

УДК 338.2

**ЗБІЛЬШЕННЯ ПРИБУТКОВОСТІ ВИРОБНИКІВ ЗЕРНОВИХ КУЛЬТУР
ЗА РАХУНОК ЕФЕКТИВНОГО УПРАВЛІННЯ, ПЛАНУВАННЯ ТА
КОНТРОЛЮ**

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**MAXIMIZING PROFITABILITY IN CROP PRODUCING FARMS
THROUGH EFFICIENT PLANNING AND CONTROL MANAGEMENT**

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DOI: <https://doi.org/10.31732/2663-2209-2018-60-77>

Annotation. This article talks about the agricultural potential of Ukraine in the crop sector. Namely, that the Ukrainian agricultural business is currently represented by three main groups of producers: farms (up to 1000 hectares) of medium-sized agricultural companies (from 1,000 to 10,000 hectares) agricultural holdings. Comparing the profitability of large agricultural holdings and small enterprises, it should be noted that small businesses can be even more profitable than large holdings and this is confirmed by the recommendations of experienced agro-consultants on the ideal size of a profit unit, which is about 3,500 - 5,000 hectares. As a result, the emphasis on the development of small farms from a macroeconomic point of view is reasonable and tailored. Moreover, as the number of farms grows, competition will also grow, causing the need for well-trained specialists in the agricultural sector, and this

will stimulate the development of relevant educational institutions, which, in turn, will also be an advantageous phenomenon for the Ukrainian economy.

The author says that today the gross yield of crop production is strictly dependent on the organization and management of internal processes. Consequently, in such conditions it is difficult to overestimate the role of experienced high-quality managers; they must put all efforts into making the value chain profitable. Managers urgently need a new vision of agricultural production, the introduction of optimization of all available resources and control of key processes. It is very important to understand whether this or that management model is working correctly and whether or not the goals are achieved in the end. The author of the article focuses on in-depth study of the subject and an integrated approach to problems in the agricultural sector, and also gives recommendations and tips for improving the state of this industry. Also, attention is paid to the effective management of resources, reducing costs, improving the professional level of managers. For this study, in order to understand how the processes in the Ukrainian environment work, four Ukrainian grain producers were selected as target companies for a detailed analysis of management decisions, planning and monitoring the financial results of companies. In this article you will find a brief summary and conclusions of a detailed study.

Key words: agroholding, agrarian sector, crop production, small and medium business, profitability, farming, optimization of agrarian resources.

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Анотація. У цій статті говориться про сільськогосподарський потенціал України в секторі рослинництва. А саме, що Український аграрний бізнес наразі представлений трьома основними групами виробників: фермерські господарства (до 1000 га); агрокомпанії середнього розміру (від 1000 до 10000 га); агрохолдинги. Порівнюючи прибутковість великих агрохолдингів і малих підприємств, необхідно зазначити, що малі підприємства можуть бути навіть більш прибутковими, ніж великі холдинги і це підтверджується рекомендаціями

досвідчених агро-консультантів щодо ідеального розміру одиниці прибутку, яка становить близько 3500 - 5000 га. Внаслідок цього акцент на розвиток дрібних фермерських господарств з макроекономічної точки зору є розумним і рекомендованим. Більш того, з ростом кількості ферм також зростатиме конкуренція, що викличе потребу у добре підготовлених фахівцях сільськогосподарської галузі, а це стимулюватиме розвиток відповідних навчальних закладів, що, в свою чергу, також буде вигідним явищем для української економіки. Автор говорить, що на сьогодні валова дохідність рослинництва суворо залежить від організації та управління внутрішніми процесами. Отже, в таких умовах важко переоцінити роль досвідчених якісних менеджерів, що мають докласти віх зусиль, щоб зробити ланцюжок доданої вартості прибутковим. Менеджерам вкрай потрібне нове бачення агровиробництва, впровадження оптимізації всіх доступних ресурсів та контроль за ключовими процесами. Дуже важливо зрозуміти, чи правильно працює та чи інша модель управління і чи досягаються, зрештою, поставлені цілі. Автор статті акцентує увагу на глибинному вивченні предмета та комплексному підході до проблем в аграрному секторі, а також дає рекомендації і поради щодо покращення стану цієї галузі. Також, увага приділяється ефективному управлінню ресурсами, зменшенню витрат, вдосконаленню професійного рівня менеджерів. Для даного дослідження, щоб зрозуміти, як працюють процеси в українському середовищі, чотири українські виробники зерна були обрані як цільові компанії для детального аналізу управлінських рішень, планування та контролю фінансового результату компаній. У цій статті ви знайдете короткий підсумок і висновки проведеного детального дослідження.

