DEVELOPMENT AND UTILITY OF GEOREFERENCED ANALYTICAL TOOLS IN RURAL AREAS

Andreas PAPANDREOU

Alexander Technological Institute of Thessaloniki, Faculty of Agricultural Technology, Department of Rural Development and Management of Agricultural Enterprises, P.O. BOX. GR 55132, Kalamaria, Greece, Phone: +302310487035, Mobile Phone: +306940327602, Email: andreaspapandreou94@hotmail.gr

Corresponding author: andreaspapandreou94@hotmail.gr

Abstract

The purpose of this paper, is to investigate the planning and development a mapping, georeferenced and analytical tool and the utility of this, in agricultural sector. The methodological approach followed is based on the research of scientific approaches and scientific bibliography, also using technological innovations and aims at the overall assessment of the usefulness of such a technological development in agricultural sector. As a result of this research, it is considered that proper planning and optimal use of all the data held in their hands by farmers, is necessary so that they have sustainability in agricultural sector.

Key words: *agricultural analytic tools, agriculture topography, agriculture planning, agriculture development*

INTRODUCTION

Today, technology and agriculture have joined forces to provide a new way of cultivation, which enables producers to maximize their profits.

This is Agriculture Precision, which allows the modern farmer to manage his field at points smaller than that of the parcel.

Precision agriculture is based on technologies and instruments that initially record the existing state of the parcel, then manage the data and eventually apply the inputs covering spatially and temporally the needs of each plot item according to its variation.

But what problem can precision agriculture cure?

The problem that has arisen today is the first strand of precision agriculture, i.e. the initial recording of the existing situation, which is needed because it has been proven that there have been a bunch of breaches by farmers - landowners who have been building a boundary from owning their neighbor. [7]

The problem has come to light in recent years in Greece, as you are now implementing the cadastral registration of the country. [5]

Cross-cutting science, such as Topography, Information Technology, Agriculture, Legal and Analytical, combined with state-of-the-art technologies such as Decision Support Systems and Positioning and Positioning Systems, can bring development and solutions to many problems in the modern rural area. [4]

MATERIALS AND METHODS

The material used for this research is the sources of knowledge of the location of country Greece as well as the scientific literature. The methodological approach followed is based on the research of scientific approaches as well as on scientific bibliography and using of special purpose pc programs.

RESULTS AND DISCUSSIONS

This sector presents the design and development of a cartographic, georeferenced and analytical tool as well as it uses in the agricultural sector based on the superior methodological approach.
Clarification of Concepts

In order to fully understand the operation of the system, some concepts should first be clarified.

First of all, Topography is the study of the shape and characteristics of the Earth's surface or other observable nearby celestial bodies (planets, natural satellites or asteroids). More specifically, it is the scientific field of description and methods for the depiction and depiction of any such surface, natural or man-made on a topographic map. In another sense, the topography of an area refers to the shapes and characteristics of the earth's surface itself.

This branch of geosciences and planetary sciences has been expanded recently to include local geography, even local history and culture. [10]

Secondly, a georeferenced is defined as the process by which real mapping coordinates of a desired coordinate system are assigned to a digital image that has been derived by scanning an analytical map or an aerial shot on a scanner device.

Another one, is Business Intelligence Systems.

Business Intelligence refers to computer-based techniques that are used to find, surface and analyze business data, such as revenue from product or segment sales, or various costs and incomes. [9]

BI technologies provide historical, current and predictive views of the Function Management. The usual functions of BI are: Reporting, Online Analytical Processing, Analytics, Data Mining, Business Performance Management, Benchmarking, Text Mining and Predictive Analysis. [6]

There are also existing The Decision Support Systems in Agriculture, which are: Information technology designed to help farmers deal with complex crop problems by using the best available data and knowledge with best scientific practices. [1]

These technology systems support the smart agricultural approach, which can:
-Reduce labor and agricultural inputs,
-Minimize negative environmental impacts and also
-Increase crop yields. [3]

As for Agriculture Precision, the term was mentioned above.

Use of the program

The program, which we will use, is Microsoft's Power BI. [8]

The reason this program is used is due to its compatibility with other Microsoft Office tools. However, there are many programs that can perform this task.

The first part, is the introduction of data. We'll have to move three columns (Longitude, Latitude and Location) to one sheet and pass the data.

