

RISK MANAGEMENT IN AGRICULTURE UNDER THE CLIMATE CHANGE

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Abstract

This paper aims to develop a better understanding of risk management in agriculture issues. At the same time, it is necessary to specify the particularly important role of managerial control and audit as ways to reduce the action of risks in managing the effects of climate change in agriculture. This article will describe techniques, which support managers so that they can mitigate the effects of risks, such as: delays in running projects, inability to obtain environmental permits in a timely manner, etc.

In this context, it can be noticed that the professionalism and qualification of the manager is propagated even in what we could name the effectiveness of performance in agriculture. In order to achieve the predetermined objectives, project management carried out in specialized units on the agriculture implies, including appropriate risk management. In this regard, at least three fundamental objectives could be specified as follows: (i) identifying likely events that may have an undue impact on the results; (ii) closely and actively monitoring identified risks; (iii) adopting decisions to prevent environmental incidents and to strengthen internal / managerial control to give full assurance on the achievement of pre-established objectives.

Keywords

project management, risk management, internal / managerial control, performance, agricultural policy, management strategy.

JEL Classification

F64; G32; O13; Q17; Q56.

Introduction

Essentially, `risk has no generally accepted definition, ` as quoted by Pfohl et al. (2010). Traditionally, the `risk is the potential economic losses, but in the scientific literature, it gets a broader perspective in the sense that risk is supposed to be a negative effect that prevents companies from achieving their intended goals` (Bagozzi and Yi, 1988). From research conducted over time, in this area it can be suggested that a lower level of environmental risk and the implementation of effective risk management are associated with the economic benefits of the company / institution concerned. However, agricultural performance and risk management are subjects of contemporary interest, but to date there is no real evidence of their relationship.

Unfortunately, the environment is increasingly exposed to the factors that may lead to the risk of incompatibility, and because of climate change appear negative effects on agriculture. However, from the perspective of improving technology is desirable to eliminate the potential threats of technological processes. Methods of assessing risks to minimize them shall be applied in accordance with the conduct of organizations and the most common ones are used in the field of quality and safety.

In fact, this study can correlate environmental risks with the application of effective company management so that, 'to conclude that these are the key factors in business relations with investors' (Aktaş et al., 2011), 'but also with banks' (Weber et al., 2008), 'as well as other stakeholders.' (Hofer et al., 2012).

Robertson specified that an adequate risk management plan, 'will implement it to respond when an unforeseen event occurs and there is an imminent threat of pollution or possible damage to the environment since the workload of the agent / operator'; also, will be essential to have the necessary response to rebalance and remedy over a longer period. However, it's important, in order to manage different stakeholders who, present one or more risks. For example, for an environmental / agricultural manager, it might include risk manager information or other direct reports, so that, to submit risk documents to appropriate regulatory agencies where appropriate as well as to respond to potential environmental incidents when they occur' (Robertson, 2009). Most often, an environmental manager is responsible for environmental issues, as well as, their sustainability and others. But there is also a risk management department which in many cases deals with insurance, and these two departments work separately and not together. That is why we can consider that it would be necessary to include these two different ways in order for the institution / company to carry out a precise risk management as a unitary one, where environmental risk and all other types of risk can be managed by a single department. Also, Robertson, added that 'risk management is actually a risk balancing act. The solid risk management creates a positive business environment for companies and minimizes or eliminates damage to the environment or the environment. It also reduces costs associated with operating activities and responds to environmental events, so it can help maintain a positive image for the various stakeholders'.

However, to achieve the success in the framework of the established agricultural decision-making, the following elements are important: transparency of procedures, better representation of stakeholders, the willingness of these parties to participate constructively and to know their predefined objectives, the orientation towards a qualified mediator and a conceptually developed basis of the underlying methodology. (Eisenführ et al., 2010). Further, these vast elements highlight the fact that decision support in environmental management can have a high degree of success for the different approaches underlying it. (Hajkiewicz, 2008).

Under the conditions of preventing the occurrence of risk results, organizations are trying to act in a systematic way and, because, is implemented the integrated management system, which is based on the formal systematic guidelines included in the following standards: ISO 9001, ISO 14001 and PN-N / OHSAS 18001. At the same time, they shall be given the tools and methods that can identify threats, as well as the results and estimation of their probability of occurrence and the significance of the results, in short, defining the associated risk. 'Techniques relate to different types of risk, however, their goal is always to ensure quality, minimizing environmental, agricultural and occupational safety. The organization's policy confirms that the most applied methods of risk estimation are the methods of research and estimation of quality and techniques for estimating risk at the workplace.' (Karkoszka and Soković, 2014).

