases of study*

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ABSTRACT

Under an institutional and organizational collapsed environment caused by Argentine cracked economical and political situation, farmers and producers are forced to add value through technological innovation's designs in order to be competitive at the international market. Food safety and Quality Assurance systems appear as key drivers of competitiveness. Three emerging models are comparatively analysed, evaluating real agribusiness that are developing HACCP, Quality & Origin Protocol and ISO 9001 Quality Management. As a result, the different level of success and impact of those agribusinesses immersed in the aforementioned external constraints and not less precarious internal limitations based on cultural, technological and financial limitations is uncertain and variable.

1. PROBLEM STATEMENT

The last three years have been problematic for Argentine agribusinesses given that the economical crisis of December 2002 has strongly affected them; however it forced farmers and processors to look for new alternatives. Instead of domestic market, export appears as an advantageous opportunity because of disparity of dollars / peso rate, among others. On the other hand, to be competitive at the international level requires building competitive advantages linking quality and origin and/or food safety and quality assurance management as key drivers of agribusiness.

In the Food Chain, the development of Food Safety is mandatory while the Quality Assurance is voluntary. It is not the same to implement Food Safety such as: GMP¹, SSOP², HACCP³ and/or others, that assures the consumption of food is safe, than to implement Quality Assurance such as: ISO⁴ 9000 Rules, Total Quality Management or Continues Improvement, which are Quality Assurance systems satisfying customers' implicit and explicit expectations⁵. By all mean, to the Food Industry, Food Safety is a pathway to Quality Management, and both are essential technological innovations for competitiveness.

In the domestic market, the perception of the Food Safety and Quality Assurance's need -as strategy of the competitiveness by the Small and Middle Food Industry- is recent. This requirement has been promoted by the globalization process, new market's penetration, exports increasing, consumers' satisfaction, and by the world-wide diffusion as competitive advantages and, in some cases, Paratechnical barriers⁶.

The current situation in Argentina related to Food Safety shows that just 35 Beef Slaughterhouses, 12 Poultry, Eggs and Hunting Products Industries, and 300 Fishing -Factory Vessels-, have been GMP and HACCP audited and approved by the Argentine National Inspection Services, the European Union, and the United States. Those statistics point out an increase since more than three years ago HACCP approvals in the Argentine Food Industry were not more than 20. The scenario of the Quality Assurance is less optimistic because only 15% of the 450 ISO certified industries belong to a food Industry Sector⁷.

That proves in despite of sharing the same institutional and organizational frame, new technological designs emerges from that uncertain economical scenario, allowing a realistic study of the effectiveness and efficiency of Argentine agribusinesses and its new and potential alternatives.

At the time of deciding any new technological system, the restrictions and obstacles are common to the most Middle and Small Food Industries around the world, including human, economical and technological resources deficiency:

- ✓ ...inadequate basic hygiene,
- ✓ inadequate infrastructure and facilities
- ✓ financial limits,
- ✓ lack of knowledge of the business

¹ GMP Good Manufacturing Practices

² HACCP Hazard Analysis and Critical Control Point -

³ SSOP Sanitization Standards Operative Procedures

⁴ ISO (International Standardization Organization)

⁵ Jatib, MI. Management of Food Safety and Quality Assurance. Magazine Forrajes y Granos. 2000/ 2002

⁶ Jatib, MI. Food Safety and Quality. Agriculture, Livestock and Fishery Secretariat. Food Magazine. 1997- Buenos Aires - Argentina

- ✓ lack of skill and information,
- ✓ restrictions of human resources (inadequate training, limited number of personnel),
- ✓ deficiency of positive attitude on the part of the industry,
- ✓ deficient client's knowledge and consumer
- ✓ lack of effective education and training programs and
- ✓ poor communication...⁸

The Argentine Middle and Small Industries are not the exception. The cases under study are introducing technological designs as food safety and quality assurance systems—with Third Part or Self Certification-generating new business underneath of both a chaotic domestic market and a competitive international one.

The three experiences selected for this comparative analysis are confronting the obstacles aforementioned at different organizational levels and in different technological models. They are developing:

- ✓ GMP and HACCP in the lamb meat slaughterhouse,
- ✓ Green Beef Quality Protocol – Good Cattle Practices and Traceability-, in the Cattle Farms,
- ✓ Quality Management -ISO 9001/2000 rule- in Private Port (Grain & Cereal Reception –Quality Homogenization – Preserved Identity - Ship Load) Service.

