International Food and Agribusiness Management Review
Vol 6 Iss 2 2003

Towards A National Agribusiness System: A Conceptual Framework

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Abstract

This paper examines today's challenges to the agribusiness sector. Through the Resource-Based View approach, we explore the potential roles and linkages between national public policies and local strategies in order to enhance the competitiveness and sustainability of a national agribusiness system. The main goal is to achieve a strategic alignment between the actions of multiple stakeholders, like firms, research centers, consumers, government, and the society in general. The essence of the paper is synthesized in a framework, which highlights the need for coordination of agribusiness systems by a National Strategy.

In recent years, increasing worldwide academic attention has been devoted to the agribusiness theme. Multiple pressures, derived from a changing environment, have stimulated these efforts. On the market side, the sector faces an increasing presence of global players in distribution and commercialization channels associated with sophisticated consumer demands for healthy, environmentally friendly and differentiated products. On the firm side, the sector is changing from family owned, small-scale production, to large firms embedded in production and distribution chains. Agribusiness is becoming, essentially, more industrialized, more competitive and even more technological and managerial intensive. Besides these trends,

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governments have to solve legislation, financing and market regulation issues that associated with social issues like rural employment and population growth place critical challenges to public policy makers.

Academic research on these topics has been undertaken at various areas of knowledge and generated a wide range of technologies, models and proposals, each dealing with specific problems. Each area, individually, has made relevant contributions in the consolidation of what we call an "*Agribusiness Body of Knowledge*". A couple of critical questions, however, can be raised concerning this body of knowledge.

The first critical question is that this knowledge was developed in a disciplinary mode and today it has become clear that technological, social and economic challenges in agribusiness are not dissociated from one another and call for an interdisciplinary approach. The second critical question is that agribusiness is a singular form of economic activity, where most firms share the same, or highly similar, basic resources, technologies and processes, although not the same goals. While in other industries the attainment of firms' goals can emerge from their own coordination structures and associations, in agribusiness it involves the strategic alignment of the actions of a great number of players whose relationships are submitted to market failures and differences in interests. Agribusiness analysis thus requires, in addition to an interdisciplinary approach, a dynamic and systemic, rather than a static and local, view of investments in order to achieve a long-term dynamic optimization of the system as a whole.

The purpose of this paper is to advance a proposal in this direction, centering attention on a national scope of analysis and on public policy making. To accomplish this task, we explore the Resource-Based View (RBV) theoretical approach to strategy.

The paper is organized in seven main sections. The following (second) section presents an overview of the traditional agribusiness concepts, key stakeholders and competitive dimensions. The third section explores the national competitiveness theme. The fourth section explains the fundamentals of Resource-Based View approach. The fifth section discusses some critical questions emerged from the "RBV thinking" about agribusiness and national competitiveness. Finally, the sixth section presents the proposed model for a National Agribusiness System.

Agribusiness Systems - Stakeholders and Key Strategic Dimensions

No one knows exactly when humans first started an organized and systematic practice of agriculture, but there are evidences of agriculture in the Middle East and Mexico that date back to approximately 7000 BC. Since then, farming methods

have gradually evolved and today agriculture activities play a significant role in every economy.

Nowadays, due to increasing demand for food, scientific farming has become widespread and has been instrumental in the change from small family-owned farms to larger, corporate farms. The modern farmer is an expert involved with cultivation and animal breeding operations, thus transferring the functions of storing, processing and distribution of vegetal and animal products as well as the supply of input and production factors to organizations other than the farm. As a result of such phenomenon, the traditional classification of the different activities as primary, secondary and tertiary sectors gave way to an analysis that focus the interlinked system of production, processing and commercialization of farming originated products.

One central issue in agribusiness studies is the integration of a production chain, treated on Commodity Systems Approach (Davis and Goldberg). A French school proposal - the *filière* approach - focuses on mapping the chain of operations and commercial relations involved in the production of specific products (Morvan). The more recently developed Supply Chain Management focuses on efficient market information backward along the chain. Since every approach deals with specific "slices" of the problem, no one supplies a complete explanation to the multifaceted and complex nature of agribusiness. In order to approach this complexity, it is useful to start exploring some key-stakeholders and key-dimensions in agribusiness. As depicted in Figure 1, agribusiness involves not only farmers (primary producers) but also a wide range of stakeholders and organizations. On the input factors side are the Agro-Chemical and Agro-Machinery Industries. On the output side are the Food-Processing Industries and, downstream the chain, the wholesalers, supermarkets and other distribution channels. Other important players on this side are the Non-Food Industries, like wood-furniture, pharmaceuticals, materials and others. Providing services to these activities are the banking industry, consulting firms, future markets, auction houses, transportation, logistics, telecommunications and others. On the technology and knowledge side are the research and educational institutions. Other involved institutions are the Non-Governmental Organizations (NGO), International Foundations and Environmental Policy Offices. Government plays a central role in this context fostering research, diffusion of knowledge and providing financing and market regulation mechanisms. Finally there are the consumers, whose expression of demands drive the strategies taken along of the chain.

