

PROJECT MANAGEMENT OF INFORMATIC SYSTEMS DESTINATED TEHNICAL-ECONOMIC ANALYSIS OF AGRICOL EXPLOATATIONS

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Abstract: *This paper presents methodologies for design and modeling of a system, which express the conceptual framework for the main components for the activity to which the information system is intended. In practice, the computer system depends on: the human resources, the hardware and software resources (to make the inputs in the system, processing, the system outputs) and the control activities that convert data into information products.*

Using information systems at farm level can increase profitability and profit, but also to save raw materials, energy or other important resources globally. The success of a computer system need not be measured only by its efficiency (to minimize cost, time or resource usage information), but also the support it provides: business strategies, developing business processes and modernize marketing techniques, improved management at farm level, increased turnover and value of the farm in a dynamic and competitive environment.

Key words: *system, management, informatic, exploitation*

INTRODUCTION

World experience has shown that the main factors of economic success, separate after their performance, countries, industries, companies and others, are mainly management technologies and the ability to use intelligent information resources and human. Improving driving performance requires first providing a quick and concise information on each hierarchical level. This is possible due to the use of computers for electronic data processing, i.e. using a computer system. Basically, the information system is the automated information system, it is "a structured set of functionally interrelated elements necessary to ensure automate the process of obtaining information for decision making."

MATERIALS AND METHODS

Between the objectives of a system with existing resources, looking for maximum efficiency occurs through the impact of the decision. The main purpose of the Decision is to harmonize the objectives with the resources, in terms of obtaining maximum efficiency. Factors influencing the quality of the decision are:

$$D = f [(fs, fi), (fm, M, d)], fm = f (s, a)$$

where: **fs** = factors certain (known) information, restrictions, influences;

fi = factors of uncertainty and risk;

fm = human factor (labor);

M = reasons for the decision;

D = the responsibility of the decision maker;

s = knowledge and experience of the decision maker;

a = adaptability.

In conclusion, the quality of decisions will depend on the accuracy of the interpretation of the information elements, the decision makers preparation and use of modern methods of processing. Features decisions, namely the ability of managers at

different levels of the company to assert that active subjects of the economic process depends on providing a background and an appropriate information infrastructure and advanced.

A IT system comprise: transaction processing systems, management systems, decision support systems and strategic information system, producing information to support management functions in an organization. The components of a model of computer system are shown in figure 1 and they include:

- **Technical resources (hardware)** and all communication are the technical means of collection, processing and storage of data, the visualization and playback equipment information, data carriers, data transmission means both within the organization and to / from external economic environment.

Communication equipment includes all technical devices for collecting, coding, decoding, transmitting and receiving local or remote data used in processing. Central place within this structure occupies electronic computer components, with all its particular configuration (all physical components: printer, keyboard, monitor, hard drive, connected to the central processing unit of the computer).

- **Basic information** consists of data being processed, information flows, systems and nomenclatures Codes, organized as files or databases, and information (results) obtained from the processing of data. The information has a great impact in decision making and therefore, the information is tightly linked to the decision resulting from its use. The information is not absolute universal value, but a value that is relative to those who use it, it is used in what situation is being used.

In order to be used in the economic analysis of farm data must have the following characteristics: relevance, timeliness, accuracy, cost effectiveness, safety, utility, to complete and a high level of aggregation.

- **The programs (software)** includes all programs by which the computer system functions in accordance with the functions and objectives that have been established. The program covers:

- Basic programs: operating systems, utilities, programs, interpreter, compiler systems, database management, system libraries, text editors;

- Applicative programs: all programs written for specific economic issues necessary to obtain information for operational and strategic management.