The common leader's purpose of those agribusinesses is to develop a strategic and competitive advantages based on food safety and quality assurance. The management recognized the need of leading a cultural change inside of the organization –in the Human Resources area- and found out that the technological approach as a common goal would drive it. They choose those new designs as a pathway to accomplish the workforce commitment with a precise objective.

2. OBJECTIVE

The main objective of the paper is to make a comparative analysis of three cases under study - agribusinesses developing new technological models- focused on the evaluation of food safety and quality assurance systems related to strategic and competitive advantages. The result of that analysis allows also evaluating the impacts on the food chain under the light of the agribusinesses' new vision and values. External limitations and internal restraints are expected as a result of the complex economical scenario and precarious strategic alliances under which those agribusinesses are inserted.

3. PROCEDURES

The procedure is based on the description of three cases in order to evaluate: a- different levels and stages of food safety and quality assurance approaches as key driver to strategic and competitive advantages and b- introduced changes in the farm and industry; in both meaning management and human resources' new perspective and cultural change.

- ✓ The first case of study is the lamb agribusiness in Patagonia. A group of sheep farmers of Southern Patagonia constituted Estancias de Patagonia –trademark-, a new type of company, producing, processing and exporting carcasses and cuts to Europe.⁹ The farmers also self-constituted the shareholders of Patagonia Sur¹⁰ slaughterhouse, which is processing lambs from Patagonia. They settled a strategic alliance with provincial government –owner of the slaughterhouse- and manager plant –responsible for the concession-. This slaughterhouse is implementing GMP and HACCP in order to meet the terms of the European Union requirements to keep the current market and increase the exports volume of Estancias de Patagonia's farmers.
- ✓ The second experience is on beef agribusiness, located in the “pampas”, an important cattle area in Buenos Aires hinterland called “Cuenca del Salado”. This case is about a network

⁸ Motarjemi, Y and Käferstein, F. Food Safety, Hazard Analysis and Critical Control Point and the Increase in Foodborne Diseases: A paradox? Food Control, 1999, 10:325-333.

⁹ Ordóñez H. et al. CFI FAUBA Contract N 4434. Final Report. Marketing Plan. Patagonian Lamb. September 2001.

¹⁰ Jatib MI et al. CFI FAUBA Contract N 4434. Final Report. Quality Protocol of Patagonian Lamb. September 2001.

conformation of certified beef's suppliers - Consortium of Origin and Quality Assurance- that meets organic and natural meat attributes¹¹. The group of farmers is developing Good Cattle Practicing –GCP-, including features such as: genetic, animal reproduction, natural grass feed, handling, and animal health and welfare, all under the Product and Process's Quality Protocol. They also are developing traceability starting with individual identification and a database network. The system might need a third party certification.

- ✓ The last case is Grain and Cereal Stocking and Ship Loading - Private Port Service -Terminal Quequen¹²-, located in Buenos Aires Province. The process of the service includes reception, storage, and quality homogenization, Preserved Identity –IP- and ship load. Historically, it was a public organization and after privatization become a private company. The involved actors are shareholders owning the plant and manager with private sector management's skill, managing the plant. Because of the incomes and the complex interaction between different background's workers, the manager's decision is to implement a Strategic Plan and ISO 9001/2000 with the main purpose of transforming the "human resources" in "social Capital" as competitive assets, by means of ISO's certification.

3.1. FOOD SAFETY - SELF-CONTROL PROGRAM

"Estancias de Patagonia SA"¹³ is a group of farmers from Santa Cruz- Patagonia's trademark, and through a strategic alliance they become the shareholders of the Slaughterhouse "Patagonia Sur" where their lambs are processed. The plant is owned by Provincial Government and it had been given in concession to a contractor who also is the manager. The farmers, government and manager's partnership is important in the light of decision making. In that meaning, all the partners decided to implement GMP and HACCP in the slaughterhouse to meet the European Union requirements in order to keep the current market and increase the volume of its exports to the European Union, the United States and Japan.

The partners bet to food safety system whit the main purpose of adding value to their products, as first step, and planning ISO 9001(vs 2000) certification, as next. Aware that they are a sort of collective strategy –farmers, industry management and government – with a win-win relationship and common interest, not all of them have deeply understood the main purpose. Thus, they decided starting with a technological model that would provoke the cultural crash and follow-on change.