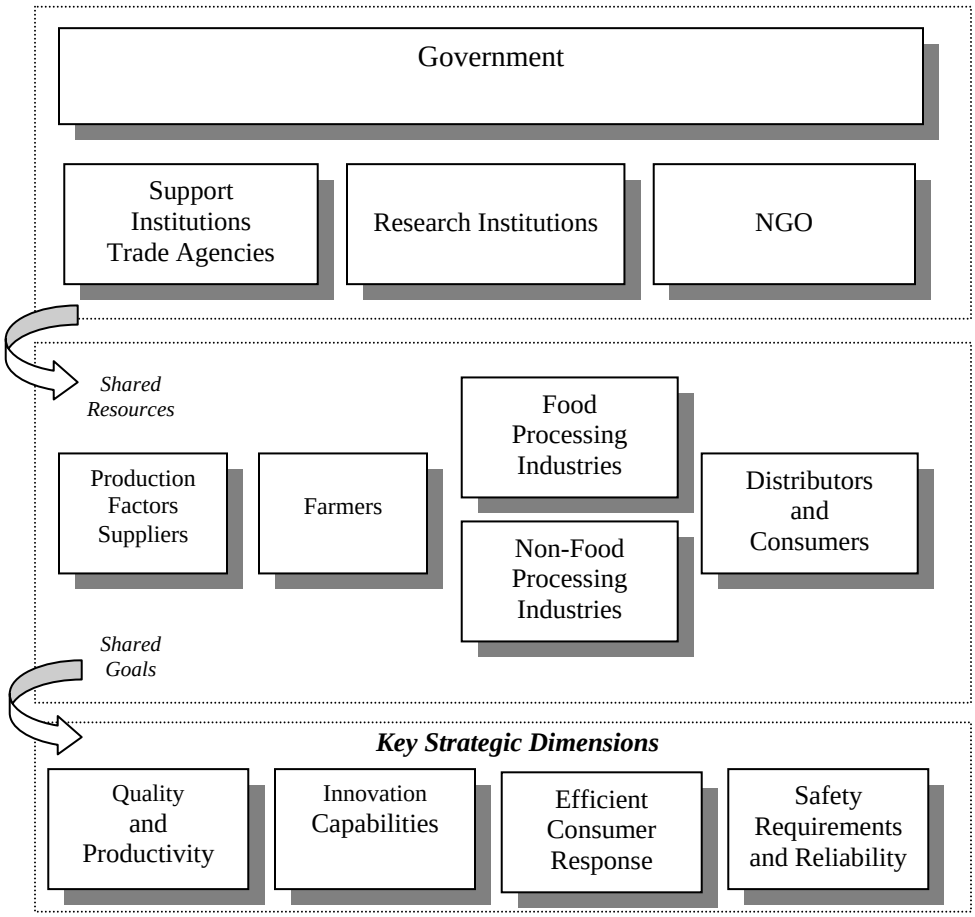

Figure 1. Agribusiness stakeholders and key strategic dimensions

The alignment of objectives and strategies between these multiple stakeholders contributes to shape the competitive potential of an agribusiness system. This competitive potential is, in fact, an expression of some key strategic dimensions, as represented in Figure 1. The first dimension relates to quality and productivity. Quality is an essential attribute of food products, while productivity is necessary to attain lower production costs. The second dimension relates to innovation capabilities of firms, necessary to respond to competitive pressures and demands for new, better, and differentiated products. The third dimension is efficient consumer response, a topic linked to logistic capabilities of the system. Finally, the fourth dimension relates to safety requirements and reliability, a role played by governments and accredited institutions.

