



Sustainable Precision Agriculture  
Research and Knowledge for Learning  
how to be an agri-Entrepreneur

GREECE

CLUSTER HALKIDIKI

BUSINESS MODEL CANVAS  
in the field of SUSTAINABLE  
PRECISION AGRICULTURE

STUDY CASES COLLECTION



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## INFO COMPANY

### CLUSTER Halkidiki SA

**Address:** Poligiros Halkidiki

**Founding date:** 2013-2014

**Extension:** remote sensors

**Crops:** olive trees

**Number of employees:** 2 owners (seasonal workers 20)

#### Contact

**Name:** Giorgos Tzevelekis

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**Date of the interview:** 20.11.2018

**Name of the interviewed person (specifying his/her role in the company):** Giorgos Tzevelekis

**Name of the interviewer:** Maria Partalidou, Vasilliki Giatzidou

## INFO PA introduced

**What kind of PA innovation was introduced in the company?**

remote sensors

- A) detect precisely all the important terms of cultivation, soil, atmospheric conditions and applications in the field, in such a way that the farmer and the agronomist in charge are not burdened in their day-to-day work and
- B) guide the farmer in the appropriate decisions concerning fertilizing, tree protection and irrigation that lead to the optimal performance of the farm

### When?

At the beginning of 2016 the farm started a collaboration with a team of researchers from the Agricultural Laboratory of the Agricultural School of the Aristotle University of Thessaloniki and the Association of Enterprises of Halkidiki SA (CLUSTER). The team developed a cooperation with a private company consisted of IT engineers and systems that adapt and supervise technology systems and specialized scientists who adapt and interpret scientific models used in decision-making models.

3 telemetric stations were installed at the farm measuring atmospheric and terrestrial parameters,

- samples of soil and leaves were taken for analyzes and placement of insect traps.
- special instruments were used for the measurement of tree physiology indicators and the supervisor agronomist were equipped with special applications for mobile to capture cultivation applications and receive observations.

### Why? What was the motivation / problem to solve?

Greek olives and olive oil consist, since ancient times, a natural treasure. Synonyms of prototypes of healthy life, they are integral elements of the perfect nutrition. In Halkidiki, the local variety of “green olive” offers an extra potential for marketing differentiation and added value due to special properties who are attributing it.

Nevertheless, local climatic conditions create a factor of incertitude concerning quantity and (even more) quality characteristics of final product from year to year which works inhibitory as far as it concerns branding.

The farm experienced several bad years when he was not able to fulfill the expectations of his customers due to lack of precise prediction for his farm optimal performance. Trying to describe the origin of the problem, he found out that he had, in fact, no “data based programming” in his farm that could match fertilizing, tree protection and irrigation with climatic conditions thus guiding him to right decisions.

Thus, at first the team registered a full inventory of the conditions prevailing in the cultivation (soil-climate) and the cultivation work carried out by the producer plus the specific characteristics of the specific variety in Halkidiki. Valuable conclusions were drawn in this stage.

From the receipt of soil and leaf samples, the team developed fertilizing models specifically for this variety of olive trees. The result was precision consulting patterns that determine the quantity, species, manner and time of application of the fertilizer.

Regarding tree protection, the presence of the dork (the main enemy of the olives in the area) and the cycloneion (the main disease for the specific area and variety) has been systematically monitored. Spraying models were defined as a result.

As far as it concerned irrigation, special sensors were used to measure the root system distribution in the soil. Afterwards, the response of the olive trees to the water stress was studied with measurements of maximum photosynthetic ability, oral conduction and intercellular CO<sub>2</sub>. Then the water potential management model for the particular crop was optimized, calculating the optimal amount of water that the olive tree needs at any time.

As a result, the farm improved the amount and size of its olive trees by applying fertilizing patterns, while irrigation and tree protection measurements have shown that it can save significant amounts of irrigation water, reduce tree protection sprays as appropriate and reduce also the risk of tree diseases.