The Design and Implementation of Hazard Analysis and Critical Control Point System (HACCP) Proposal is inserted within the "Lamb Meat from Patagonia- Santa Cruz- Denomination of Origin" previous¹⁴ project. It was financially supported by the Provincial Government and technically assisted by the University -2000/2001-. This new proposal, based on HACCP Design -2002-, is assisted by the University with the co-ordination of National Inspection Service –government financing the University assistance-. All the investments and expenditures related to implementation of self control program are financially supported by the contractor.

"Patagonia Sur" annual outcome is around 150,000 lambs. Notwithstanding, the factory slaughters hares from May to August, the most profitable activity –lamb processing- starts in December and ends by April. The plant has almost 200 employees, 40 of which are permanent and the rest are temporary¹⁵. This is a key issue since HACCP needs trained personnel and on account of workers' transitory condition, training must be made earlier every year.

The Good Manufacture Practices and Sanitation Standard Operative Procedures are the food hygiene and correct manipulation pre-requisites required in both domestic and international market. Those pre-requisites have been essential to process safe food for human consumption. They also are useful tools to the design of slaughterhouses and the operative processes of safe food.

¹¹ Ordóñez H. et al. CFI FAUBA Contract N 4880. Report N2. Regional Products COPRODER, Pampas del Salado. December 2001.

¹² Ordóñez H, Jatib MI, Napolitano G, Miño JL y Bozzano M - Terminal Quequen ISO 9001/2000 Rules- Implementation. 2002

¹³ Jatib MI et al. CFI FAUBA Contract N 4434. Final Report. Quality Protocol of Patagonian Lamb. September 2001.

¹⁴ Ordóñez & Jatib. CFI FAUBA Contract N 5256. Proposal for Design and Implementation of HACCP Plan in Patagonia Sur SA Slaughterhouse.

¹⁵ Jatib MI et al. CFI FAUBA Contract N 4434. Final Report. Quality Protocol of Patagonian Lamb. September 2001.

HACCP System is founded on those pre requisites and consequently has become world-wide food safety's synonymous, being to both industry and governments required standards. The HACCP provides systematic and pro-active evaluation of food safety because it defines potential hazards: biological, chemical and physical, which can jeopardize consumer's health.

A successful HACCP Plan means a settled and proved system by SENASA¹⁶ and also a National or International Third Part Certification and approved by the Inspection Services of the United States and/or the European Union. Currently, SENASA is also requiring not only HACCP system –by June of 2003- but also the ISO 9001 rule's Certification - by 2005 year-. It is offering a stable institutional framework to those who have invested in food safety and would have to invest in Quality Assurance.

3.1.1- Introducing HACCP System: Phase of Application

The process of implementation began with a first inspection and evaluation audit –driven by SENASA-, to define the current situation and the following methodology. Many hygienic and sanitary hazards were found in the process, caused by the inadequate and old infrastructure –more than 30 years-, low employees' competence and serious cross contamination difficulties due to flow of operative process.

The implementation's selected method was the Progressive one taking into account slaughterhouse's features, manager and employees' availability, and SENASA and different countries' mandatory specifications and requirements. This method has allowed initiating activities simultaneously knowing HACCP plan requires many investments which must be decided by the manager.

In order to run the process' performance, it is listed and defined the process's Critical Limits, such as: temperature, time, pH, among others, respecting its parameters' range that allows the process to be under control. Because of there is not micro-biological standards' references in the world, it is required to register slaughterhouse own data at least for more of 3 years and to analyse the trend in order to define the own factory's standards.

Once the Critical Control Points (PCC) are agreed, they must be constantly measured through analysis and/or visual observations, which are verified¹⁷ in normal conditions, assuring the process can be maintained and it is realistic. The statistical methodology is used to verify the process stays under control in those conditions. During the verification it is also demonstrated if the process is able to reach the criteria of control (critical limit) defined.

As a result, the manager encouraged his supervisors to search for hygiene and cross contamination due to failure of infrastructure and incorrect manipulation focusing on the flow of the plant, the operative process and the product. Many investments were made and changes introduced since this process started but there are still many infrastructure's repairing, hardware and software innovation, and technical changes pending on.

3.1.2- Phase of Human Resources Structural Changes

One of the most common causes of failures of this process is the lack of commitment, which can be only driven by the leader. For that reason is needed to focus on training and diffusion as the adequate tools to provoke motivation and increase competence as well as. By all mean, training was highlighted from the beginning, even though it has continued through the whole process. The shareholders have attended diffusion meetings because at the moment of decision making it is very important their awareness of the HACCP needs.