The performance of a firm, or group of firms, in any one of these strategic dimensions is sustained by a set of strategic resources, like knowledge, technologies, natural resources and management capabilities, among others. Each industry has its own combination of strategic resources, but a fundamental distinction from other industries is that in agribusiness these resources are very similar or equally

relevant for a wide range of activities. Technologies like precision agriculture and genetic improvements, for example, can be applied to many cultures and thus be shared by many types of agribusiness activities.

The fact that many resources and capabilities have a low degree of appropriability of results discourages individual investments and creates an opportunity for collective optimization of efforts in the development and upgrading of shared resources. In this reasoning, a well-designed and coordinated agribusiness system can enhance value generation and thus become a distinctive factor that will pave the way to the emergence of large-scale regional and national agribusiness systems.

Beginning with the main contributions on national competitiveness research, the next section explores some strategic implications of this new scope of agribusiness analysis.

National Competitiveness

Academic research on national competitiveness dates back to the studies of Smith and Ricardo that contributed to the understanding of comparative advantages and trade between nations.

In recent years, due to globalization trends, attention to this topic has intensified and evolved beyond the comparative advantage concept. Today, as argued by Porter, comparative advantages based on fixed physical resources are no longer a satisfactory explanation to global competitiveness of firms or nations and new sources of competitive advantages must be added. He explores four macro-determinants of a nation's competitive advantages:

- Factor conditions: The nation's portfolio of production factors, like skilled labor, natural resources, knowledge, capital and infrastructure necessary to compete in an industry.
- Demand conditions: The nature of local demand for the industry's product or service.
- Related and supporting industries: The existence of supplier and related industries that have internationally competitive standards.
- Firm strategy, structure, and rivalry: The structure of industry, organization of firms, and the presence of domestic rivalry and competition that foster development.

In this perspective, factor conditions are expanded beyond the traditional physical factors of land, labor and capital, and are particularly relevant in the agribusiness sector. A nation's factor endowment must include human resources, knowledge

resources, physical resources, capital resources and infrastructure. Within this context, the relevance of some agribusiness strategic dimensions becomes apparent. Clear linkages exist, for example, between research and educational activities and the effectiveness of a nation's human and knowledge resources.

According to Porter, factors can be classified along two dimensions: basic versus advanced and generalized versus specialized. Basic factors primarily refer to physical resources and advanced factors by sophisticated, technology intense capabilities. Similarly, generalized factors, such as highways, can be used by many sectors whereas specialized factors have focused application opportunities; an example is a large pool of food technology expertise in a specific region.

Although Porter's analysis focused to some degree the dynamic nature of competition, his conceptual framework is somewhat limited. It does not deal, for example, with: how activities that create key factor endowments are planned; which factors can become sustainable sources of advantages, resisting imitation; and how support institutions that are critical to the improvement of factor conditions are coordinated. In order to overcome these limitations we make use of the resource-based view approach to strategy.

The Resource-Based View Approach

Every firm in the market can be viewed as a collection of resources whose form of productive use depends on its managers visions and perceptions. If these resources are somewhat rare, scarce, specialized, complementary and value adding, they can be used as sources of competitive advantage, leading firms to superior performance. This is the central principle of the resource-based view of the firm (RBV).

This approach has its roots in the studies of Penrose and Selznick and, in its modern form, has been object of the works of Wernerfeldt, Rumelt, Dierickx and Cool, Barney, Teece, Grant, Mahoney and Pandian, Amit and Schoemaker, Peteraf, Teece, Pisano and Shuen, Lockett and Thompson and Mahoney, among others.

The search for special attributes that characterise the strategic value of a resource takes us to an extensive list of concepts. Although researchers have explored these attributes under different names, a deeper analysis of the main studies in the area shows a strong similarity of ideas.

Peteraf synthesised those views in four necessary conditions that must exist for a resource to be considered strategic, referred to as the “cornerstones of competitive advantage”: heterogeneity, imperfect mobility, *ex ante* limits to competition and *ex post* limits to competition. Each one is next briefly described, as they constitute important elements of the conceptual basis of our study.

Heterogeneity

According to Peteraf, heterogeneity in an industry can involve situations in which the amount of strategic resources is limited and scarce in relation to its demand. Under this condition, inferior or inefficient resources are used in production in order to supply the residual demand and a possibility of superior profits (economic rent) emerges for the most efficient firms. This type of competitive advantage can then, be sustained by the efficient firms as long as their resources cannot be imitated or expanded to the demand level. The efficiency differential (heterogeneity) in relation to other firm's resources and the existence of scarcity in relation to demand are essential conditions to improve profit performance through the use of a strategic resource.

