

Dobre, Iuliana

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FARMERS PERSUASION REGARDING IMPLEMENTING OF THE METHODOLOGICAL SUPPORT FOR DETERMINING THE PERFORMANCE IN AGRICULTURAL EXPLOITATIONS

DOBRE IULIANA¹

Abstract

This paper is a quantitative and qualitative approach of performance from Romanian agriculture exploitations,, focusing on the need to implement the methods to determining of it. Are references to the content of performance, to the variables that influence, to the assimilation of methodology for assessing of the its level by managers or producers. For this purpose, are created theoretical and methodological conditions which to provide information necessary for the understanding and acceptance of application of methods for determining the performance. For this, are used the statistics in this area by presenting some methods with large utilization in production activities and in marketing and illustration, by elaborate a questionnaire from producers, to convince them to implement methods and techniques as scientific base of decisions. Considering the multitude of factors which acting on achieving performance, the results show, undoubtedly, the need of minimum of economic and managerial knowledge which to put in value the potentialities of exploitations.

Keywords: *performance, agricultural exploitations, methodological suport, persuasion, farmers*

INTRODUCTION

The need of methods in agricultural exploitations is emphasized by the making of analysis with reference to economic and financial situation of the farm, to identification and interpretation of strengths and opportunities, but also to identify problems facing the unit, like the threats and dangers. Also, the need is felt in terms of: efficient use of inputs, given the substitutability of some (which would mean lower costs, with effect on performance), development of production programs (forecasting on short-term of activities, of expenses and profit, with inclusion in the program of problems regarding optimization of production structure), development of business plans

Methodological knowledge has a great importance. In their work, many producers acts in an empirical manner when estimates the activity, which can lead to errors in their decision-making process affecting the whole, with reference, in particular, to the decision. For example, the average production can be easily influenced if not call to the methods or if these not correspond to the series data. Similarly, the choice of crops structure without scientific foundation determine disaggregation at farm level, at least in terms of resource allocation and demand. Acquisition of fixed capital without knowing the methodology for calculating the investment can create strong financial imbalances. In like manner, can speak about establishing the necessary labor or investments in irrigation systems in livestock production (size and structure, determining forage requirements). Therefore, for the managers of agricultural exploitations is need to understanding and acceptance of methods and techniques utility, like support of their decisions, given that they are to ensure a certain level of economic performance.

MATERIAL AND METHODS

Achievement of paper is based on a series of researches regarding functioning of agricultural exploitations ifrom Romania, practiced management, their level of economic efficiency. Was used studies from the literature on agricultural statistics, agricultural management from which we obtained results showed, also, exploitations situation, particularly with reference to the problems they face. Was described the methods and techniques needed to forecast agricultural activities, including the implementation of market studies, like support to connection of exploitations in the competitive environment.

¹ Conf. univ. dr. Iuliana Dobre, Academia de Studii Economice București, e-mail: iulya_dobre@yahoo.com

RESULTS AND DISSCUTIONS

Why is it necessary to apply methods in farms activity? Motivation of farmers

Orientation of farms, in generally of agriculture, at performance, either the economic or environmental, need to involve decision makers to approach beyond empiricism. It is known that such an approach can not be treated in an empirical manner, being to the significant allocation of working capital, which to find economic justification, for to achieve the desired results

The literature has, regarding performance, a variety of methods, models, techniques, all as a support of scientific substantiation decision, whatever their nature. When referring to the current decision, often required farmers activities (monthly maximum), made by decision makers are the hierarchical pyramid, things are more simplistic, because it no will introduce new elements to change the farms objectives. Intensity increases when the decision is tactical or strategic which aimed the overall activities of the farm, in order to find solutions to adapt to the economic environment, especially when it is changing with respect to various critical periods that may arise

High probability of occurrence of conflict situations on farms coming from the external environment (farms competing, market - demand, supply, prices, suppliers) are destabilizing elements that can lead to threat and dangers in farms (Bran, Mariana, 2012). Things can be amplified in the negative sense in the absence of tactical and strategic decisions (such as the recall), which emphasizes the necessity of predict economic phenomena and use of management and marketing practices to mitigate the manifestation of "lines" effects. Therefore, should be resorted to measures to persuade decision makers to use the methodological tools necessary to prevent such events.

