

## *Strategic management model for decision-making in livestock production entities. Implementation in a UBPC of the Martí municipality (Part II)<sup>1</sup>*

Maybe Campos<sup>1</sup>, J. Suárez<sup>1</sup> y R. Ojeda<sup>2</sup>

<sup>1</sup>*Estación Experimental de Pastos y Forrajes "Indio Hatuey",  
Universidad de Matanzas "Camilo Cienfuegos", Ministerio de Educación Superior  
Central España Republicana, CP 44280, Matanzas, Cuba*

<sup>2</sup>*Centro de Estudios de Desarrollo Agrario y Rural, Universidad Agraria de La Habana, Mayabeque, Cuba  
E-mail: maybe@ihatuey.cu*

### **ABSTRACT**

The objective of this work was to show the results of the implementation of a strategic management model for decision-making in a basic unit of cooperative production (UBPC) of the Martí municipality –in the Matanzas province, Cuba–, specifically the analysis of a group of economic, environmental and technical-productive indicators. The starting point was the unfavorable economic and environmental situation shown by the UBPC in 2005, which demanded a strategic analysis focused on sustainable development from the optimal and rational utilization of the existing resources; this included the formulation of 12 general strategies. The testing of the effectiveness of the strategic management model (SMM) implementation was based on its feasibility of application, in which the evaluation of 15 competent experts from the entity –with a remarkable agreement coefficient– and the tangible and intangible changes generated between 2006 and 2011 were taken into consideration. With the implementation of the SMM a contribution was made to providing the UBPC with a conscious, integrating and systematized organizational procedure for strategic management, which supports decision-making.

Key words: basic unit of cooperative production, decision-making, strategic management

### **INTRODUCTION**

In a previous paper, Campos, Suárez and Ojeda (2013) presented the implementation of a strategic management model (SMM) for decision-making in a UBPC of Matanzas province, which comprised four stages associated to the CIPP model (Stufflebeam and Shinkfield, 1987) in which the context, inputs, processes and products that could contribute to the sustainable development of the UBPC were evaluated. This included the elaboration of the mapping of social actors to identify the people and entities which can be priority for the planning, design, implementation or evaluation of the cooperative's strategy; as well as the identification of 36 relevant indicators for decision-making, organized into four dimensions: environmental, social, economic and technical-productive; from them, 18 were selected which become a key input to support it.

The objective of this work was to give continuity to the experience of the implementation

of the SMM in a UBPC of the Martí municipality –in Matanzas province, Cuba–, specifically the study of a set of economic, technical-productive and environmental indicators; as well as the strategic analysis of the UBPC, the testing of the SMM and its support procedures, and the changes associated to its implementation.

### **METHODOLOGY**

The methodology used in this study was approached in part I of the paper (Campos *et al.*, 2013), and is in correspondence with the stage of product evaluation (stage 4).

### **RESULTS AND DISCUSSION**

*Quantitative analysis of the economic and technical-productive indicators (2006-2010)*

The quantitative analysis of the economic and technical-productive indicators (fig. 1) consisted in comparing the referred indicators since 2006

<sup>1</sup> This paper is part of a doctoral thesis.