After we save it, we open the Power BI program. We go from Home tab to Edit Queries and load Excel with our records.
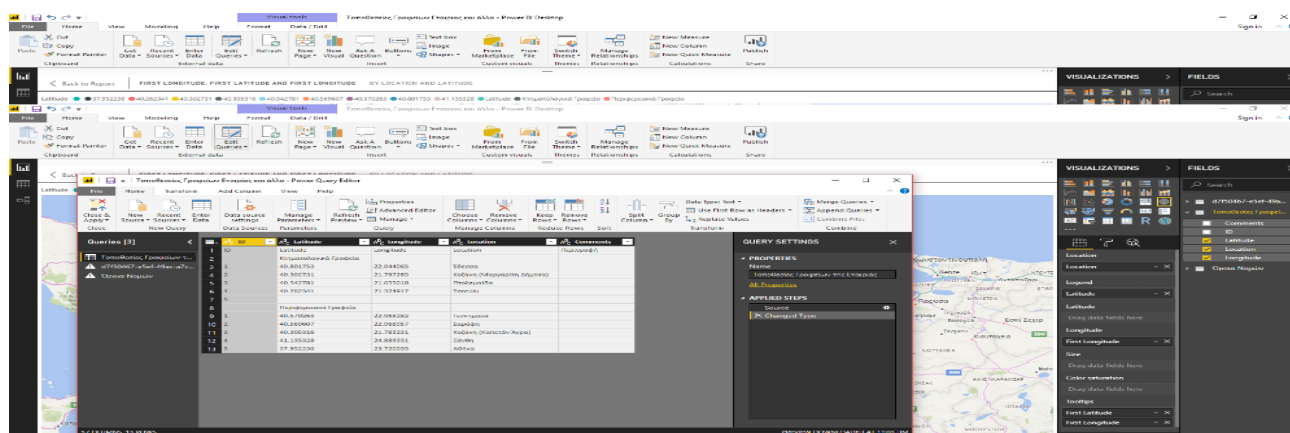

Photo 1. The insert of information.
Source: Screenshot of personal using and design.

Once we have completed our subscriptions, we will see dots appear in the map at the points we chose to, geo-map.
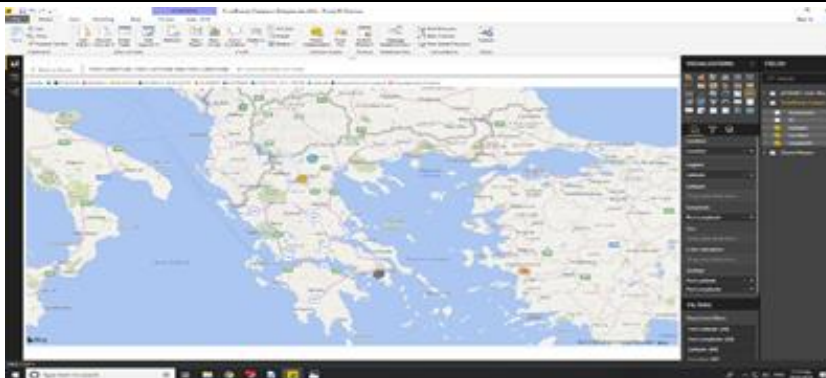
Photo 2. The first phase of results appearing

At each dot there will be the information we load and therefore the more columns in the original excel, and we will have more information if we want it.
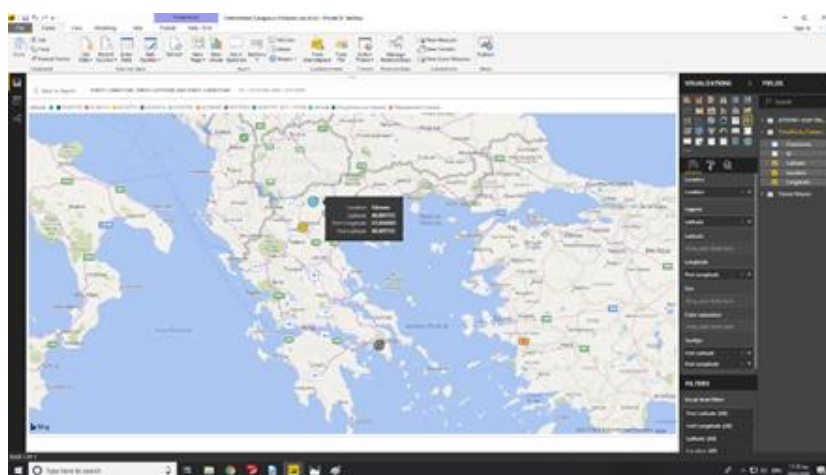

Photo 3. The first phase of results appearing
Source: Screenshot of personal using and design

Significance of the program in Agriculture

The importance of using business intelligence technologies in rural areas and more, of such a program, is related to the development through the information that this technology can provide to the user.