In this sense, is make into account different situations that may arise in a farm and which require application of methods for substantiation. (Berevoianu, Rozi, Liliana, Dobre, Iuliana, Voicu, Radu, Bran, Mariana, Ivaşcu, Teodora, Buiga, Andrei, Trică, Carmen, Lenuța, 2010).

Case 1: Farm establishment

- assessing the production potential of land, given by evaluation marks, to establish the favorability for different branches (culture);
- determining the optimal size;
- development of the production structure, cropss to be applied, taking into account the natural characteristics and suitability of land for different crops, market demand (it is an economic decision to be based, using rigorous reasoning and methods of choosing the optimal of crops structure),
- land organization, focusing on possibilities for establishing and ensuring crop rotation, given their impact, particularly on the level of production per hectare and soil protection;
- estimation of total production and average production and they expect to get settled on the productive potential of land and production technologies to be used (with intermediate consumption higher or lower, which restores the level of intensity);
- estimation of technical means necessary to carry out production processes and ways to ensure their (purchase, call the service providers as agricultural work, etc..)
- providing other inputs (fertilizers, pesticides), human resource requirements, determined by technological requirements of the crop (the problem is particularly relevant if you work by hand);
- commercial relations will be established, stating the recipients of products from the set of crops for which we chose, that marketing plan: advertising, promotion, distribution, marketing, market research.

Case 2: Existing farm

- economic and financial analysis of farm (3 years): indicators of production (average yield, total production), changes in prices, production costs, the costs of production on cost elements (operational, financial, extraordinary), the income (operating, financial,

extraordinary), indicators of liquidity, solvency, indicators of resource consumption, gross margin (often used in farms in the European Union)

- altering the structure of production - production development programs: forecasting (estimating) average production level, streamlining production, estimating demand for chemical fertilizers or organic crop and total, to the identification of origin, changes in human resources - determining labor requirements due to new production structures,
- design revenue and expenditure budget
- economic efficiency,
- sensitivity and risk analysis (under the influence of climate, change of price, technology improvement, etc.).

The following refers to farmers to play results (operating income, operating expenses, the operating result, total revenues, total expenses, gross profit, net profit, rate of return), which requires a degree of economic training, capacity of synthesis and interpretation.

In any of the following situations may occur a number of issues that are necessary elements of economic knowledge (calculation of investment indicators), namely:

- investment in the purchase of technical equipment (tractors, agricultural machinery, etc.)
- investments, purchase of vehicles for plant products;
- planning an irrigation system;
- construction of silos for storage of plant products;
- other storage buildings (cold storage, warehouses, cellars) along access roads;
- availability of technological lines for sorting, grading, packaging in case of vegetable products.

Such activities involve rigorous calculations regarding investment efficiency: specific investment, payback period, profit from recovered, total profit, profit end economic return on investment. In the absence of these elements can create dysfunction at farm level, with impact on the distortion degree of efficiency.

Not omitted any concerns environmental practices. Farmers are applying in their activities unconventional technologies, which requires the presence of solid elements of knowledge, both technical and economic. Allocation and adventitious organic fertilizers can adversely affect product quality. In addition, should know that organic farming produces high costs per unit area, is needed a control in terms of achieving their for to obtain performance. Also, it put an increasing emphasis on environmental performance, which requires the use of knowledge and application of good practices. Also, conducting of agricultural activities aimed at making products from biologically clean and maintain a healthy environment involve high risks from farmers, requiring more support than in conventional agriculture. There are studies describing the development of this type of agriculture, farmers and expectations in their relationship with the promotion of this agriculture. Society's expectations of farmers in relation to their environmental performance are ever increasing, in general terms and in response to regional challenges. One tool for achieving environmental improvements in agriculture is the design and promotion of region-specific best management practices' (BMPs). BMPs are conservation practices aimed at reducing diffuse source pollution from agricultural lands and thus improving end-of-catchment water quality (Greiner, Romy, Patterson, Louisa, Miller, Owen, 2009). Is need to understanding of farmers' motivations and risk attitudes for improvements in the environmental performance of agriculture.