Ex ante limits to competition

The existence of *ex ante* limits to competition, as defined by Peteraf, implies that prior to the establishment of a superior position in resources there must exist a limited competition for that position.

According to Peteraf, a position in resources can only be a source of superior profits if the firm has an opportunity to acquire them in the absence of competition. The value of the resources cannot be known to all competitors prior to their acquisition and use, for otherwise it would generate a competition for these resources and consequently profits would be eroded. Unless a difference exists between the *ex post* value of the necessary resources and their *ex ante* acquisition cost, the generated above normal profits (economic rent) can be null (Rumelt, *apud* Peteraf). By this reasoning the above normal profits result from the uncertainty at the initial phase of the process.

Ex post limits to competition

The need of *ex post* limits to competition implies that after a firm establishes a superior competitive position through heterogeneous resources in relation to its competitors, there must exist factors that sustain the durability of this heterogeneity condition in a way that preserves the attained superior position.

Peteraf considers as the main *ex post* limit to competition the presence of imperfect imitability and imperfect substitutability of a resource. The capacity to protect a resource against imitation or substitution depends on a series of factors. Among these are issues described by Rumelt (1984) and Dierickx and Cool as isolation mechanisms, like indetermination or causal ambiguity of the knowledge involved in the acquisition of a resource, the degree of asset complementarity and the existence of path dependence conditions.

Indetermination or causal ambiguity exists when competitors are unable to identify which are the valuable resources or how to recreate or define them (Reed and

DeFillippi). Thus, the idiosyncrasies of the learning process, rather than representing a problem, are a desirable condition to sustain a competitive advantage. A path dependence condition, in turn, means that a resource or asset was developed and accumulated in a process through time, generally in a learning sequence involving trial and error.

Imperfect mobility

The imperfect mobility condition of a resource implies that although the resource can be traded, it is much more valuable in the firm in which it is currently being used than it would be in another firm. It is the case when the resources somewhat specialised or exclusively developed or adapted for the needs of the company that possesses them. Other source of imperfect mobility occurs when a certain group of resources only produce value when used jointly; they are referred to as co-specialised assets (Teece, 1986). Or yet, when the associated transaction costs for this resource are excessively high in relation to its value (Rumelt, *apud* Peteraf). And finally, when the resources are configured or related in such a way that it becomes difficult for both sellers and buyers to analyse them and determine their costs or individual values. These information asymmetries prevent a likely buyer to have access to a proper evaluation of these resources, therefore hindering their negotiation or change of hands (Barney, 1991).

Each of these above conditions, heterogeneity, imperfect mobility, *ex-ante* and *ex-post* limits to competition, reveals which resources have strategic value. The identification and management of these resources is a first order topic in countries' strategic agendas, as discussed in next section.

Resource-Based View, National Competitiveness and Agribusiness: Some Critical Issues

Undoubtedly the resource-based view approach brings new and useful insights to agribusiness analysis and strategy formulation, but it brings as well three critical issues. The first one is that firms do not compete only at the product level but also at the resource a sub-level, where a race for strategic resources acquisition occurs. In Agribusiness, at the individual firm level these strategic resources can be technologies, special land, market brands, dedicated logistic channels and others. At the agribusiness sector level these resources can be, for example, the role of the nation's research system, knowledge in genetic advances, international trade networks, efficient logistic structure, reputation, reliability, image, consumer response capability and others.

The second critical issue is that traditional strategies of capital investment frequently focus on attainment of static optimization, choosing the best alternatives to present scenarios. This may lead some firms to invest in narrow technological trajectories and resource portfolios. When technology evolves and business

environment changes, these firms can be locked-in in their old choices and not be capable of effective adaptation or reaction.

The third issue is that technological trajectories and future unfolding possibilities are not clearly apparent to individual firms. In a dynamic and evolutionary context, power and adaptation plays a central role. Power is a question of organized effort, whereas adaptation is a question of flexibility, which is, in turn, a question of complex decisions and strategies that, in many cases, must be treated at a collective level.

These issues assume critical importance when we deal with the agribusiness system as a whole, which must be subject to a national strategy, as discussed in next section.