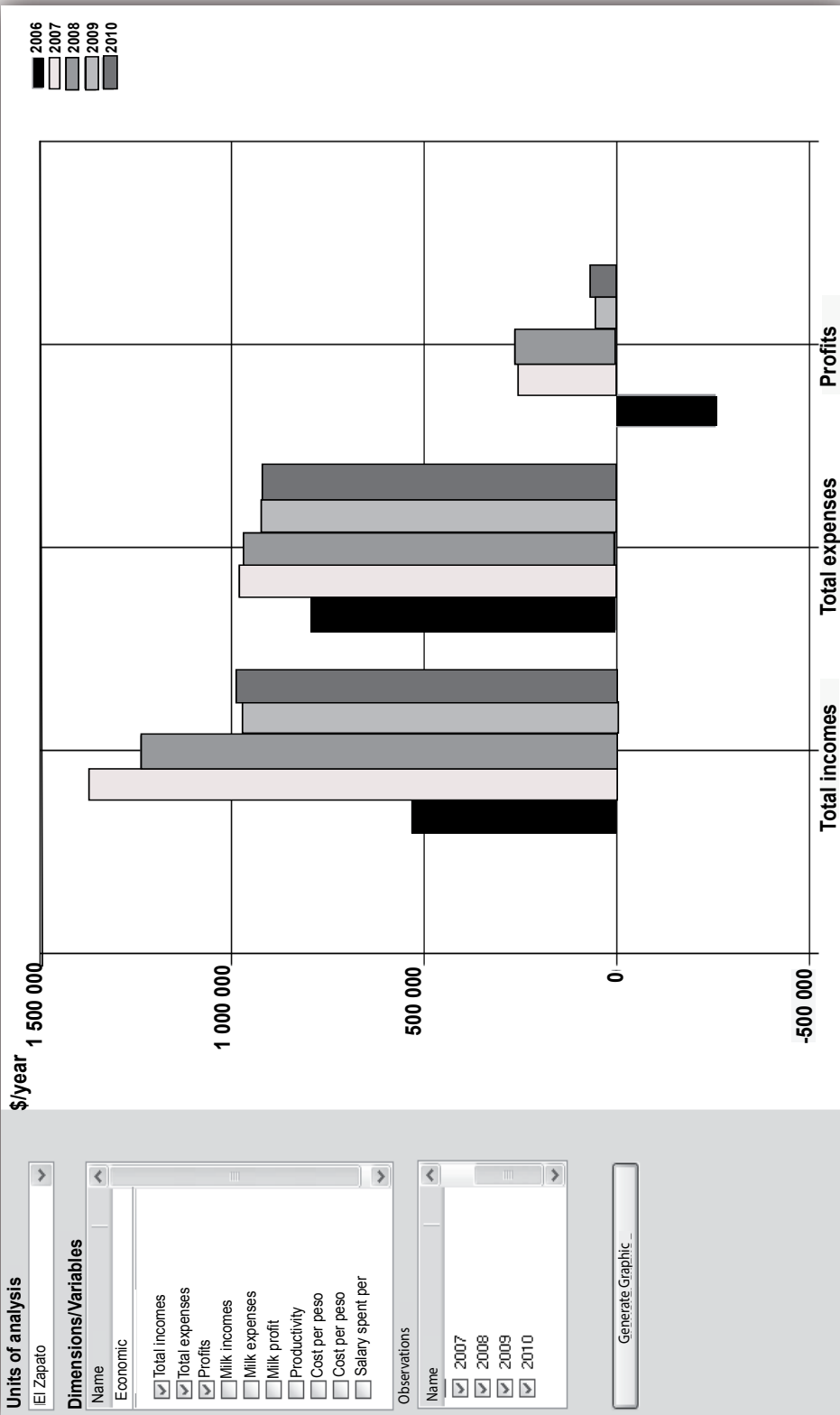


Figure 1. Analysis of the economic indicators of the UBPC (2006-2010).

Source: Elaborated by the authors.

until 2010, through applied statistics and using the software ANSOST 1.0 (Vázquez, López and Hernández, 2011).

It could be noticed that in 2006 there was a loss of \$ 259 258; nevertheless, since 2007 the entity began to be cost-effective, and the best results were obtained in 2007 and 2008 (a profit of \$ 124 968 and \$ 266 029, respectively). During 2009 and 2010, although it did not stop being cost-effective, the incomes and profits were reduced. This occurred due to the ageing of the dairy cattle herd and the lower quantity of milking cows –caused by deficient management of the reproductive indicators–, as well as to the drought that affected the municipality, which is considered of high vulnerability, with zones of moderate and severe deficit in rainfall during recent years (INSMET, 2012). In this sense, the National Institute of Water Resources reported that in 2009 and 2010 the dams of the Martí municipality accumulated only 46 and 50 % of the useful water volume, respectively; while rainfall did not exceed 31 % of the historical mean of the last 20 years (INRH, 2009; 2010).