Information such as: what cultivation exists in the particular parcel, its geographical limits, crop history, etc.

They enable us to make decisions, such as: whether or not to set aside whether or not to use fertilizer, because we will already have the history of the information.

Future Development of the Program

All of the above can be an important pillar of development in the program, as linking the information base of the BI program, based on a decision-making program: Lindo, which is also linked to its modern form with Excel, can be innovations that will reduce the labor costs of farmers and reduce the margin of error.

Still a design development move that could be done is linking the above programs to projects such as Floorplaner, available in electronic form, free of charge, for the design and modeling of building facilities on the parcel, and linking it to a based-on indices of depreciation of building facilities from the agricultural appraisal tables of the Ministry of Rural Development. [2]
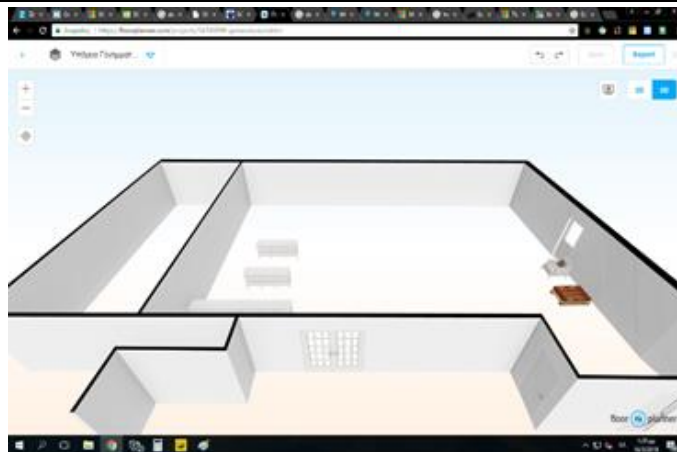
Photo 4. Planning and development design
Source: Screenshot of personal using and design

Program Cost

The Power BI program is completely free of charge from Microsoft. So, a farmer can start to integrate Business Intelligent into his business without any cost to his business.

For the use of the program as well as for their full potential, it may take a few days of short-term education and a small fee for this education will be spent.

CONCLUSIONS

Nowadays, more emphasis is placed on accessibility related to business intelligence that focuses on information gathering, something that has not happened in the past decades. The availability of a strong business model leads to a deeper knowledge of technology with regard to business executives.

From the analysis of the above, as a conclusion, we could deduce the fact that there is now the possibility for fast education and low cost, in order to have a development policy for the agricultural producer to become a rural entrepreneur.

ACKNOWLEDGMENTS

REFERENCES

[1]Boretos, N., Kremmydas, D., Rozakis, S., 2018, Internet Spatial Decision Support System for estimating the supply of energy biomass. In Geographical Information Systems. (1: 1-5). Athena. Department of Agricultural Economics and Development - Agricultural University of Athens.
[2]Floorplaner. Available at: https://floorplanner.com/ Retrieved September 9, 2018.
[3]How business intelligence can help people without technological knowledge use data analyzes. Available at: http://www.business-analytics.com/news/1305-how-business-intelligence-can-help-non-techies-use-data-analytics. Retrieved September 19, 2018.
[4]Innovation is changing agriculture - New technologies on the farmer side. Available at: https://www.helexpo.gr/el/press20180203a, Retrieved September 1, 2018.
[5]Locating Real Estate. Available at: https://www.ktimatologio.net/entopismos-akiniton/ Retrieved September 9, 2018.
[6]Luhn, H. P., 1958, A Business Intelligence System. IBM Journal. Retrieved on July 10, 2008.
[7]PoliceNet. Available at: http://policenet.gr/forum/%CE%BA%CE%B1%CF%84%CE%B1%CF%80%CE%AC%CF%84%CE%B7%CF%83%CE%B7-%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B5%CE%BC%CE%B1%CF%87%CE%AF%CE%BF%CF%85, Retrieved September 10, 2018.
[8]Power BI. Available at: https://powerbi.microsoft.com/en-us/get-started/, Retrieved September 15, 2018.
[9]Theodoridis, S.,2018, What is Business Intelligence? Texnologia.net 1, (1), 24 May 2018, Available at: https://texnologia.net/ti-einai-epixeirimatiki-eufuia-business-intelligence/2018/05 Retrieved September 20, 2018.
[10]What is Topography? Centre for Geographic Information. Available at: https://www.michigan.gov/cgi/0,1607,7-158-14767-31893--F,00.html, Retrieved September 18, 2018.