Some methods in production of exploitations

Production activity. Substantiation methods are numerous and could be considered: methods for the estimate of average production, optimization of production structure (linear programming, partial budget, the gain matrix, the method variants (Voicu, R., Dobre, Iuliana, 2003).

Estimate of average production Methods - trend extrapolation, using statistical and analytical methods. mobile mean method, the arithmetic mean, mechanical methods

- *Average increase method (mean absolute change):* $y_i = y_1 + t_i \cdot \bar{\Delta}$; $i = 1, 2, \dots, n$, when:

y_i = adjusted level of production with average growth

y_1 = production in t_1 ;
 t_i = time variable..

$$\bar{\Delta} = \frac{y_n - y_1}{n - 1}$$

Increase average index method

Average growth index method is recommended to use if the terms of the series tend to increase as a

geometric progression: $\bar{I} = \sqrt[n-1]{\frac{y_n}{y_1}}$, $y_i = y_1 \cdot \bar{I}^{t_i}$.

- Increase average rythm method $\bar{R} = 100 - \bar{I}$

Arithmetic mean

The arithmetic mean is used only if the series is stationary (production is constant, regardless of the period for which is calculated). It will be added to increase the production (s) determined by the improvements to technology, the quantities of inputs allocated.

$$\bar{X}' = \bar{X} + s.$$

Moving average method is used when the average production of time series shows an oscillating evolution. In this case, are calculated moving averages of a number of years. This number can be established: either by successive attempts, stopping us at the number of terms for the series average production of the calculation shows a continuous evolution, increasing or decreasing; either by counting periods of time between two points of maximum or minimum, resulting in a dynamic chart of the average series. In this case, add a production increase, according to conditions such as those mentioned in the arithmetic mean.

Extrapolation from analitical methods

- liniar $y = a + bx$;
- parabolic $y = a + bx + cx^2$;
- exponențial $y = a \cdot b^i$, unde i = timpul.

Optimization of production structure

The linear programming method, using an appropriate mathematical model, allows obtaining, from the multitude of possible variants, the optimum solution. The objective function of the model will be the maxim profits, and the variables will be possibilities to practice different branches, in the conditions and according to various requirements mentioned. Linear programming model has the following general form:

$$\max. f(x) = \sum p_j x_j$$

General restrictions are the following

$$1. \sum_{j=1}^n a_{ij} x_j \leq b_i \quad i=1, 2, \dots, n \quad 2. x_j \geq 0$$

The meanings of symbols are: x_j – the area that will hold the branch j ; p_j – the profits of branch j ; a_{ij} – the resource consumption per unit area of branch j ; b_i – the volume of resources; j – set of branches; b_i – volume of resources i ; i – volume of branches.

What was presented is related to farm managers, and therefore theirs collective responsibility in accepting and using of methodologies, whether are be these, respectively from management or marketing. It needs the persuasion of farmers for using, in their business, the methodology with scientific substantiation, in terms of performance increase.

Farmers persuasion – questionnaire

Research goal is to promote "product" methodology, which belongs to marketing communications, and convinced of farmers for usefulness in their production activity and aconomic activity.

Elements of "input":

- The choice of the target group (farmers)
- Message (which is to be provided)

- Establish means of communication (direct channel of communication - discussion with farmers, or indirect - e-mail).

Stages

Stage 1 About farmers and their activities

a. Knowing the target group – farmers (based on questionnaire):

- age; level of general knowledge; level of economic knowledge; level of managerial training.

b. Farms knowledge (data and general information):

- location: area, degree of favorability for different branches; type and form of legal status; field of activity (eg production and marketing of cereals); size;
- production system practiced (intensive, semi-intensive, extensive, based on monoculture or polyculture, in the open or in an artificial environment (for vegetables), conventional or organic, traditional and industrial (in animals);

c. Knowledge of economic and financial situation of the farms:

- production structure (what is cultivated or what is grow and how much of each); the level of production indicators (average production, total production)
- economic results (revenues, expenditures, proffit, proffit rate); SWOT analysis; market analysis.