Another key piece of information to understand the above-explained facts is that Martí is the municipality with lower rainfall in the province. If its mean annual rainfall is considered, in the northern coast –where the UBPC is located– it rains very little; towards the center, it rains little; and to the south (limit with the Colón municipality, moderately little (EcuRed, 2012).

#### *Strategic analysis of the UBPC for sustainable development*

For the strategic analysis the situational planning was made, through which the objectives and actions were arranged in time, and a desirable future status for the UBPC was formulated, from the optimal and rational utilization of the existing resources.

#### *Strategic diagnosis*

The strategic diagnosis allowed to analyze the critical internal and external factors of the UBPC's problematic situation, its causes were defined and possible solutions were proposed. In this regard, in a group session the opportunities and threats of the environment were identified, and the UBPC's mission was formulated: “to increase the welfare of the cooperative members, the community and society through the development of sustainable

agricultural production, with emphasis on milk production, through animal and plant diversification and the use of environment-friendly technologies; thus to contribute to the conservation of the sub-basin of the La Palma River.”

It could be observed that in the mission –as a result of the reflection process on the real situation of the UBPC– the cooperative members already considered diversification and the use of sustainable technologies as the basis of its development to achieve the partners' welfare, which in turn allows to restore the environment.

Afterwards, the main subsystem and the complementary subsystems of the UBPC were determined. The main subsystem was that associated to large livestock, while the complementary ones were: small livestock, varied crops, economy and finances, human talents and services. Once the subsystems were analyzed, the main strengths and weaknesses of the UBPC were selected, the SWOT matrix was elaborated and the problem and the general strategic solution were enunciated.

From all this, a group of general strategies were elaborated, which are mentioned below:

1. To develop a process of management and technical training, aimed at improving entrepreneurial efficiency and productive capacity.
2. To elaborate projects to be presented to financial organizations which support sustainable rural development.
3. To create an infrastructure to increase diversified production.
4. To elaborate and apply a program for the development of grass-legume associated pastures, including trees.
5. To guarantee roughages for the dry season (sugarcane and king grass).
6. To use artificial insemination to aim genetics at double purpose cattle.
7. To solve the electrification of irrigation systems in varied crops.
8. To increase animal draught.
9. To promote the use of ethnoveterinary (traditional medicine), which demands training.
10. To promote the production of organic manure and the culture of using organic residues.
11. To develop the adequate mechanisms for commercialization in the frontier market.
12. To elaborate a program of sociocultural attention to the workers and their families.

Subsequently, the UBPC's vision was elaborated: "the welfare of the cooperative members, the community and society has increased, and the agricultural production has been sustainably developed through animal and plant diversification and the use of environment-friendly technologies, which has created a deep sense of belonging in the workers and has contributed to the conservation of the sub-basin of the La Palma River".

The gaps, that is, what is missing to complete the vision, were identified, and starting from them the actions that must be carried out and the strategic objectives were established.

#### *Strategic objectives*

1. To develop agricultural production sustainably, with emphasis on milk production.
2. To develop animal and plant diversification in order to increase incomes and guarantee food sovereignty in the cooperative and the community.
3. To increase the human welfare of cooperative members and the community.
4. To improve and preserve the ecosystem, which is patrimony of the UBPC.

Likewise, the functional objectives of the main subsystem "large livestock" and of the five complementary subsystems were identified. When making the strategic projection of the UBPC, an action plan was elaborated for each subsystem.

With the conception of the SMM and its procedures, as well as their implementation in the UBPC –including its strategic planning– a contribution is made to provide livestock production entities in Cuba –among which necessarily are UBPCs– with a conscious, integrating and systematized organizational procedure for strategic management, which supports decision-making.