RESEARCH RESULTS

Computer system design proposed in this paper has two distinct phases:

1. Structural components of the computer system

From the construction point of view, the system for the economic analysis of agricultural holdings include (figure 1):

A. Inputs - is any information entered by the user, according to the objective:

- User identification data;
- Identification data farm;
- Type of crop / livestock category;
- Production area (plains, hills, mountains) / production system (irrigated, non-irrigated);
- UAA;
- Charges mechanical works;
- Manual work rates;
- Prices materials and supplies;
- Selling price primary production, secondary production, respectively;

- Subsidy per hectare;
- The proportion of different types of expenses (supplies, labor, insurances and general management, interest on loans);
- Values for other expenses (reduction in value on buildings and utility taxes);
- Opening balance etc .

B. System constants (information taken from lists and tables) are classifications, internal tables and tables linking the program, the system uses the following tables:

- Making crop / animal categories;
- Table with manual work;
- Table with mechanical works
- Making materials and materials
- Making the required annual (monthly rations of feed types)
- Table of actions for each crop plant
- Table with pesticides (fungicides, herbicides).

These constants can be updated through maintenance (maintenance) nomenclatures and tables used.

C. Outputs - are those that the system generates reports after loading and processing of the input data and constants, as defined above, algorithms based on the design - specific, examples:

- Technology culture/ha, technology culture/farm;
- Estimate the technological/animal category;
- The income and expenses of the culture/ha, the income and expenses of the culture/farm;
- The income and expenditure/capita animal, the income and expenses/total heads;
- Profitability indicators for crops/livestock production.

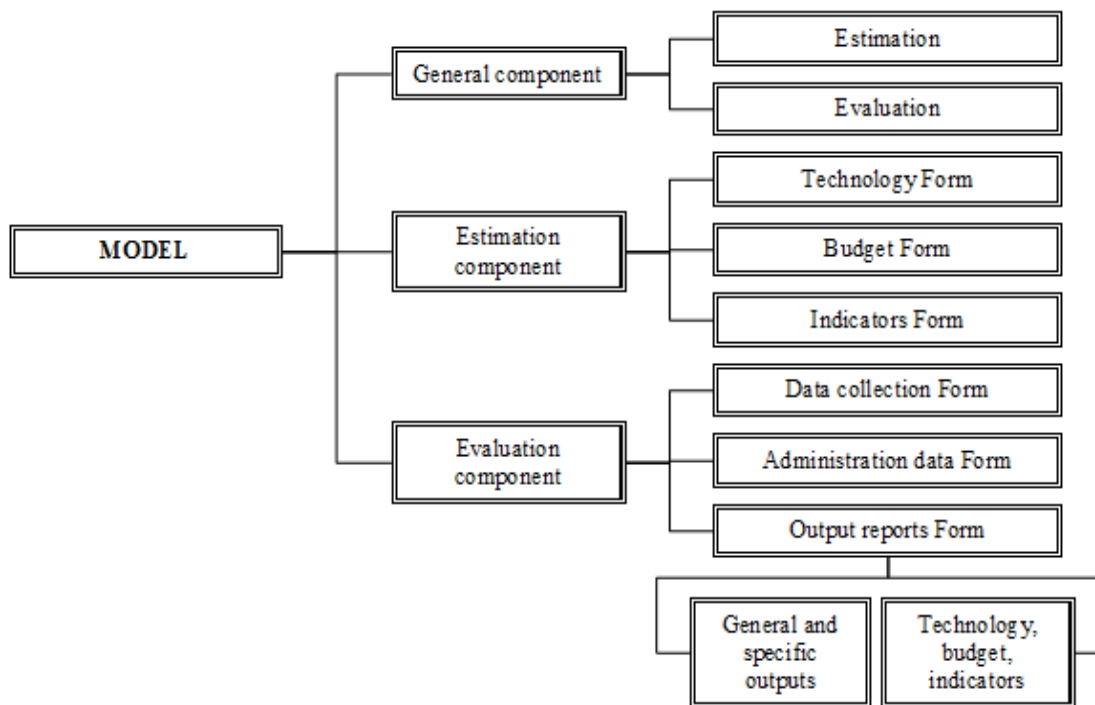


Fig. 1. General model components of computer system

2. Functional characteristics of the information system

System for economic diagnosis allows managers to seek information obtained from both internal (financial statements, management accounting and budgeting analytical)

and external sources (other than farm accounts) - information necessary to maintain the competitiveness of their activities and their products.