As HACCP principles require, it was settled the HACCP team, which counts on interdisciplinary experts from Buenos Aires University, Estancias de Patagonia SA, Manager Plant, Veterinary Plant, and SENASA inspector (placed in the industry), and supported by SENASA (Headquarters). The Veterinary Plant will manage the quality program, and will be responsible for keeping the HACCP updated and permanently reviewed.

¹⁶ SENASA: National Service Inspection Food Safety and Quality

¹⁷ Safer Foodstuff in Europe Through HACCP – A Guide for Trainers. Co-ordinated by centro Ricerche Ambientali Montecatini Spa – Edited by S. Bandini, E. Dall, R. Tagni

The team meets periodically and area's supervisors are permanently called up to work on the HACCP plan with the purpose of making them aware of their essential role of managing personnel. The supervisors' main responsibility is to make workers aware of being manipulating high risk food. Unconscious employees of the importance of cleanness, hygiene, and right manipulation can not be blamed for jeopardise food safety and consequently, the consumers health. However, the main responsible for leading the change is the manager who must show commitment through daily basis' decision making and behaviour.

So far, the motivation and awareness of all involved workers has been apparently positive since the manager started making the recommended investments and working on the process' hygienic basic problems. As long as, HACCP team had meetings with all technical areas in order to keep them motivated and committed.

3.1.3 Impact of the self- control system

During the process, the external context changed and the original requirements increased as a result of the European Union's visit to Argentine Meat Industry. Making the specifications' fulfilment requires deeper changes and more investments. In the last months the activities were carried out according to the planned agenda; however delays have already appeared as a result of the delayed investments and workers manipulation changes.

Patagonia Sur had all the expected obstacles related to insufficient basic hygiene, low of personnel's competence, financial scarcity, old infrastructure and facilities, and poor communication. About the strategic alliance, the partners have been acting without assuming their duties, which was neither helping nor supporting the HACCP implementation. Still worse, the contractor did not comply with the minimal signed contract with both the government and the shareholders. Even the shareholders never visited the slaughterhouse until some problems showed up. At the beginning, the veterinary Plant was working without empowerment and SENASA's inspector was neither controlling nor demanding minimal regulation's requirements.

Those technical and financial limitations and partners' behaviour impacted in the employees' commitment and motivation. Consequently, the HACCP success has been jeopardized, and reviewing the minimal requirements has been the main cause of the delayed agenda.

Under those circumstances, there also were positives impacts. The first one was to make evident all the emerging problems as technological as operative based on infrastructure complications, making the partners aware of those limitations and make the necessary decisions related to investments.

The second HACCP positive impact was also to bring out the complexity of the strategic alliance. It obligated to the partners to review their own duty, demanding as the shareholders as the management and the local SENASA's inspector to meet the terms of the original agreement. As long as those internal constraints are not faced and solved, the new model will fail, being a not genuine competitive advantage at all.

3.2. GREEN BEEF QUALITY PROTOCOL – SELF CERTIFICATION MODEL

The proposal "Pampas del Salado" introduces a paradigm's change aimed to the construction of a new strategy in the business of cattle and beef in Argentina. This is a singular "Pilot Project" which defines a new model planned to go -from calf region "Pampas del Salado" to the entire livestock of the "Pampas Argentina-." Besides, this is a leading case involving more than 300 farmers -from 11 municipalities-, almost 200 thousands hectares and more than 65.000 animals compared to the large number of 50 millions heads of the Argentine Livestock.

The institutional frame must protect property rights in order to allow the use of the geographical area's name as Denomination of Origin. Also, the law must provide stable and secure platform in order to make the competitive advantages sustainable in the long run. The organisational innovation consolidates the co-ordination of the collective action and strategic alliance based on the high asset involved. And the technological aspect is related to the three quality protocols formulated enabling different attributes of

quality, origin and required traceability in order to add value to one of the world-wide most remarkable Argentine products¹⁸.

The main objective starts joining the collective action of the cattle dealers around the origin and quality protocols: Green Beef¹⁹, Grain Beef²⁰ and Eco Beef²¹. This strategy aims to increase negotiation's ability in the cattle sector in order to influence the beef business. The idea is to collect local data creating local knowledge with global impact, and a farmers' network managing information and knowledge through COPRODER –regional group of municipalities- in order to become a Self-Certified Farmers Network²².

The Network is built through Registers which collect local data, such as information of origin and quality of the cattle and beef, converting this information in valuable knowledge to the consumers of any market. That is the core of the added value in information and knowledge for the consumers. That is also the key of the negotiation strengths into the farmers' hands.