National Agribusiness System: A Strategic Framework

As previously explained, the traditional agribusiness sector can no longer be planned from a narrow focus, since major engines of change are rooted in larger systems influenced by globalization of trade and technology and rapid demand shifts. How the system deals with the change and how players react, adapt and innovate become crucial questions.

In this context, a National Agribusiness System is defined as the organizational network that coordinates agribusiness strategies at the national level. It includes strategic and non-strategic resources auditing, analysis, forecasting and planning; global market prospecting and promoting; knowledge generation and diffusion; regulation and legislation; financing; supporting infrastructure; and environmental control activities. The central idea is that the sum of individual's optimum is not equal to the overall system's optimum, hence coordination is required. A graphic representation of the main elements and tasks of the proposed system is presented in Figure 2.

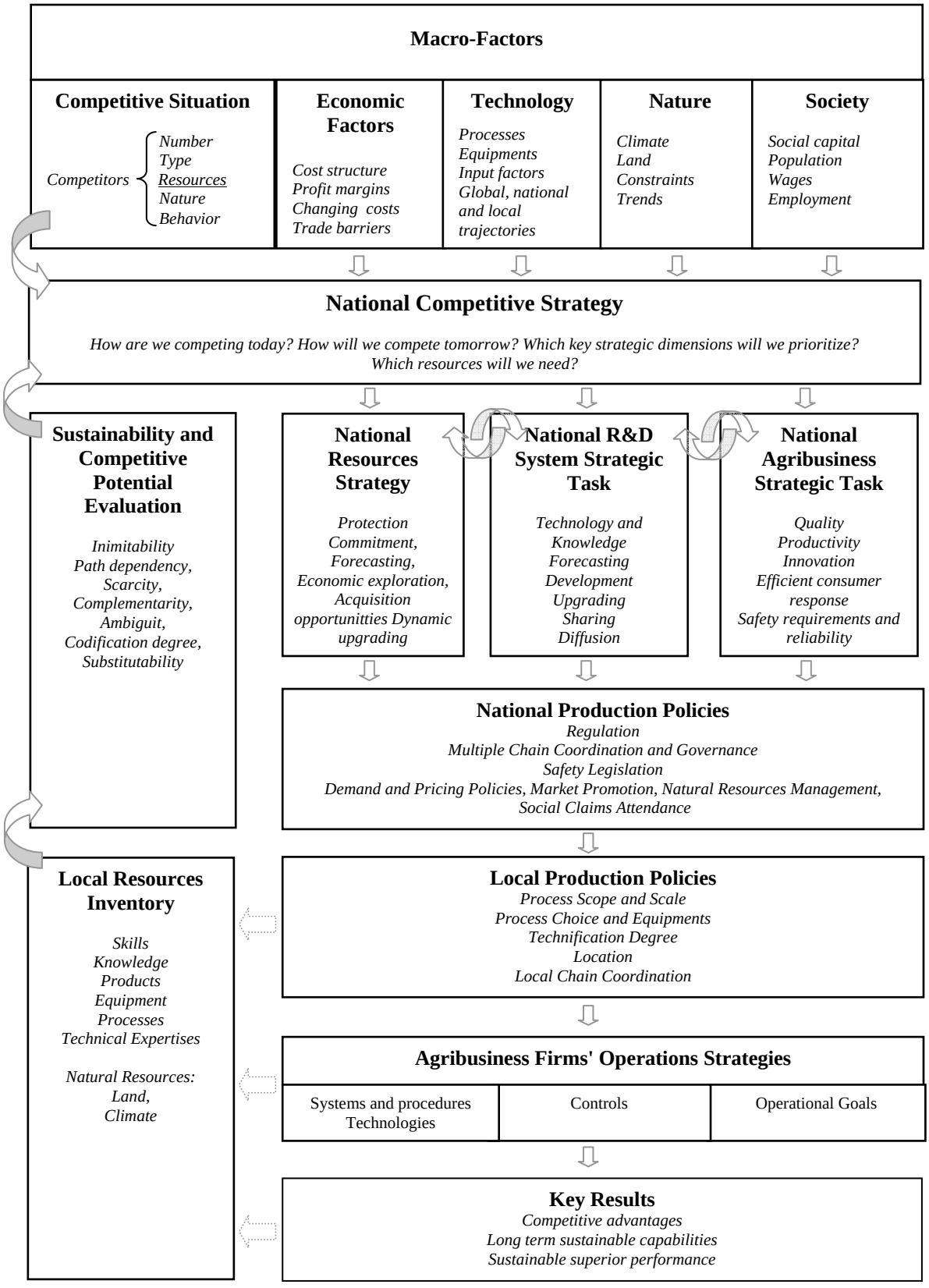

Figure 2. National agribusiness system framework

The starting point of the framework is the *inventory of local resources*, determining the existing skills, local products, equipments, shared facilities, productive processes, technologies and natural resources. The next step is the analysis of resource attributes, identifying which ones have strategic value. As each region has its own distinctive resources and capabilities, the aggregation of these local resources constitutes the national resources portfolio, which, associated with the *macro-factors*, are inputs to the development of a *national competitive strategy*.

In order to support the defined *national competitive strategy*, the resources must be managed, protected, optimized and upgraded through the implementation of a *national resource strategy*. This strategy contains action plans and commitment to development trajectories that fill gaps and constraints in the portfolio of national resources. The national competitive strategy also requires research for the continuous upgrading of the resources and capabilities; this task is accomplished by the implementation of a *national R&D system strategy*. Finally, the national competitive strategy requires that the agribusiness system attain a high performance level in the prioritized strategic dimensions; this task is accomplished by the implementation of a *national agribusiness strategy*.

The three national supporting strategies described above will provide the elements for the formulation of a n*ational production policy,* which deals with the issues of international promotion, safety legislation, regulation and natural resources management, among others. This policy is then translated into *local production policies*, which, aligned with national objectives, deals with the local governance of chains and production processes adjustments.