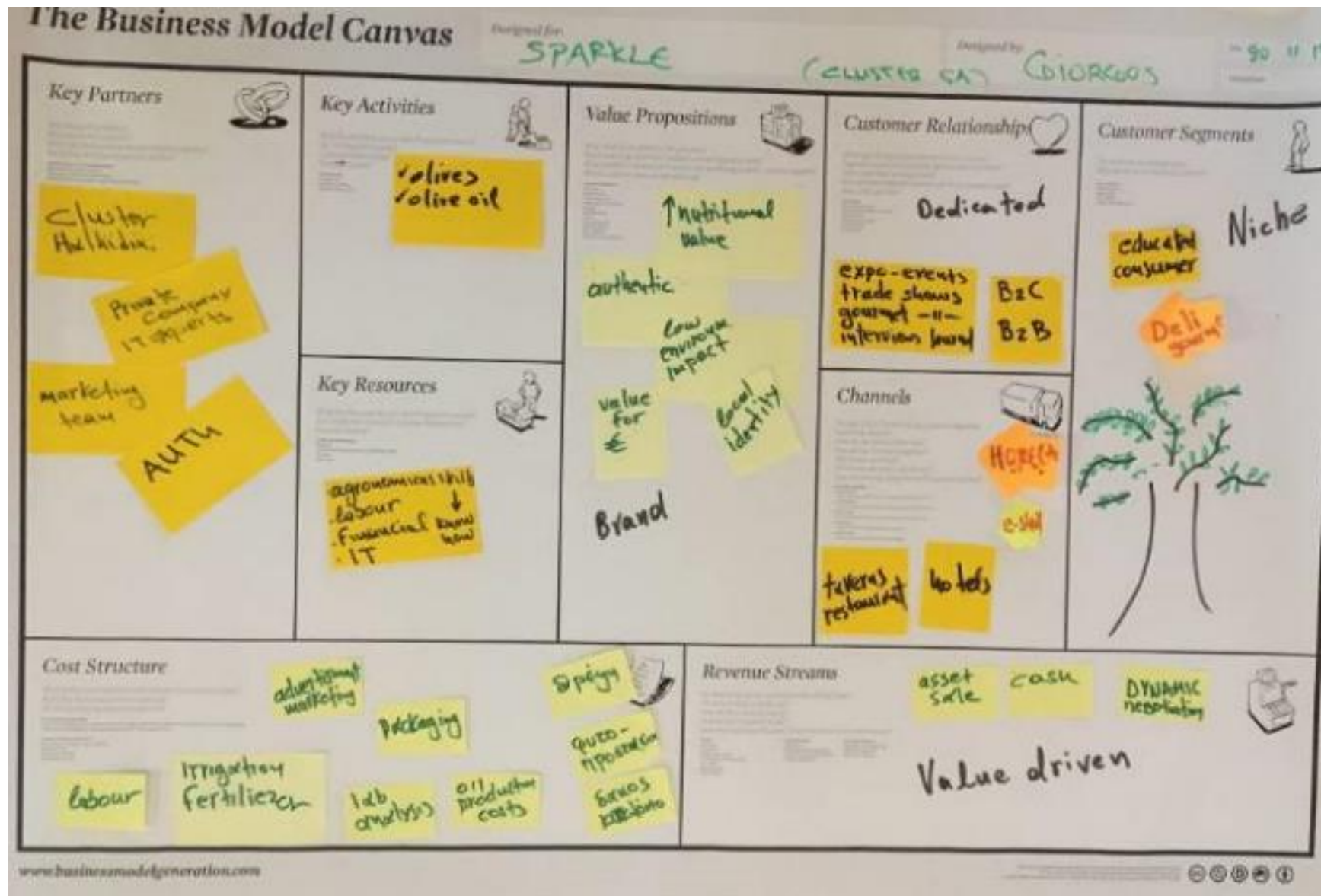
**How did you learn about these new technological solutions?**

We met with a core of the team of researchers during a lecture at the expo AGROTIKA 2015 in Thessaloniki Greece. It was them who introduced him afterwards to the IT company. The Internet played a key role in searching and verifying proposed solutions.

**Have you been supported / assisted / trained by someone?**

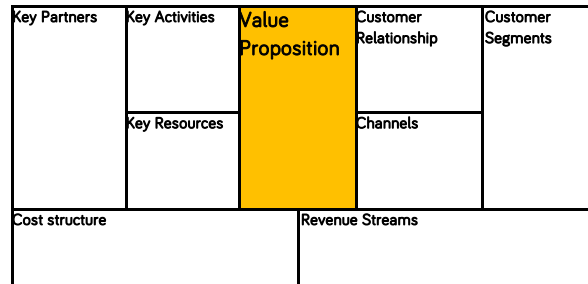
The team of researchers was responsible for the theoretical protocol of the project. Their scientific propositions were translated technologically by the IT and the farm and the agronomist carried out the final models of application. Special training seminars were held in order to practice decision making models diagrams.





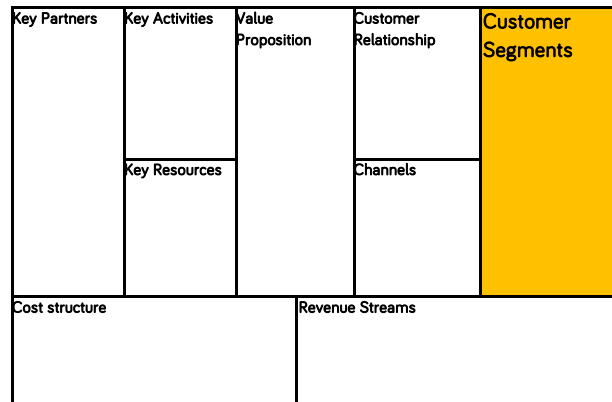
## BMC - report

## Value Proposition



- High nutritional value
- Authentic taste
- Low environmental impact
- High value for money
- Identity of uniqueness

## Customer Segments



- Companies with:
  - stage of life cycle at development or maturity
  - attitude of innovation
  - clients who care about their health and concern for the environment
- Final consumers that respect values as: authenticity, uniqueness, low environmental impact, high nutritional expectations

### Distribution Channels

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure		Revenue Streams		

- HO.RE.CA in Greece (or international) emphasizing in clients who can appreciate high quality products
- Delicatessen & gourmet retail stores
- Exclusive e-shop sales

### Customer Relationship

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure		Revenue Streams		

- B2B distinguished expo events
- Exhibition & trade olive oil shows
- Gourmet shows
- Presentation & interviews in olive oil specialized magazines

## Revenue Streams

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure		Revenue Streams		

- Transaction based revenues

## Key Activities

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure		Revenue Streams		

- Cultivating olive trees of a special variety
- Producing olives and olive oil of a special variety

## Key Resources

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure		Revenue Streams		

- Grove farming knowhow
- Human labour
- IT specific knowledge
- Management team
- Methodology for decision making models
- Financing



## Key Partners

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure			Revenue Streams	

- The Agricultural School of the Aristotle University of Thessaloniki
- The Association of Enterprises of Halkidiki SA/ CLUSTER
- Private IT company
- Marketing team

## Cost Structure

Key Partners	Key Activities	Value Proposition	Customer Relationship	Customer Segments
	Key Resources		Channels	
Cost structure		Revenue Streams		

- Tree protection
- Irrigation
- Fertilizing
- Human labour
- Packaging
- Laboratory analysis
- IT systems
- Advertisement
- Branding

## IMPACT ANALYSIS