As this model is a collective strategy among farmers and processors, with the co-ordination and support of provincial and local governments, the first phase's project has been financially supported by government and assisted by experts of Buenos Aires University -2001 and 2002 first semester-. The second phase -2002 second semester – counted on financial support of local government and the same technical assistance, although the caravans' shopping to individual identification was afforded by the farmers. By all means, the roles in this collective strategy have been functional and dynamic. It also proves that slowly but progressively those roles are going toward the farmers since they are not only the owners of the business but also the beneficiaries of the gains.

3.2.1. Introducing Green Beef Protocol: Phase of Application

After of almost three years of the project development, important advances have been made. The farmers are in charge of handling the information through the Network of local Registries. Although the Network co-ordinated by Pampas del Salado Regional Consortium and it is carried out through:

- ✓ The collective action
- ✓ The origin and traceability
- ✓ The quality of cattle and beef: Good Cattle Practices

That set is enclosed under the quality protocol "Green Beef". The University Quality Meat Laboratory²³ has been working on the standardization of the protocol "Green Beef: grass feeding". The Lab is carrying out the objective and measurable demonstration of both product and process' quality and has developed a sampling methodology. The standardization is about -the selection of representative farms and identified animals- finding out and objectively demonstrating the relationship among Argentine beef quality attributes with agro-environmental conditions and handling.

So far, the Green Beef protocol includes the geographical area borders -11 municipalities: COPRODER-, the races -British and Continental-, according to the quality standards, and other issues regarded the performance such as handling including animal health, weight and age of slaughter, high standards and grades of carcasses, etc. –Good Cattle Practices- and animal welfare, among others.

The traceability is now supported by National Administration through regulations (2002 and 2003 years) which have been sanctioned as a consequence of European Union recommendations and are very helpful to provide a safe environment to this leading case.

The traceability starts with the caravan's individual identification gathering data such as farmers' Register number and animal Date of birth. Nowadays, the calves have being identified and registered, and are going to be certified taking the data out from local and regional Registries.

¹⁸ Palau H. and Jatib MI Constraints and Limitations to the Design and Implementation of Origin and Quality Assurance Systems for Argentine Beef XIV IAMA Conference. 2003

¹⁹ Green Beef: Grass Feeding

²⁰ Grain Beef: Grain Feeding

²¹ Eco Beef: Ecologic Certification

²² Héctor Ordóñez. Final Report CFI –FAUBA – Pampas del Salado. Dic. 2002

²³ Japanese Research Institute (JAICA)

The definitive Quality Protocol “Green Beef” has not being finished yet, due to the lab is still collecting and analyzing data and also because some issues are still under farmers’ discussion. Quality and traceability are going to be demonstrated and audited using both parameters/standards and data objectively measured and recorded from the field.

So far, the farmers have settled the individual identification, bought the caravans and adjusted quality protocol in order to certify, at least, the calves’ origin and quality attributes before selling and moving them to another farm.

3.2.2- Phase of Human Resources Structural Changes

A group of majors of different municipalities²⁴ agreed that cattle growing in natural conditions would be one of the main regional projects. Eleven majors and rural associations’ members met in order to develop this proposal and in spite of the discrepancy of interests, they settled that this project was going to be the most realistic for the region.

The facts shows that the internal organisational aspect is difficult to accomplish particularly increased in this case because of all involved actors -300 farmers, provincial’ and 11 municipality’s governments, technicians from the University, the COPRODER and the Rural Associations, which makes this collective action very complex.

Farmers and processors -coordinated by Rural Associations, supported by municipalities and provincial governments, and technically assisted by professional- had many meetings before finding the most suitable organisations that meets a common interest and makes possible the collective actions. The decision making goes from the bottom –farmers- to the top level –representatives of local commissions and regional consortium- in that order. Those meetings, conferences and workshops were the common place where all participants exchanged knowledge and expertise, ideas and opinions, in order to reach the fitting quality protocol and to develop appropriated traceability’s procedure.

The diffusion among farmers was done in the middle of enormous difficulties such as the greater floods of the Province of Buenos Aires, the reappearance of the Foot & Mouth Disease, the spectacular reduction of the property’s price, and the political and economic crisis of years 2001 and 2002. That very unfavourable situation triggered off farmer’s awareness of being the only responsible for adding value to their products, building competitive advantages and improving their negotiation’s ability in the cattle business.