Finally, the above stages lead to *agribusiness firms' operations strategies*, level at which a set of operational goals is defined at the individual firm level.

Conclusion

Agribusiness is a complex multidimensional sector that cannot be planned without a systemic view and an interdisciplinary approach. The power of the proposed model resides in the definition and integration of multiple levels and scopes of analysis. Instead of short view approaches, we argue that only the implementation of a national resources strategy in order to preserve, forecast, and explore these resources can lead to long-term competitiveness of the agribusiness sector. The Resource-Based View proved to be useful as a theoretical support to this process.

References

Amit, R, and P..J. Shoemaker, 1993. "Strategic assets and organizational rent." *Strategic Management Journal* 14 :33-46.

Barney, J.B. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17:99-120.

Davis, J.H., and R.A. Goldberg, 1957. *A Concept of Agribusiness*. Boston: Division of Research, Harvard University School.

Dierickcx, I., and K. Cool, 1989. "Asset stock accumulation and sustainability of competitive advantage." *Management Science* 35:1504-1514.

Grant, R. M. 1991. "The resource-based theory of competitive advantage: Implications for strategy formulation." *California Management Review* 33 :114-135.

Mahoney, J. 2001. "A resource-based theory of sustainable rents." *Journal of Management* 27: 651-660.

Mahoney, J.T., and J.R. Pandian, 1992. "The Resource-Based View within the Conversation of Strategic Management". *Strategic Management Journal* 13:363-380.

Morvan, Y. 1991. *Fondements d'Economie Industrielle*. Paris: Economica.

Penrose, E.T. 1959. *The theory of the growth of the firm*. New York:Wiley.

Peteraf, M.A. 1993. "The cornerstones of competitive advantage: a resource based view." *Strategic Management Journal* 14 :179-191.

Porter, M.E. 1990. *The Competitive Advantage of Nations*. New York: The Free Press.

Reed, R., and R.J. DeFillippi. 1990. "Causal ambiguity, barriers to imitation and sustainable competitive advantage." *Academy of Management Review* 15:88-102.

Ricardo, D. 1817. *On the Principles of Political Economy and Taxation*. London: John Murray.

Rumelt, R.P. 1991. "How Much Does Industry Matter?" *Strategic Management Journal* 12:167-85.

Selznick, P. 1957. *Leadership in Administration: A Sociological Perspective*. New York: Harper e Row.

Smith, A. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*. New York: The Modern Library.

Teece, D. J. 1986. "Firm Boundaries, technological innovation, and strategic management." Pp. 187-199, In: L. G. Thomas, III (ed.*), The Economics of Strategic Planning*. MA: Lexington.

Teece, D.J., G. Pisano and A. Shuen, 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18: 509-533.

Wernerfelt, B. 1984. "A Resource-Based View of The Firm." *Strategic Management Journal* 5: 171-180.