#### *Testing of the SMM and its support procedures in the UBPC's decision-making*

For testing the SMM a strategy based on two aspects was elaborated. The first aspect was the feasibility of application of the model and its specific procedures in the UBPC, previously explained. The second one consisted in the evaluation of this model and its procedures by experts of the entity, as well as of the changes associated to their implementation, which is explained below.

#### *Selection of experts*

The selection of experts was based on the analysis of their competence coefficient, through the application of a questionnaire elaborated with this purpose, in which the following aspects were considered: good knowledge about the SMM, work experience in the agricultural sector, in the UBPC and in management positions; as well as the professional training and the post they occupied. From a total of 21 individuals –to which the competence questionnaire was applied– only 15 were selected, because their  $K$  coefficients were in the optimal range ( $0,8 \leq K \leq 1$ ), according to Frías (1999).

#### *Criteria of the UBPC's experts to evaluate the SMM*

In order to evaluate the main qualities of the methodological instruments developed (SMM and its associated procedures) a questionnaire was elaborated, which was subject to the consideration of the 15 selected experts –including those in charge of the productive units–, after a work session in which the final result of the study was discussed. In this questionnaire a Likert scale of five categories (Hernández Sampier, 2003) was used, in which a maximum score of five (5) points represented the complete agreement with the statement, and a minimum evaluation of one (1) point means the contrary (complete disagreement with the statement); although intermediate scores (2, 3 and 4) are allowed.

The results of processing the 10 questions of the questionnaire are shown in table 1. The criteria in the first eight (related to the SMM) exceeded the scale of 4; questions 7, 1, 2 and 6 stood out, with a favorable average (4,30), which indicates a good perception by the staff about the SMM as a viable tool to improve the strategic vision of decision-makers and the organizational performance. In the case of the last two ones the perception was very low (1,30 as average), and it indicates that in the UBPC no strategic instruments elaborated at ministry level are used.

Likewise, during the work sessions and the interviews made to decision-makers it could be observed that the UBPC still received resources by centralized State assignation. Besides, there was a high level of sale commitment established with the Collection and Distribution Center, which was based on a centralized management model of the Delegation of Agriculture ("I order and command" type), and ruled by policies demanded from higher

Table 1. Results of processing the questions listed in the questionnaires.

Item	Average
The SMM is a simple, flexible, practical and feasible system to be applied in the UBPC.	4,60
The participatory work sensitized and committed the workers with the development program, of the UBPC as well as the municipality.	4,53
The model trains the decision-makers in the systematic analysis of the problems and the use of mechanisms that allow them to verify the coherence of their appreciations and reflections.	4,33
The model prevents decision-making derived from erroneous ideas.	4,07
The methods, tools and procedures used allow evaluation in each of the model stages.	4,33
Strategic planning was an important exercise to begin the process of change in the entity.	4,47
The diagnosis and participatory strategic planning constitute a learning process, which contributes to management.	4,67
With the implementation of the model a commitment with strategic management is achieved.	4,13
The entity uses the strategic plant of the MINAGRI as management model.	1,27
The methodology of the SINCITA is used by the entity as management model.	1,32

Source: elaborated by the authors.

management levels and which should be complied with in the productive basis. These results are similar to the ones referred by Nova (2011) and Rodríguez and López (2011).

The application of this questionnaire to experts from the studied UBPC allowed to know the feasibility of application of the SMM and its specific procedures, by proving that there was agreement among the experts, which was corroborated with the value reached in the Kendall coefficient (0,7167), considered adequate.

#### *Changes associated to the application of the SMM in the UBPC*

Several tangible (tables 2 and 3) as well as intangible results were mentioned, which were associated to the application of the SMM and the procedures in the UBPC between 2005 and 2011.

At the beginning of the study, the UBPC was not cost effective and had a loss of \$ 881 000. At present, it is a cost-effective entity, with profits higher than \$ 100 000 and a cost per peso of 0,86.

