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# INCREASING THE AGRICULTURE BUSINESS PERFORMANCE BY MIGRATING TO CLOUD SERVICES OF INFORMATIONAL STRUCTURES

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**Abstract:** *To experience a rapid development in the past decade brought the IT industry ordered the establishment of new performance indicators for world economies. These new indicators refer to the information society development. Thus, is going to be the question in any economic the administration and development of the informational structure. This paper aims to analyze the Company's performance growth opportunity of farming business in agriculture, by migrating to cloud structures.*

**Keywords:** cloud computing, management, agricultural production, smart agriculture

**Clasificarea JEL:** Business Management, Agriculture Project Management

## INTRODUCTION

Although many of the old challenges remain, in twenty years Romania has turned into an open country as part of the global market. After joining the EU in 2007, Romania had to adapt to new requirements imposed by EU legislation, accepting new challenges.[8] Moving forward, Romania must find its place in Europe and must learn to thrive under a new set of circumstances

Today, the rapid development of technology is perhaps the most significant feature of our world. Everything, or almost everything today depends on technology, be it social aspects, the fight for resources, generate solutions to the complex problems of the economy and the environment. Regarding technological developments that made the difference and which has seen perhaps the most significant progress of the last decade, it is IT.

On small-scale farming most businesses are less profitable than it ought to be. Reasons for the low profitability can mention lack of access to inputs, the lack of capital and reduced ability to withstand risks. As stated in the expert reports (World Bank, 2007), [7] a major contributor to the low profitability of businesses in rural areas is the information gap that is limiting the adoption of available technologies and management practices.

## MATERIAL AND METHOD

The material presented in this article was developed under a research on implementation and usage of cloud computing services in the Romanian agriculture business environment. The methods have focused mostly on literature review and results achieved in various research profile. And methods were also used to correlate data.

## RESULTS AND DISCUSSIONS

As a vital branch of each society economy, agriculture must face a large number of challenge in the coming years. Statistically, FAO (Food and Agriculture Organization) anticipates that the world population will be over 9 billion until 2050. Thus, in order to provide food requirements it's necessary to increase over 70% of food production.

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Community agricultural industry growth through the introduction and use of modern technologies has generated high interest for the European Union leadership in promoting smart agriculture technologies.

Thus, scientific conferences of the European Union will have the directions carefully as crops and livestock. These directions will be treated in view of the latest advances in applications:

- Big Data & Data Analytics;
- Cloud Computing
- Drones;
- Robotics & Automation;
- Internet of AgriThings;

On agriculture as a business, research reports from the field (Brugger F., 2011) put in a wider cycle of agricultural production and the use of software, creating a complete picture of the economic, social and institutional. The report also highlights the existence of a potential initiative and experience of IT technology to encourage performance and productivity of farmers, agri-food value chain including service support, as shown in Figure 2. [1]

Figure 1. Agricultural activities in a business perspective



Processed F. Brugger , 2011 Mobile Applications in Agriculture, Syngenta Foundation [ 1]

This perspective on the structure and organization of food involves many stakeholders and coordinating agents. There are also Included intermediaries (brokers , processors , exporters and retailers), support organizations ( agents extension , NGOs , foundations , researchers, government agencies) , service providers (banks , insurance) and consumers (internal and external) ( Figure 1 ).

The contribution of ICT involves collecting, processing and sharing / disseminating information. Each party involved in the agricultural value chain has different functions, interests and information flows must be managed. Some studies groups IT after the following categories of information flow from agricultural environment by fulfilling the need of communication between the parties, such Parikh et al., 2008 (4 ) distinguishes three categories:

*link-to-link (L2L)* – this flow of information is necessary to coordinate the products distribution throughout the value chain.

*peer-to-peer (P2P)* – necessary communication and information exchange among members of a group of experts with the sector.

*end-to-end (E2E)* – communication between producers and consumers to facilitate the exchange of non-economic values as inputs external for market pricing.

Another example of an information provided by computer applications is published by (F. Brugger , 2011). [ 1] In view of this study group focuses on information in the position of agriculture as follows: ( figure 2)

- *Extension services*

The applications discussed in this category covers communications required to transfer and exchange of knowledge and experience to and between farmers, to facilitate research and dissemination of information from domestic agencies to farmers. This flow of information contributes significantly to addressing the shortage of competent small producers and offers the potential to touch many more farmers than traditional ways.

- *Market Information and Interaction*

This category tighten the flow of information necessary to coordinate acts of procuring and distributing products throughout the process of increasing their value from early stages until sale to the consumer. It is hoped that using the software will improve transparency and market efficiency and strengthen the position of farmers as sellers of goods.

- Market information - these prices include information systems (ie . Market prices of various inputs and agricultural commodities trading in various locations).

- Facilities commerce / trading platforms: trading systems and platforms to identify the best opportunities to buy or sell goods and exchange platform.