Ключові слова: агрохолдинг, аграрний сектор, рослинництво, малий та середній бізнес, прибутковість, фермерське господарство, оптимізація аграрних ресурсів.

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Introduction. Ukraine's potential in the crop production agricultural sector is well known. While public media mostly focuses on big agro holdings, the significance of small- and medium sized enterprises (SME) in the agricultural sector is sparsely covered and grasped. Ukrainian agricultural business is represented by three main groups of producers: individuals' farms (until 1,000 hectares); middle-sized agro-companies (from 1,000 to 10,000 hectares); agro-holdings. According to the agricultural policy report of the Institute for Economic research and policy consulting issued in December 2013, by the end of 2013 agro-holdings (>50.000 ha) cultivated more than 6 million hectares which is about 27% of Ukraine's total 31 million ha farm land (2008: 12,1 %). Comparing the profitability of big agro holdings and small enterprises it needs to be noted that small enterprises can be even more profitable than the big holdings. This is supported as well by recommendations of experienced agro-consultants concerning the ideal size of a profit unit which is about 3500 - 5000 ha. This is based on the fact that for this ideal size investing in heavy machinery is already sufficient (proven as well by the fact that big holdings work in clusters of 5000 ha) and one well experienced agronomist is physically able to supervise the farm of a given size effectively. Following this a focus on the development of small farms is from a macroeconomic point of view reasonable and recommendable. Moreover, with growth of farms quantity, competition for well-trained farming specialist will grow as well and, consequently, will require and foster the development of respective training facilities, which in its own turn will also be an advantageous phenomenon for Ukrainian economy. Different countries try to support their agro producers launching state programs, publishing materials on web-sites of their Ministers of agriculture (Canada, Australia etc.). Ukrainian government does not provide informational support for SME business and mainly focuses on big players.

Analysis of recent research and publications. Crop production is a customer market. Prices are highly volatile and dependent on demand. In addition, according to Anderson & Hanselka (2009) *“agricultural producers receive a much smaller portion of the consumer's dollar than do food processors, especially processors who produce*

brand name items” [1]. The authors mention that a goal of producers is capturing their profit by adding value to products. Managers’ function is to create a value-added business via boiling down to key ingredients for business: “*Adapt to market changes. Be open to exploring new ideas. Operate more as a resource manager than as a producer*”.

To make the value chain profitable managers require a new vision of agro production, optimizing all available resources and key processes. It is very important to understand if their model works properly and achieves the targets. Via some indicators the built model should be compared with similar models in the industry, which gives an opportunity to identify what is needed for improvements.

Anderson & Hanselka (2009) mentioned the indicators for value-added chain for farmers. All of them are important for sales and customers’ relations. At the same time there are some indicators, which show effectiveness of processes and resources usage within a production process of the value-added chain.

Economic environment uncertainty oftentimes presses to make a choice between options which people usually do not want to choose. At those times some people try to find new solutions how to combine resources in such a way that they give better efficiency. Agro producers have no power to influence market prices and other macroeconomics threats. However, they can influence microeconomics level and improve internal processes to receive better results.

Jibben (2014), publications of different organizations like USAID (2013) and UCAB (2014, 2015) support key dimensions where improvements are required to make an agro business successful:

- effective resource management (including information and knowledge),
- decrease of costs,
- improving managers’ decisions [2; 3; 4; 5].

Setting objectives. To understand how these processes work in Ukrainian environment four Ukrainian grain producers were taken as the target companies for the detailed analysis of a role of managerial decisions, planning and controlling on of the

financial result of the companies. In this article you could find a brief results and conclusions of the performed detailed research.