Thus, the software allows the economic and financial analysis of agricultural holdings, identifying: fixed costs, variable costs, production costs, profit rate on the product, product budgets etc. Also determines at any time economic indicators of the farm, the physical volume of production sold breakeven properly etc.

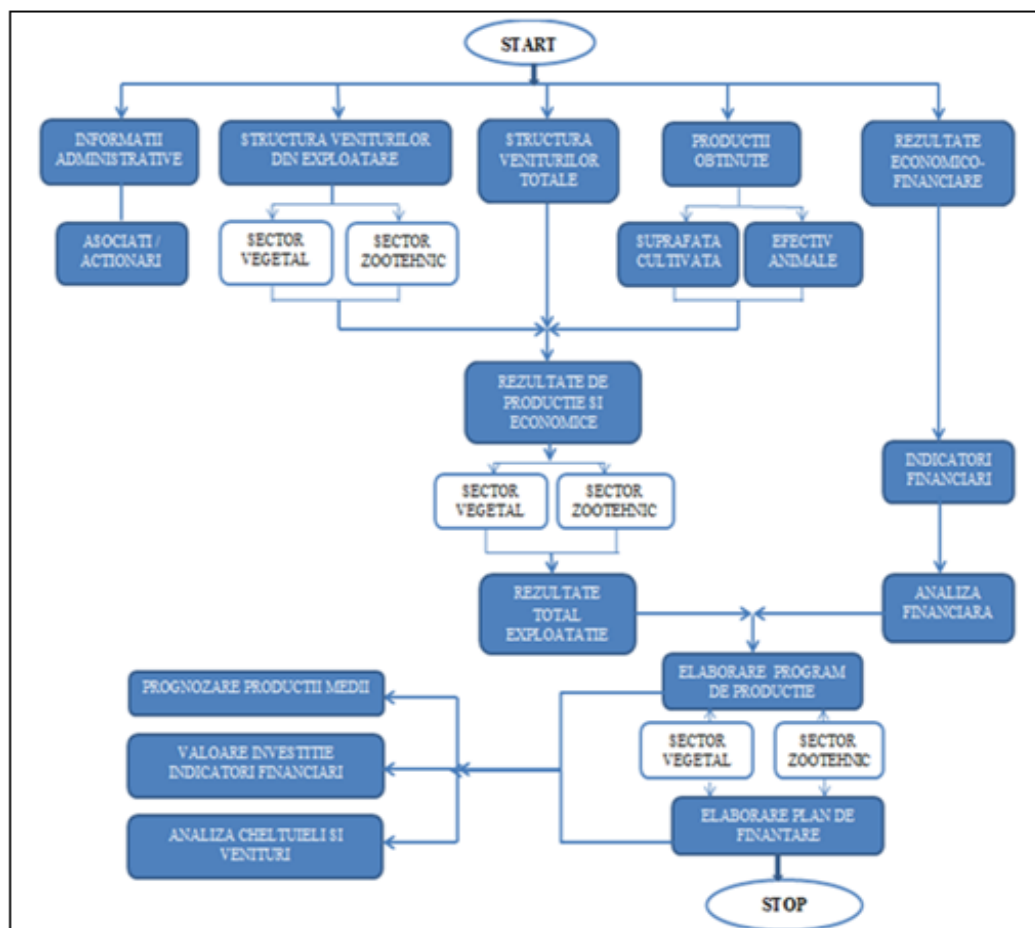


Fig.2. Design system (logic diagram - flow of information)

From a functional perspective, the product information can present the following functions:

- Generating Technology / Technology estimate
- Generate revenue and expenditure
- Generate economic indicators for each of the crops / animal categories recognized by the system based on input data:
 - specific indicators;
 - outcome indicators;
 - profitability indicators;
 - rates of return;
 - profitability margins;
 - financial risk indicators.
- Maintenance of all subsystems (lists and tables) used to obtain the results generated by the system.