According to the FAO, risk management is defined as 'a set of coordinated activities for managing and controlling an organization in terms of risk. It includes a structured, methodical approach to identifying, verifying and reducing exposure to risks achieving the desired objectives' (Food and Agriculture Organizations, 2015).

Subsequent, the harmful hazards could be remedied through alternative measures identified as most appropriate. Also, the communication and consultation with stakeholders should take place throughout the process to ensure that those responsible for decision-making on the implementation of the risk management process understand the concepts and results of the risk analysis. On the other hand, monitoring and verification must be carried out throughout the risk management process to detect changes affecting the risk and / or real risk criteria to identify emerging risks and to ensure that mitigation measures are effective. (ISO, 2009).

Thus, throughout the article we will present the description of the risk assessment methodology, but also the underlying principles underpinning the proper risk management. Therefore, the methodology applies the instructions for assessing the acceptability of environmental / agricultural risk. This is reflected by the risk-environment / agricultural ratio in close connection with the impact, occurrence and significance, as well as, the fulfilment of legal requirements and careful monitoring of environmental / agricultural issues. The methodology we discuss is consistent with integrated risk management and can be used to manage either the environmental / agricultural risk itself, or the integrated risk of improving the processes in each organization.

General characteristics of risk management

In the context of explaining the term of risk, it can be defined as a probability of exposing man and his goods to the action of a particular hazard of a certain size. Also, the notion of risk can be defined, as a random event that can strike goals and cause serious harm in all activities.

However, in specialized dictionaries we meet established, such as '... the danger, the more or less likely inconvenience to which we are exposed', but also '... exposure to danger, loss or failure' (Le petit Larousse) or '... the chance to suffer harm (something bad) or loss' (Webster's Dictionary).

Risk is the likely level of loss of life, the number of injured, damages to the properties and economic activities of a certain natural phenomenon or group of phenomena, in a certain place and in a certain period. The elements at risk are the population, property, ways of communication, economic activities, etc., exposed to risk in a certain area.

Researcher, Slaymaker, found that Risk (R) is the mathematical product of hazard and vulnerability, expressing the relationships between a particular phenomenon and its consequences (Slaymaker, 1999). Thus, we can further specify, the fact that a certain risk can be expressed by a mathematical formula, which represents the product of hazard, risk and vulnerability: $R = H \times E \times V$, where R = risk, H = hazard, E = risk-exposed elements, V = vulnerability. From this expression, it follows that, depending on the size of the hazard, of all human beings and their goods and their vulnerability can characterize the risk. In order to assess damages from natural or anthropogenic sources, the calculation is based on the above formula. The risk cannot be completely eliminated from any activity, and the only valid option remains to 'produce' a risk management strategy that brings with it a series of decisions that are necessary to combat the effects of various factors, resulting in reducing the threat that threatens people's lives, the destruction of goods and the environment. Getting a risk assessment is considered the first step in the strategy.

A risk assessment is necessary to ensure decision support and remedial action. In this way, an efficient use of the available resources. Existing risk assessment methods can be assessed by comparing with the relevant parts of an international risk management standard.

Whereas, the efficient risk management requires financial resources, skilled workforce and time - it is itself associated with cost, delay, and inaction risks. It is necessary to specify that risk management is not, however, a completely innovative or unfamiliar exercise. Agricultural risk management is only a part of a much wider set of governmental needs and national priorities. In most cases, the economic and social development leads to the introduction of new processes and products, as well as to the growth of potential risk areas, because we do not consult with risk assessors or agricultural scientists in advance.

The risk management helps managers to ensure that their strategies are strong and to identify weaknesses and mitigation actions to manage operations and minimize risks. But we need to specify that a solid team is needed to solve the problems and risks that arise so that it is able to take the right measures.

The actual approaches in risk management with projection on environment in correlation with agriculture issues

According to the European Union Guideline on Performing Risk Analysis More Relevant to Establishing Management, 'Current approaches to assessing health and environmental risks lead, frequently, to a variety of technical expressions of risks, on the basis of which the objectives, results or other technical parameters are taken into account, which are, sometimes,

indirectly related to the protection objectives expected by risk managers and decision-makers' (Scientific Committees, 2013). However, we must add that sometimes, 'risk managers' cannot establish an appropriate framework for achieving the risk objectives, such that, to reach the desired results with the help of risk assessors. Unfortunately, often, the specialists may have problems in interpreting the expressions used in risk assessment reports because they do not address the risk directly. Thus, methods of risk assessment, procedures and expression of results are rarely cost-benefit or multi-criteria analysis that risk managers and policy-makers have to inform when making decisions. An important challenge, in this process, is characterized by the possibility to establish and standardize the approaches and methodologies needed to measure and quantify the risks, benefits and costs. As a result of the lack of such specific approaches, comparisons of parameters without standardization the result can vary considerably based on their underlying assumptions, using only existing policy comparisons.