Research results. Resources management is an art of economic usage of recourses and maximizing their output. To obtain more profit it is necessary to: increase earned revenue. In agro industry it is possible only by increasing yields or producing more profitable products because there is no chance to influence market prices; spend less.

Johnson et al (2008) mentioned the key resources (assets) like people, technology, products, facilities, equipment, channels, and brand required to deliver the value proposition to the targeted customer. The target is to create the most favorable way of elements interaction. Authors defined that

“successful companies have operational and managerial processes that allow them to deliver value in a way they can successfully repeat and increase in scale. These may include such recurrent tasks as training, development, manufacturing, budgeting, planning, sales, and service. Key processes also include a company’s rules, metrics, and norms. As simple as this framework may seem, its power lies in the complex interdependencies of its parts. Major changes to any of these four elements affect the others and the whole. Successful businesses devise a more or less stable system in which these elements bond to one another in consistent and complementary ways” [6].

Managing all resources wisely and optimally is a task of planning. As there are many ways of organizing production planning helps to combine a complex of resources and find the balance between all inputs variations combining financial and non-financial factors.

The most difficult in planning is resource allocation among various uses finding the most effective and highest output. Planning process foresees a combination of all areas of business starting from strategic planning (What to produce? What is the most profitable this season?), operational management (How to organize the process?) to human behavior issues (How to manage people on a farm to make them motivated for achieving results in the most effective way?).

Plans from all these sectors are combined into one project plan, which has to achieve the aim for each of the project dimensions: scope, quality, time, cost and risks. The costs require resource planning (short-term and long-term), budgeting and control.

Effectiveness of resources' usage is visible from two main indicators: yields and costs of products. The crops' yields depend on different factors – climate, soil, operational processes effectiveness, technical agro solutions and methods etc. - which leads to variations from season to season. However, increasing of yields could lead to extra expenses within production process.

Jain (2006) described the law of diminishing returns (variable proportions) like the law which predicts the consequences of varying the proportions in which the fixed and variable factors of production are used. In other words, if the input of resource is constant, total output will increase beyond some point, then it will become smaller.

It is not possible to produce a large quantity of grain from a small piece of land. The production capacity of soil is limited. For long-term planning it is very important to consider that soil can be exhausted in case of very intensive and non-caring usage, which may cause damage and low yields in future. Marginal productivity is a core question for agronomists to fix a measure. This effect is quite important for resources effectiveness to be considered.

Costs management.

Outflows arising in business activity in fact generate revenue. Cost of products is a factor which shows economic effectiveness of agro producers. It synthesizes all elements of operational activity. Reducing costs of production is a worldwide issue. The strategic plan of the Maryland Agricultural Commission (2006) stated the problem for American farmers which is very similar worldwide:

“Producers have little control over the prices they receive for their products. Likewise, they generally have little control over input costs, which have risen much faster than prices. As a result, escalating costs of key inputs are reducing returns on agricultural investments. Insurance, labor, and wildlife damage in particular have had major impacts on farm profitability” [7].

Cost reduction, control over resources and some other issues are similar for different countries with certain elements of local specifics. A diagnostics of profitability problems is regularly required. Regular audit helps to define the current situation and plan the future.

Grain producers have the same structure of production expenses like other producing companies: production costs and non-production costs (administrative, sales and others). Production expenses consist of direct costs (salary of workers, materials and services which are relative to a particular plant or even field) and indirect costs which are difficult or impossible to split up between types of products. Indirect costs are usually allocated. Production costs analytics for crop producers are very similar and that makes possible the comparison with other companies. To neglect differences in size of companies and volume of production all costs are taken as costs per hectare.

It is very important to understand that increase of profitability is the first and foremost task of operational management and specialists. The task of top-management is to organize their work, motivate and support their knowledge to improve processes. Moreover, cost reduction is an issue for all the productions process which include harvesting, storage, logistics etc.

UNIDO (2006) rose a problem of losses related to post-harvest processes. For industrialized countries these losses are minimal, but for developing countries losses are up to 40%. The grounds for this can lie in the lack of technical facilities, lack of control and poorly organized operational processes, lack of technical knowledge and business skills. For the cost reduction plan all factors, processes, potential losses and their impact on the final result have to be considered [8].