- *Services and Support Systems*

- Business Process Management: It aims to maintain full operation of production within the parameters of quality, quantity and time required by the basic objectives of production and the quality assurance of functional stability of production while the variability of input disturbances environmental and the dynamic market requirements;

- Quality control: communication between buyers and sellers, producers and consumers, to facilitate the exchange of product quality (eg. Determining the quality of a product) and non-economic values as external inputs for determining the market price (eg. Product certification fair trade, maintaining quality standards, ECO label, verify the origin of the product).

It is obvious that Cloud Computing technology is a developing field of information technology (ICT), but for now, there is no compatibility for each project or application. Such projects or applications, are not suitable for cloud migrate. If, management, customers and end users are satisfied with the current arrangements for hosting and managing the current system is cheaper than cloud platforms option, then there is no reason for migrating to the cloud [6].

A definition of cloud migration is given in "Cloud Migration Challenges and Its Benefits Issue", published in 2010 by Mr. Shrikant and D. Bhopal. (5) As defined in cloud migration is the transition of databases, business applications or IT systems of companies to cloud platforms, or moving them from one cloud environment to another.[3] Migration often involves moving data to the cloud , or other business items between cloud environments, also called cloud to cloud movement.

Today, many companies in the national economy, want to migrate databases with existing information systems to cloud platforms as they begin to have problems in adopting new

technologies, platforms and new standards. The literature identifies a number of issues, as follows:  
(5)

*Low agility* -Because these applications are compatible with the new technology, it takes significant efforts to make changes to existing digital content;

*More time on the market* - In order to support and diversify the business, it takes more time to launch new services and features;

*Cost of maintenance* - Over the years, it becomes costly maintenance of personnel for system maintenance and routine updates;

*Difficult integration* – Integration of older application with the new and modern standards - based technologies and special services is a difficult but necessary;

*Difficult updated* - Especially older applications client-server type applications require a client application to be installed on workstations (desktop computers, laptop..etc) so that the user can access the applications.

Figure 2. The information requirements and business processes that provide opportunities for applications



Processed F. Brugger , 2011 Mobile Applications in Agriculture, Syngenta Foundation [1]

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Because the transition of applications and databases of customers on cloud computing makes the level of services provided in the cloud environment is comparable with IT services offered in traditional media. Failure to properly migrate applications and database servers in cloud computing may lead ultimately increase costs and decrease turnover of the companies, thus negating any potential benefits of cloud computing platforms. To ensure successful migration of existing applications, in the literature are offered a series of measures such as: [2]

1. Analysis of applications and workloads;
2. Drawing up of business plans;
3. Develop a technical approaches;
4. Adopt a flexible integration model;
5. Security and confidentiality is mandatory;
6. Managing migration;

**Measure 1** *Analysis of applications and workloads*

Evaluation of applications and workloads for cloud availability, enables organizations to determine which applications and which data can be or cannot be easily moved to the cloud environment and what can be sustained delivery models (public, private or hybrid).

**Measure 2.** *Drawing up of business plans*

Developing a business plan for migrating applications to the cloud requires developing an overall company strategy for migration to cloud and to determine the specific information describing the current state and demonstrating the advantages of cloud computing, not only to reduce only costs but also get a high turnover. In the context of a strategy to farms for use cloud computing services, extending to issues related applications business environment, we can identify cloud services required to validate a proper migration strategy.

**Measure 3.** *Develop a technical approaches*

In general, there are two service models target potential for migration of applications and databases existing in an organization: (a) Infrastructure as a Service - IaaS (service IT integration scalability cloud model the customer to migrate applications and data bases) and (b) Platform as a service - PaaS (an iT service that provides the client a set of software components that it can use to implement their own electronic services).

**Measure 4.** *Adopting a flexible integration model*

It is common for an application to be migrated to a cloud service to have connections for various types of applications and systems. Therefore, applications administrators need to understand the impact of these connections between applications and its behavior.

**Measure 5.** *Security and confidentiality*

Security and privacy are two of the issues to which customers show the highest concern for cloud services. Depending on the sector, in terms of priority may be above or below the availability and performance concerns.

**Measure 6.** *Migration management*

Given that factual execution of a migration is a complex and delicate, it is necessary pursuit of a migration plan: tasks, durations, resources, costs and implementation risks. Finally, after being well defined and "on paper" project on how the migration of applications, system administrators can plan, execute and manage effective migration to cloud structures.

## CONCLUSIONS

Technological changes of recent years have various problems in the national economy. One of the most affected business environments is the agriculture, where implementation of IT technology was slower. Among the main problems occurred more frequently in market demand can remember decreasing market agility, increased costs of administration and existing platforms maintenance, often structure information updating difficult. Such negative aspects can be reduced by migration to various services offered by cloud technologies.

Against the advantages of the use of information systems for business are taken into account the following

- Increased production and quality;
- Preserving and enhancing soil fertility;
- Reducing costs and increasing sales / profitability

Organization management system involves coordinating various interest groups. This includes categories such sons intermediaries (brokers, processors, exporters and retailers) and providers (banks, insurance).

Grouping IT applications is mainly the categories of information flows in the agricultural environment by fulfilling the need of communication between parties.

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