So far, the group of cattle dealers are willing to appropriate the project, and they are strongly convinced of their leadership in the continuity of the process. Besides, farmers are also aware that either success or failure is under their own responsibility. Now, they are in charge.

3.2.3. Impact of the self-certification model

Regarding that the European Union and shortly new countries will require traceability; it is a fact that the entire livestock in Argentina will be affected. The National Government is strongly supporting the project given that as Agricultural Secretariat as National Inspection Service (SENASA) sanctioned regulations making mandatory the traceability for exports. This is a significant institutional decision offering an adequate framework to the leading case, since new and fair rules of the game will run the whole business. Even more, the Pampa del Salado’s cattle dealers are already organized and they can take advantage to export.

Once that first experience is consolidated, it is possible to move on to the next goal, developing the denominations of origin strategy in order to create competitive advantages to the entire Argentine beef business. The proposed pathway is extending from the calves of Pampa del Salado to the young bulls of the Pampa Argentina.

²⁴ Raul Bozzano – Major of Maipu –Buenos Aires- Final Report CFI –FAUBA – Pampas del Salado. Dic. 2002

However, of the three projects analyzed this is the most difficult to achieve. Having into account many farmers are involved, many opposite interests are coexisting, and current businesses are being affected. The change of paradigm is not only farmers' responsibility but also politicians, technicians, and the rest of involved actors of the beef chain.

The collective strategy is very strong and very fragile at the same time. Reaching consensus among farmers has been a very arduous task, and it has not finished yet. This leading case is founded on institutional, organizational, and technological changes affecting the Argentine beef business, and not all of the involved actors are willing to take sides.

This is also a very ambitious project that sooner or later will touch many consolidated interests and informal business. However, since many farmers are involved, the opponents will be restrained to do so, at least, openly. Furthermore, this pilot experience involves almost 65.000 animals against a cattle business that involves almost 50 millions head, meaning there is a long way to walk.

3.3. IMPLEMENTATION OF STRATEGIC PLAN AND ISO 9001 (VS 2000)

Terminal Quequen S.A. is a Private Port located in Buenos Aires and its agribusiness includes reception, storage, quality homogenisation, blending and Preserved Identity -PI-, and ship load's services. Terminal Quequen is implementing ISO 9001/2000 with the main purpose of transforming the "human resources" in "social Capital" as competitive assets by means of ISO's certification²⁵.

T. Q. was born as a private company ten years ago after 20 years of being a public organization (National Grains Board). The private company was run by public sector's manager until the last year when a grain business competence' one takes charge of the position. The plant's value is estimated on U\$S 20 millions. Since the privatisation it was invested almost U\$S 12 millions from the company's profits.

The company's manages 160 thousands tons mainly in maize and wheat operations. The loading's activity is concentrated from December to March for wheat and from April to May for maize and it is managed almost 80 vessels of 20 thousands tons capacity (each one) and around 50 thousands trucks.

The Argentina unfavourable economical situation -2001 and 2002- makes the company to invest rather in human resources as an attractive alternative to add value and competitiveness in a very low cost than to invest in either technology or other matters. Even more, since unemployment arises 20% and 50% of the Argentine population lives in poverty, the management can not afford any confrontation with neither the Union Labour nor the government.

Instead, the general manager chose to implement a new technological model in order to make the needed paradigm's change from the inside. The challenge to the management is to convert this "workforce in human capital" which means in dynamic and competitive asset. Additionally, this process allows thoroughly research for the company's technical and human resources inner problems.

The management is very confident about the construction of competitive advantages through strategic plan and ISO's certification. Hence, this would put the company in better position compared to their domestic and international competitors, being Quality Assurance's ISO rule remarkable marketing tool, at least in this business. Certainly, the general manager's conviction is that the company has innovating profile since new ideas and proposals are evaluated constantly.

3.3.1. Introducing ISO 9001 (vs 2000): Phase of Application

The evaluation reported prescriptive recommendations evidencing the differences detected between the real operation of the organization and the demanded in the ISO 9001 requirements. The diagnostic evaluation essentially aimed to evaluate the approach used in the definition of methodologies for different processes, remaining to a later step a stricter evaluation of the implantation's degree and effectiveness.

²⁵ Ordóñez H, Jatib MI, Napolitano G, Miño JL y Bozzano M - Terminal Quequen ISO 9001/2000 Rule- Diagnosis and Auditor's Evaluation Report 2002

The management gets involved with the development, implementation, maintenance and continuous improvement of the Quality's System. The involvement is demonstrated through the following aspects: assuring that all the members of Terminal Quequén S.A. understand that the high-priorities' company are the satisfaction of:

- ✓ Client's requirements,
- ✓ Internal norms requirements,
- ✓ Expectations of the shareholders, and
- ✓ Maintenance of an appropriate work's environment.