Decision making process improving.

Management decisions in business are made very often, especially during the seasonal works in agro business like inputs purchasing, seeding, care and protection, harvesting, logistics, storage etc. These decisions' correctness is tightly dependent on correctness of information provided for this decision, correct and actual information is critical for success.

An effective decision maker can maximize benefits when they consider:

- 1) their own assets, including abilities and attitudes;
- 2) the consequences of their decisions; and
- 3) the value or satisfaction associated with each consequence.

A forecasting could not be a driving factor in the decision-making process. Digital computing changes the process of decision making and gives an opportunity to improve the process significantly.

Often management makes a decision intuitively, that with a big massive of information in constantly changing environment becomes less effective and may decrease competitiveness of a company. Neglecting information analysis or poor organization of processes present an overconfidence of managers, which according to Schoemaker (2004) has three main reasons:

“illusion of control” or a belief that it is possible to control future events.

“risk perception” or ability to accurately predict and consider future risks.

“distortion of information” or people's tendency to use heuristics.

It is very risky to base a decision on heuristics and not on real quantitative or qualitative data. If the decision is complex, it is impossible to make it properly and it is more likely that mistakes and biases are possible [9].

Management mistakes are highly influential on a company's financial result. Taking responsibility and basing such decisions on biases is very risky. There are the following types of biases: representation, availability, and anchoring and adjustment.

An optimal solution is always an assumption. There are a lot of relevant variables which have to be appropriately analyzed for decision making. Grounded on variables the decision-making process helps to predict outcomes and reduce the likelihood of risky decisions.

In the agro industry this topic is really crucial because of typically conservative attitude of countryside people and natural resistance to changes. However, there are a lot of practical examples when decisions are made intuitively because of lack of information, absence of actual figures or because “it was always like that”.

Transparent managerial reports and accounting (including operational data) is a good ground for creating a strong basis for decision-making process. It allows the top managers:

- to receive correct information on time,
- to detect a real status in a particular part of company (inputs or cash available, stock balance etc.),
- to manage costs and priorities,
- to control processes,
- to plan financial result both short- and long-term.

These data are must-have in any company to be competitive and flexible in a constantly changing environment and to make fast and correct decisions.

Conclusions. Gross profitability of crop production is tightly dependent on internal processes organization and management. The following factors have a high level of influence on a farm's performance:

- planning and control systems organization by supplying to managers information about the business in whole and in details and giving an opportunity to maximize profitability via costs reduction;
- transparency and validity of accounting and control systems which can help to detect problems quickly and adjust processes when it is necessary;
- non-financial factors whose performance and organization status may create opportunities or risks:
 - 1) Organization of operational processes and Resource management.
 - 2) Combination of outputs and costs.
 - 3) Document and information flow.
 - 4) Human factors and work attitude.
 - 5) Knowledge management, networking and experience exchange.

Abovementioned key findings are based on executed survey and case studies. The case studies were benchmarked with the average figures for agro industry and the best

practices' data. The results for gross crops' profitability on analysed farms fit the average for the industry (except one company), but they are lower than best practices' data which shows an opportunity to maximize a performance. Data collecting process was conducted using abstraction, observation, comparing, analysis and description. All these methods in combination with the interviews supported the conclusion that the effective decision-making process has a strong influence on crops profitability. At the same time, an indispensable condition for correct managerial decisions is transparent, actual and accurate data. The implication of recommended actions can help to maximize profitability of analysed farms if required changes and improvements are done in a proper way. The conclusions and recommendations are based on a combination of following theoretical sources being applied and strongly recommended to be combined with a practical experience of a particular crop producer:

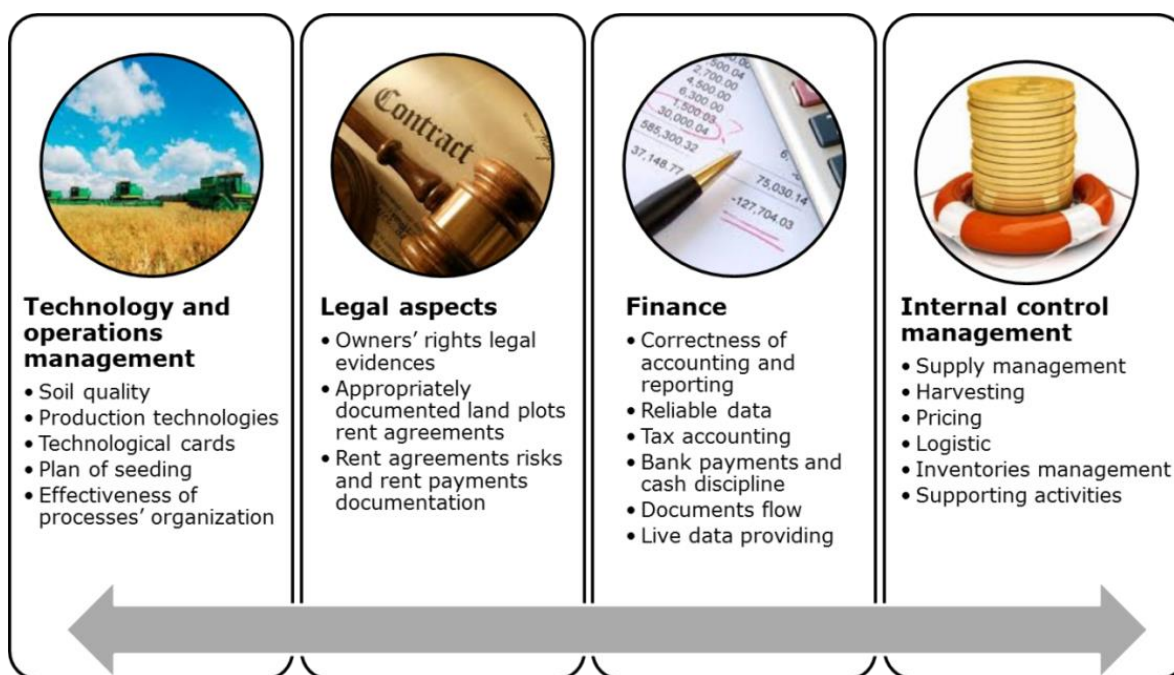
- project and financial management techniques and tools for planning and budgeting,
- management control systems for setting measurements and their control,
- operational management techniques and tools for effective resource management.

The technology and resource management is a core block of a crop production value-added chain, a part of its operational activity, which generates gross profit. This underlines an importance of the question for all farms as all of them require improvements in this area.

It is highly important to involve staff in all changes and improvements. As world practice shows failure of projects cannot occur on the technical or managerial level. All changes are always related to stakeholders interests, including workers and executors. The initial target for any changes is to change a style of thinking and people's behavior. The output of resources can be maximized via improving controlling tools which implementation success depends on people's attitude.

To launch the process of planning & budgeting improvements a current state of things of a company has to be audited for understanding of resources available, such as:

- Land, machinery and storage facilities, including legal aspects;
- Technology, soil quality, norms for inputs and required external services;
- Financing, suppliers and customers relations;
- Accounting organization, technical solutions used for accounting;
- Organization of the internal control and management;
- Information and document flow organization.



Picture 1. Set-up audit for planning and control processes improvements

The farm management has to understand clearly the following information: which crops were more profitable in the past seasons, yields and profitability for each crop produced during the last 5-7 years (dynamics and fluctuation), benchmarking analysis of the results with the industry and best practices, the most successful segments; a potential of the farm to produce other crops or/and plants or to render agro-services to the 3rd parties if there is a possibility.

Having information about available resources and potential of the farm an analysis of the market is required:

- market analysis, trends and perspectives (both global and local);
- SWOT analysis for defining the most perspective dimensions and crops;
- competitors in Ukraine and in a particular region, SWOT analysis for own farm and for the main competitors in order to define competitive advantages or ways of cooperation;
- potential suppliers who can give better prices or/and conditions for cost cutting strategy;
- potential buyers of products, analysis of an opportunity to sell products directly to foreign customers, terms and logistics in relation to a particular buyer;
- storage facilities' analysis in a region and prices' analysis.