Essentially, the environmental policy focuses apart from applying the legislative approach to implement effective tools that can support the company's growth of its competitiveness, profitability, including the opportunity of vacancy, who helps, in this way, to reduce the negative impact of human activity on the environment. The international environmental standards are not intended to be used to create non-tariff barriers or to increase or change the legal obligations of the organization. The general purpose of international standards is to support environmental protection and pollution prevention in relation to socio-economic needs. The sustainable development indicators are needed 'to provide solid bases for decision-making at all levels and to contribute to the self-regulation of the sustainability of integrated development-environment systems', according to the Declaration of Agenda 21 of the United Nations Environment and Development Conference, (Rio de Janeiro, 1992).

Strategies applicable to environmental / agricultural management

The management strategy consists of the following three components: (i) strengthening institutional capacity for environmental / agricultural assessment, involving the creation of a

specific procedure in the environmental factors analysis and the provision of technical assistance, training and equipment to the functional unit; (ii) development of an environmental assessment procedure to institutionalize environmental analysis, as part of the selection, design and execution of projects; (iii) setting up an environmental monitoring system to verify the implementation of the improvement measures and the imposition of sanctions for violation of the law.

If the established and acceptable standards and criteria for air quality, water and agricultural land are non-existent, they lead to a constraint in carrying out environmental impact assessments. International standards have a role to play in determining the present and future environmental quality thresholds by comparison with the results analysed. However, there is a need for a well-founded legal basis for standards to be defined in accordance with existing provisions. On the other hand, another constraint that may be possible is the implementation of the environmental impact assessment process which is limited to establishing and coordinating inter-institutional actions. These restrictions can gradually overcome, i.e. as the agencies responsible for implementing the evaluation process will acquire the necessary experience in the implementation of the activities. The environmental manager will report with one of the following conclusions: (a) the correct application of the measures is verified; (b) justifications for adjustments or delays; or (c) violations. In the event of breaches of applicable legislation that are reported, the inspector will issue a correction notice, specifying the violation and how to correct it. However, if the correction notice is not complied with and refusing to meet the criteria, the qualified person on environmental matters will issue a notice of non-compliance, which may range from a fine to work suspension or suspension of the contract. The risk management is an administrative workload that requires the implementation of legal, economic, and available technology standards. Based on an activity that can cause a disaster, the objective measures must be taken into account which should be applied at the moment and not according to the personal perception of risk. Such that, in most cases, choosing the right decision is focused on individual choice.

Firstly, the risk management involves identifying probable events that may have an undesirable impact on the results. When archiving is not properly organized, there may be a risk that, in the case of an audit, the requested documentation cannot be made available. In this case, finding a deficiency can no longer be countered with arguments, so the risk of applying a financial correction becomes a necessity. For example, the manager does not seek to identify opportunities, but only the possible constraints that may cause the objectives to fail.

In the secondary plan, careful and active monitoring of identified risks is required. If the situation so requires, the list of risks can be changed operative, either by introducing new risks, either by removing some of the risks from the list which no longer pose any threat to the achievement of the objectives. Also, where appropriate, the initial statement may be subject to possible corrections or possible re-forms.

Finally, the third specific purpose of risk management refers solely to the prevention / correction decision. Such a decision needs to be adopted on the basis of complete, accurate and thoroughly verified information and is usually aimed at strengthening the internal / managerial control of the Project Management Unit (PMUs).

The risk assessment involves identifying its probability and impact level. Probability refers to the chances that, for various reasons, the risk of activation. It is determined by taking into account several probable consequences that the risk could trigger. For this purpose, both available statistics and brainstorming can be used. Probability is directly proportional to the number of events that may occur at risk activation, while, the impact relates to the

consequences / effects that the risk may once have triggered. Therefore, the higher the negative consequences, the greater the impact of that risk.

Considerations on risk elements with implications in the project management implemented in agriculture

The efficient agricultural policies are essential to increase the demand for safe and nutritious food in a sustainable way. While growth in demand for food, feed, fuel and fibres presents significant opportunities for agriculture, government policies must address challenges such as increasing productivity growth, enhancing environmental performance and adaptation to climate change, and improving resilience of farm households to market shocks brought on by weather and other unforeseen circumstances.