All the processes of Terminal Quequén S.A. are fitted in the previous requests. The management emits and spreads the Quality's Policy like explicit commitment with the mentioned values and assures the objective is aligned with the Policy of the effective Quality.

Terminal Quequén S.A. defines the Client's approach as essential strategy for the operation's development. This strategy is sustained and implemented through: a) the knowledge of the clients' different expectations, b) the systematic translation of those expectations in requirements, considering the operative availability and the economical feasibility, c) the commitment to offer the service fulfilling the requirements, through parameters within the chain of the clients - internal suppliers, d) the satisfaction's evaluation of the diverse clients, and e) the implementation, control and improvement of the Quality system²⁶.

The Operative Procedure is alike to any cereal and grain stocking and loading company that operates blending different standards to increase the product' quality –homogenisation-. It also handles Preserved Identity (IP) with identification of the raw materials and products –from the farm to the vessel-. There is a electronic data program to trace all operations from the truck's reception until the vessel's unloading.

The Administrative Procedure has insufficient software although it is planned to develop a program for the ordered works, cost's center, and stock of storeroom. There is a supplier's data base and critical suppliers are chosen by both quality and price criteria.

The Preventive and Corrective Maintenance Procedure is being developed. In fact, predictive and preventive controls are very large issue related to people safety since the plant is fifty years old. The old silos do not have controls of temperature and humidity, just the new ones. Periodic data and statistics are being organized. The company uses calibration's pattern and has written procedure of calibration's control of critical equipment and instruments.

Once completed the previous phase and solved part of the problems aforementioned; the pre certification and certification will be carried out. The Pre certification's audit it is recommendable, although non mandatory.

3.3.2. Phase of Human Resources Structural Changes

The Quality Policy assures the provision of both human and material resources to the appropriate development of the Quality's System. The commitment with the Quality is well-defined, also, through the effective leadership of the manager and its closest team. This leadership is based on the unrestricted respect of the exposed Quality's Values, like axis of the operative management.

The company has 102 employees; most of them are from public sector. According the private organizations' vision workers from public sector has an inefficient work's culture, in Argentina. This is very considerable conflict focused on the coexistence of two very different work's cultures makes the operation "heavy" and "slow".

The modified flow chart has been a very helpful tool in the obstacles' reduction since it included definition of required competence's positions, personnel's profiles, and training necessities, remaining

²⁶ Ordóñez H, Jatib MI, Napolitano G, Miño JL y Bozzano M - Terminal Quequén ISO 9001/2000 Rules- Diagnosis and Auditor's Evaluation Report 2002

clearly defined responsibilities and functions. Besides, it makes possible the detection and elimination of both unnecessary and bureaucratic tasks through the writing of specific task's procedures.

The human resources' structural change started with initial training focused on ISO introduction as a tool to align all the employees. Oriented and motivational workshops were arranged to make workers to identify their process' inefficiencies and to look for potential solutions. As a first experience, all workers were listened and all opinions were openly discussed counting on workers are acquainted with their own tasks and the solutions as well as.

The following step was internal auditors' selection and training, and preparation for the first internal auditory. Part of the management and some employees were willing to be internal auditors of the Quality's System, meaning to be able of self-evaluation and of evaluation of other processes.

3.3.3. Impacts of the Quality Assurance

While the ISO 9001 (vs 2000) requirements have being almost accomplished; the human resource's structural change has not been reached yet. Certainly, ISO 9001 is a very useful tool but it must be used progressively. In fact, it can be discouraging to discuss employees' overt conflicts and dissatisfaction as management is not strongly persuaded. Moreover, it is expected uncertainties and doubts during the implantation's process, knowing the changes break old paradigms down. Consequently, the commitment and motivation alternatively drops and rises. It does not occur overnight and it does neither mean failure nor success until the process is done and proved maintained.

From the very beginning certain opposition and obstacles was detected and unfortunately it was placed among the managers, the closest to the general manager. That restriction comes from the management's peculiar idea of no sharing the knowledge and hiding information, meaning "keeping the power". Still, the problem is openly discussed, although unsolved.