This preliminary stage should result into a strategic business plan for the following 3-5-7 years, which will contain Objectives, Goals and Measurements: crops, other agro production or processing (if so) or services provided to the 3rd parties; yields and costs; gross and net profitability etc.

When the concept is developed it shall be negotiated with an investor. A core responsibility of a manager is selection of the most promising alternative, presenting it to the investor and obtaining a confirmation. The operational seasonal plans have to be prepared based on the strategic plan confirmed by the investor(s).

Operational processes in crop producing farms have a lot of similarities to the project management, which allows to use project management techniques and tools. An abstract model of project planning for the crop production is designed similarly to the project management system. To process the operational plan a setting of strategic dimensions is required, like it is described below:

Scope of works: initiation, indicating project's screening and schedule, scope definition, verification and change control, works performance and allocation.

Quality: planning, assurance and control via measuring success on each stage of the implementation.

Time: defining a life cycle, sequencing, duration, development and control.

Cost: resources planning, estimating, budgeting and control, costs calculating, etc.

Risks: assessment of possible risks for a particular alternative and how it is possible to reduce it or neglect.

The budgeting methodology to be applied for crop producing is a breakdown structure (WBS) which combines expenses depending on works performed. At the same time a technique used for the budget creation is bottom-up budgeting. Each department (or person) - who performs specific works - creates a part of the budget related to their responsibilities and limited scope of works. That means organizational breakdown structure (OBS) is used as well.

A control process targets at achieving planned variables and preventing risks. There are three core questions to be answered for a control mechanism in the project management:

- where are we? (measurements);
- where do we plan to be? (evaluation);
- how can we get on track again? (correction).

Combination of control analysis data are combined in a matrix, which includes different aspects of the project progress on OBS and WBS levels. The report includes all data for each executor of the project and recordings may create a current status of the project, chronological data, accumulated data and total project performance. The roll-up mechanism generates reports according to management needs. The following financial tools shall be applied for costs and budget control:

- Single crop production analysis,
- Costs ratio,
- Earned value concept (EV) with blocks (graph).

Such approach helps to create a reasonable structure where plan implementation results are visible, and a particular middle-level manager takes his part of responsibility. Such results are the base for identifying KPI of a particular manager or a department, and motivate to fulfill plans.

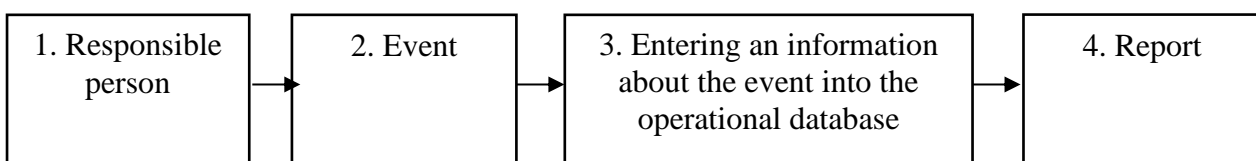
Detailed analysis of risks is required if formal risks quantification is significant and might have a strong impact on fulfilling plans. This analysis has to be done by each manager who participates in planning and budgeting processes.

The main source of control is accounting database which includes actual operational data. Operational accounting may include information which has no cash-equivalent and nominated only in units/weight/etc. Setting an automatic system of operational accounting will cover a full cycle of the operational process from purchase of inputs till sales transactions and logistics. This is an all-purpose program that enables:

Planning settings for understanding by all involved people a scope of work, variables, measurements and goals;

- Execution: being a guideline for all processes, and appointing responsible people for guidance and control;
- Inventory organization via setting norms and consumption statistics, showing actual balance for inventory planning and management;
- Monitoring and control.

The operational accounting has to be done by staff available as an additional obligatory task and implementation foresees some changes in daily functionality of staff members and departments interaction.



Picture 2. Description of information flow algorithm within a farm

The algorithm has the aim to maximize factor neglecting, implementing an automatic solution where it is possible. The abovementioned chain has to take 1-2 days maximum for providing actual information. Information is only valuable if it is actual [10]. The more accurate and timely it is provided the more valuable it is for managers.

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