Stage 2. Presentation methodology farmers (message) - Some methods used in production and marketing activities of producers: content; advantages to implementing; practical example (information necessary and effective way of computing); any costs involved in providing information in the application of the methodology.

Stage 3. Interpretation of answers

Structure of questionnaire

To achieve the questionnaire was left: identification of decisional problem; establishment of objectives; establishment of hypothesis, establishment of research variables. Schematically, the relation between them is shown below:

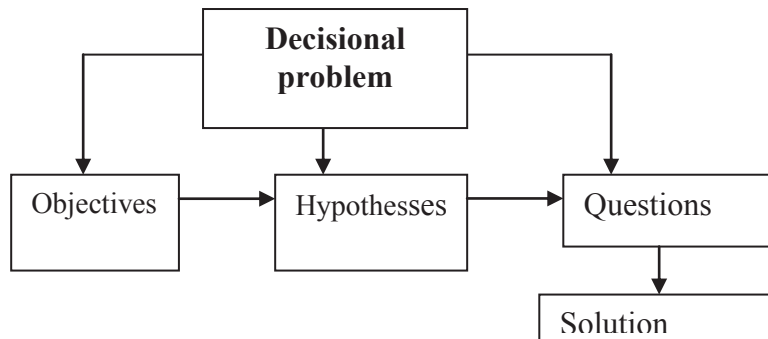


Fig.1 Structure of marketing research

Decisional problem: *Farmers persuasion regarding implementing of the methodological support for determining the economic and ecological performance in agricultural exploitations*

Hypotheses: H_1, \dots, H_n

Objectives: O_1, \dots, O_n

Questions: Q_1, \dots, Q_n

Questionnaire

H1 It is a correlation between type of management and farmers education and their willingness to implement methodologies

O1 *Identifying factors that influence farmer's willingness to implement methodologies*

Q1 *What is your education level?*

Q2 *What kind of management do you practice?*

Q3 *What is the farm area?*

Q4 *What is the used agricultural area?*

Q5 Which is the production structure?

Q6 Is an activity based on profit?

If Q6 is No, then stop the H1, result activity noncommercial, small size.

If Q6 is Yes, then follow:

Q7 Do you use the methods in planning activities?

H2 Farmers use methods of improving on performance considering the type of exploitations, area, structure of production, system of production, level of education and age.

O2 Determining the methodological support used in farms.

Q1 Do you practice a large production structure or specialized?

Q2 Who are your customers?

Q3 What methods do you use in production activities?

Q4 What methods do you use for estimation of indicators?

Q5 Do you want to extend your market?

Q6 What methods will be used for determining the study of market?

H3 Farmers are interested in applying new methods.

O1 Determining farmers' interests in applying immediately new methods of improving performance

Q1 Do you recognize the role of application a new methods in your farm activities?

Q2 Your performance is due to scientific substantiation decision?

Q3 Are willing to improve your economic and management training?

CONCLUSIONS

- The production activity of agricultural exploitations is influenced by a variety of factors;
- Is need to knowledge for making the decisions in agricultural exploitations;
- Obtain of performance require the scientific analysis of exploitations, inclusive market research;
- The literature has a multitude of methods for the estimate the future results, as support to achievement of performance;
- The results of this questionnaire show :the knowledge degree concerning scientific methods; the capacity of farmers to understanding the importance of methods for functionality of their business; the acceptability degree for methods and the proportion for using; the major importance of methods in obtain the performance and competitive advantages; the managerial training of farmers, respectively the level of education; the relation of farmers with market; the degree of opening farmers for new and formation of new farmer; the economic development level of farms and, through extension, the level of agriculture.

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