Table 2. Changes in the economic indicators of the UBPC.

Indicator	2005	2007	2009	2011
Total incomes	551 100	1 007 234	973 306	739 326
Total expenses	1 432 700	882 266	924 909	637 350
Benefit/cost ratio	0,38	1,14	1,05	1,16
Profit	- 881 600	124 968	48 397	101 976
Cost per peso	2,6	0,88	0,95	0,86
Productivity	340,1	871,19	811,09	1 084,32

Source: Elaborated by the authors.

Table 3. Changes in the utilization of environment-friendly technologies in the UBPC.

Indicator	2005	2006-2007	2008-2009	2010-2011
Produced and/or applied biofertilizers (t)	11,7	68,7	105,7	206,1
Number of friendly technologies and practices adopted	1,0	3,0	5,0	11,0
Areas reforested with silvopastoral systems (ha)	1,0	2,5	8,2	26,4
Solutions for residual treatment		4,0	7,0	8,0
Solutions applied for water conservation and protection		2,0	3,0	4,0

Source: elaborated by the authors.

Table 3 shows the noticeable production increase, as well as the application of biofertilizers to improve the soils of the UBPC which were highly degraded.

Regarding the adoption of friendly technologies, in 2005 silvopastoral systems were introduced; in 2007 the livestock production-agriculture integration began –with the creation of a fruit and crop farm–, as well as the production of biofertilizers (vermiculture, compost); and in 2008 the production and application of IHplus® –a bioproduct of wide agricultural use developed at the EEPF “Indio Hatuey”– started. In 2009, bioproducts from the foliage of neem (*Azadirachta indica*) were produced and applied for pest control; and in 2010 and 2011 agroecological practices associated to crop rotation and intercropping were used.

Concerning the treatment of residuals, the four dairy units, the cattle fattening unit and the pig production unit currently have oxidation ponds; while the excreta from the goat and poultry production are used for vermiculture. In the five units for growing cattle there is no treatment system, because the animals are always grazing.

The solutions applied for water conservation and protection comprise the residual treatment systems, reforestation –with woody trees– of 30 % of the hydro-regulating strip of the La Palma River and the rehabilitation of pasturelands to reduce drifts towards that river.

On the other hand, the intangible results are the following:

- Social transformation of the UBPC and the community, from encouraging the participation of actors in the development program.
- Enhancement of the relations between the community and the UBPC.
- Increase of the innovative capacity of the decision-makers of the UBPC, aimed at the promotion of a long-term development program, based on innovation. Likewise, a high commitment with innovation has been developed among members of the cooperatives and the managers.

- Formulation of a strategic plan since 2008, which was updated in 2010 with a 2010-2014 horizon.
- Increase of the sense of belonging in the workers of the entity, who state: “we realize now that the UBPC is ours”.
- Training of cooperative and community members in participatory workshops.
- Promotion of an organizational learning process, in which the technicians and workers of the UBPC participate.
- Good knowledge, by the staff, of the most relevant technologies for the UBPC –of the existing ones in their environment.
- Production diversification and agriculture-livestock production integration.
- Establishment with an alliance with the EEPF “Indio Hatuey” for advisory on agricultural production and sustainable management of resources.
- Elaboration of a development project portfolio to search for international financial support.

## CONCLUSIONS

- The implementation of the SMM in the UBPC, which approached the study of a set of economic, environmental and technical-productive indicators as well as the strategic analysis of the entity, contributed to support decision-making.
- The strategic analysis through which the objectives and actions were arranged in time allowed to formulate a desirable future status for the UBPC, from the optimal and rational utilization of the existing resources.
- With the implementation of the SMM in the UBPC –which includes its strategic planning– a contribution was made to providing it with a conscious, integrating and systematized organizational procedure for strategic planning, which supports decision-making.
- The testing of the SMM and its support procedures, as well as the changes associated to their implementation in this productive entity, allowed to appreciate their feasibility and pertinence.

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