Furthermore, the company has done benchmarking and have researched for problems, benefits, and competitive advantages. It concluded in despite of all the faced difficulties, the process is being improved, ordered and systematized, the people organised and their profiles known and fitted according their competences. A new training annual plan, training and performance evaluation, and all useful tools for the company's efficiency and efficacy have been settled.

In summary, all those internal movements, changes and worries are pathway that drives to Quality Assurance and satisfaction of stakeholders, employees, management and clients' expectations.

4. RESULTS & CONCLUSIONS

The whole society and, above all, the agribusinesses were affected as a result of the economical and political collapse, in Argentina. Agribusiness's executives were forced to look for new alternatives at the international market since domestic market was offering neither possibilities of increasing incomes nor certain environment. On the other hand, the level of the international competitors showed that to be competitive was needed to add value as creation of the competitive advantages. Technological innovation such as food safety and quality assurance seemed adequate strategy as key drivers of the competitiveness. As a result, the local agribusiness crosses external constraints due to institutional, organizational and technological limitations to internal restrictions caused by cultural, technological and financial insufficiency.

To be competitive not only entails to face organizational and technological unbalance compared to international competitors but also requires a safe institutional platform. An unstable institutional scenario with unclear and changing rules of the game and informal contracts is not healthy framework to any innovative design, permanently threatening any efforts and achievements.

Organizations fail to provide the necessary framework for the development of the new designs forcing to the transactions operate under an informal economy²⁷. Then the real innovation requires a transparent

²⁷ Ordoñez & Jatib – XIII World IAMA Congress Paper. 2002.

business culture and path dependency of institutional and organisational frame providing a formal structure²⁸.

The leading cases described show that the construction of competitiveness is accomplished from the process of technological approach, having into account that Food Safety is a pathway to Quality Assurance and both are keys to build competitive advantages.

In the internal context, the situation is not less complex since the partnerships of the three cases are collective action based on common vision and values. The delayed implementation of the proposals is also consequence of internal organizational issues based on required cultural change. Since the cultural change takes years, despite the delays, it is expected those leading cases success, in the long run.

Limitations and restraints are part of the analysis regarding they are emergent of the complex economical scenario and precarious strategic alliances under which those agribusinesses are inserted. Poor interrelationships among share holders, ambiguous rules of the game and low commitment have been the emerging facts of the collective action²⁹. Under this context, it was pretty obvious to find different level of implementation and different impact on the human resources' expected change.

Particularly, in the HACCP model, the external context changed due to original requirements increased as a result of the European Union more demanding standards. The HACCP positive impact was to bring out the complexity and uncertainty of the collective strategy and to make as the shareholders as the management and the SENASA's inspector to review their lack of responsibilities and low commitment. The HACCP system also made evident all the failures as technological as operative process. Consequently, all the partners are trying to work out those obstacles.

The self-certification model of "Pampa del Salado" impacted confirming and making publicly evident the opposite interests at the stake, above all, in the many current informal cattle and beef's businesses. Being this is an ambitious project, representing 0.13 % of the total Argentine cattle business, the proposed pathway of extending the calves of Pampa del Salado to the entire Argentine beef business, will take more time and more farmers' involvement. However, the pilot project could help to introduce institutional, organizational, and technological changes in the Argentine beef business. The paradigm's change is not only farmers and processors' duty but also politicians, technicians, and other involved actors. Internally, the partners of this collective action will have to keep working on the issues that they have already initiated and focus on reinforce their commitment.

In despite of ISO 9001's implantation is almost accomplished; the human resource's structural change has not reached yet. It is expected that the opposition from the operative management will break down as a consequence of both natural implantation's process and strong leadership. At the same time, the rest of the workers are making the service more efficient and doing the necessary efforts to the client's satisfaction. After all difficulties faced, the process is becoming more efficient and effective and the satisfaction of the stakeholders, employees, management and client's expectations are being a company's concern, meaning the Quality Assurance is on its way.

Regarding all the leading cases are under such institutional and organizational scenarios: externally unstable and internally precarious, their essential strength is a clear goal and well defined objectives. The certainty of going step by step allows going forward and expecting their success, with the all the warnings given. By next June 2003 there is going to have new advances in some of the innovation's models analyzed whose outcomes will be discussed.

***Key Words:* Food Safety and Quality Assurance, Technological Approach, Competitive Advantages Strategy, Agribusiness**

²⁸ Palau & Jatib 2003- XIV World IAMA Congress Paper. Paper 2003.

²⁹ Ordoñez & Jatib – XIII World IAMA Congress Paper. 2002.

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