For the development of agriculture, will be needed of structural and technocratic reforms with commercialization and modernization in the sector. It will increase the production level in the sector and become a source of both goods; industrialization will create more employment and less inflation. With the development process in the sector if economy achieves more production and employment with low inflation, is also considered as sustainability. For sustainability of agricultural crops production, it is necessary to starts various reforms in the sector i.e. reforms about crops production, basic, infrastructure, extension services and mechanization.

The OECD is a founding member and partner in the International Organisations Consortium for Measuring the Policy Environment for Agriculture, which is working to develop a harmonised and consolidated database of well-documented agricultural support indicators for an even larger set of countries.

European funds should be seen as an important source of funding which can lead to the achievement of agricultural objectives and project management is a useful tool that can make this progress possible. An important role in this process it has the state's ability to channel with efficiency and effectively funds to users and appropriate investments leading to economic growth based on agriculture. In this regard, the European Bank for Reconstruction and Development (EBRD or the Bank) promotes rational and sustainable environmental development in all its investment activities and technical cooperation, in accordance with its constituent instrument. The EBRD considers social sustainability and the environment is a fundamental aspect of achieving results in accordance with its mandate on the transition and recognizes that projects that support social sustainability and the environment are among the top priorities of its activities. Successful agricultural transformations are based on following:

- Developing an agricultural transformation plan demands prioritization—a plan will not succeed if it tries to cover everything. Instead, it should focus on the changes that are most likely to kick-start rural economic growth. Successful plans identify goals in a limited number of crop and livestock value chains, cross-cutting agriculture sector enablers (such as lower transportation costs or access to irrigation), and specific geographies.
- Agricultural transformations often focus too much on volume rather than value and on productivity of row crops rather than opportunities for high-value crops, downstream processing, and livestock. Farmers everywhere are businesspeople. Farming households in developing countries balance a portfolio of crops, livestock, and nonfarm work. Because they feed their families with some of the farm output as well as sell into markets, they make decisions based on their potential profit, risk, and cash flow across family food consumption as well as sales. Too often, agricultural plans recommend particular commodities without paying attention to this basic calculus of farmer household economics. Successful agricultural transformation plans give farmers the opportunity to raise their household incomes.

- The success of any agricultural transformation relies on how well millions of smallholders and small- and medium-size enterprises can be helped to change farming practices as quickly and effectively as possible. The critical enabler, without which an agricultural transformation is likely to fail, is a frontline “change agent” that helps farmers modify their practices. Change agents are people who farmers trust and interact with regularly.
- Effective change agents exist in both the public and private sectors. Many scholars cite countries’ investments in national agricultural extension services as critical to agricultural transformation. Ethiopia’s investments in expanding the agricultural extension system are believed to have accelerated its agricultural transformation. Other mechanisms for organizing farmer-facing change agents, though, have also played critical historical roles in transformation. Agricultural cooperatives, for example, can provide technical assistance to farmers but can also fundamentally change the farmers’ risk and potential revenue by providing access to storage, equipment, finance, and marketing services.
- Change in agricultural systems requires multiple parallel advancements. For example, improvements in agricultural extension and seed systems might enable farmers to switch to a more productive hybrid seed, but lack of access to fertilizer (upon which the hybrid depends) could prevent productivity increases and leave the farmer unwilling to buy hybrid seed next time. As in any complex economic system, when so many elements are interrelated, any one of them can become a constraint and stall progress.
- Approaching transformations with an investor mind-set is critical to the success of the process. In kick-starting agricultural transformations, coordination among government, donors, and civil society is critical, but it is equally important from the start to plan for private-sector engagement. Without this, the transformation may proceed more slowly, stall, or not reach scale.
- Agricultural transformation is more than changes in farming practices. It is about catalyzing transformation of a country’s rural economy. As such, more than agricultural trade and subsidy policies are in play. For example, laws and regulations that influence banking, labour, infrastructure, land ownership and access, access to water, telecommunications, taxes, and insurance are also critical considerations.

Conclusions

While preventive management involves the inclusion of ecological restrictions in the design and exploitation models of production technologies, such that to use as few non-renewable resources as possible, to minimize the volume of waste, residues, harmful emissions.

However, for prudential purposes, but also to mitigate possible effects of risks, the manager will proactively act to identify the activities for which it is necessary to develop operational or system procedures. As such, management of units engaged in environmental issues will formulate a predominantly preventive line of conduct and, in this regard, a special role will have it the professional management of risks.

In conclusion, institutions should develop strategies that respond to the vision and development goals, to encourage creative thinking within employees, generation of ideas beyond the imposed formal limits on the basis of sound project management knowledge to ensure they increase performance on all levels.

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