- Function to create / upgrade: the system is equipped with a special feature for creating and updating its constants (maintenance) this function can be achieved through the following:

- update/change information contained in classifications and system tables;
- adding new records (mechanical work, manual work, materials and equipment, types of crops, types of animals etc.)
- delete certain information from the database;
- search / checking the desired information;
- nomenclatures listing or other useful information from the system.

- Search functions, location, computing, extracting desired information from the database and preparing for listing, these functions constitute the most important component of the system, the procedural algorithms have been incorporated into the calculation. In this section, the user is offered the possibility of introducing the system parameters (choice of crop / animal categories, setting selling prices for primary and secondary production, the setting related to different types of spending, subsidies and depreciation etc.).

In the following figures (3-8) are some of the most important reports used in the economic analysis of a type of vegetable farms.

Bugetul de venituri si cheltuieli			
Calculatii pt.		10.00 ha	
		Zona geografica: Deal	
		Sistem: Neirigat	
		Productia principala: 3000.00	
		Productia secundara: 1000.00	
Nr crt.	Indicatori	UM	Valoare
1	A. VALOAREA PRODUCTIEI	lei	90000
2	A1. Din care productia principala	lei	90000
3	B (+) SUBVENTII	lei	10
4	C (=) PRODUS BRUT	lei	90010
5	D (-) CHELTUIELI TOTALE	lei	3041,63
6	D1 Din care pentru productia principala	lei	3041,63
7	I. CHELTUIELI VARIABLE	lei	2865,56
8	1. Cheltuieli cu materii prime si materiale	lei	0
9	2. Cheltuieli cu lucrari mecanizate	lei	2836,13
10	3. Cheltuieli cu irigatii	lei	0
11	4. Cheltuieli de aprovizionare	lei	0
12	5. Asigurari	lei	29,43
13	II. CHELTUIELI FIXE	lei	176,07
14	- Cheltuieli cu forta de munca permanenta	lei	107,2
15	- Cheltuieli generale si de management	lei	29,43
16	- Dobinzi la credite	lei	29,43
17	- Amortisment pentru cladiri si utilitati	lei	10
18	E (=) VENIT IMPOZABIL	lei	86958,37
19	(-) Impozite si taxe	lei	2648,75
20	F (=) VENIT NET + subventii	lei	84319,62
21	G. RATA VENIT IMPOZABIL	%	2858,94
22	H. RATA VENIT NET + subventii	%	2772,185
23	COST DE PRODUCTIE	lei/kg	0,101
24	PRET PIATA INTERNA PREVIZIBIL	lei/kg	3

00 ha / Buget pt. 1 ha / **Buget pt. 10.00 ha** / Indicatori tehnico-economici /

Fig. 3. Window generation budget for culture (n = 10 ha)

Nr. crt.	INDICATORI SPECIFICI	UM	Valoare
17	1 Cost unitar de productie	Lei	113,805
18	2 Pret unitar de vanzare	Lei	116,2
19	3 Productie medie (randament la hectar)	kg/ha	30
20	4 MARJA BRUTA	Lei	1102,371
21	5 MARJA BRUTA LA HECTAR	Lei/ha	11023,71
22	6 RATA MARJEI BRUTE	%	0,026

Fig. 4. Generating economic indicators - Specific indicators

Nr. crt.	INDICATORI DE REZULTAT	UM	Valoare
17	1 Cifra de afaceri	Lei	60000
18	2 Productia marfa	Kg	20000
19	3 Valoarea productiei marfa	Lei	60000
20	4 PROFIT BRUT / PIERDERE BRUTA	Lei	56289,425
21	5 PROFIT NET / PIERDERE NETA	Lei	51173,375
22	6 PROFIT NET / PIERDERE NETA, inclusiv subventii	Lei	51203,375

Fig. 5. Generating economic indicators - Indicators of results

Nr. crt.	INDICATORI AI RENTABILITATII	UM	Valoare
17	1 Valoarea adaugata	Lei	60000
18	2 Excedent brut de exploatare	Lei	59747,89
19	3 Rezultatul exploatarii	Lei	56352,51
20	4 Rezultatul curent brut	Lei	56319,425
21	5 Rezultatul net	Lei	51203,375
22	6 Capacitatea de autofinantare	Lei	51208,375

Fig. 6. Generating economic indicators - profitability indicators

Nr. Crt.	MARJE DE RENTABILITATE	UM	Valoare
17	1 Marja costurilor de productie	Lei	2,814
18	2 Marja costurilor variabile	Lei	2,832

Fig. 7. Generating economic indicators - profitability margins

13	Nr. crt.	RATE DE RENTABILITATE	UM	Valoare
14				
15				
16		Rate de rentabilitate a resurselor consumate		
17	1	Funcție de venitul impozabil	%	1517
18	2	Funcție de venitul net și subvenții	%	1379,93
19				
20		Rate de exprimare a rentabilității veniturilor		
21	1	Rata rentabilității veniturilor (rentabilitate comercială)	%	85,34
22				
23		Rate de rentabilitate economică și financiară		
24	1	Rata marjei asupra valorii adăugate	%	99,58
25	2	Rata marjei brute de exploatare	%	99,58
26	3	Rata marjei nete	%	85,34
27	4	Rata marjei brute de autofinanțare	%	85,35
28				
29				

Fig. 8. Generating economic indicators - Rate of return

13	Nr. Crt.	INDICATORI DE RISC FINANCIAR	UM	Valoare
14				
15		Evaluarea riscului din exploatare		
16	1	Pragul de rentabilitate (punctul critic)		
17	a	Exprimat în unități valorice (cifra de afaceri prag)	Lei	374,219
18	b	Exprimat în unități fizice	Kg	124,74
19	c	Exprimat în unități de timp	zile	2,245
20				
21		Alți indicatori de evaluare a riscului		
22	1	Coefficient de flexibilitate (indicator de poziție absolut)		59625,781
23	2	Coefficient de volatilitate (indicatorul de poziție relativ)		159,334
24	3	Coefficient de levier (coeficientul de elasticitate)		1,006
25				
26				
27				
28				

Fig. 8. Generating economic indicators - Indicators of financial risk

CONCLUSIONS

In the present, agricultural practices is influenced by the knowledge of the farmer regarding both the economical and technological aspects of production. It is important for him to know how to estimate and evaluate production costs under various prices and operating conditions. Use of information technology in support of specific activities on the agricultural sector is a matter of great topical interest, under the terms of a society increasingly based on normalization, where markets are becoming more competitive, with consumers.

The "farm" may regulate its activity by management based on information processed and used efficiently, taking decisions needed to guide the work. Information and communication technology provides the means to draw together management, information technology and production, is a tool that makes information more accessible and therefore improves the quality of decisions. Development informatics, both in appearance high performance computers and the development of thinking computer, the software industry and information systems in particular, has led to an organization that responds very well information needs raised by a field as complex as agriculture.

The role of the information system is to provide management information to decision makers at various levels of the organization, namely:

- to plan the best allocation of resources (eg staffing, operational mobility and the amount of resources required);
- to choose one of several possible or to conduct a study on the impact of the use of certain resources;
- to control daily operations, such as comparing the results obtained with the current planned.

In conclusion, any agricultural modern profile regardless of size, ownership and socio-economic space in which they operate, requires a management style based on flexibility, dynamism and foresight, which is unthinkable without information, transactions and quality to underpin decision making. In order to increase the competitiveness of farms on domestic and foreign markets is absolutely necessary to improve the existing information flows at the branch level and providing methods for grounding business and the use of information technology to innovate the field, taking into account the strategies defined at European level.

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