AGRICULTURAL ENTREPRENEURSHIP IN ALGERIA: ACTORS' STRATEGY ANALYSIS USING MACTOR METHOD

Houssame Eddine BALOULI
High School of Statistics and applied Economics ENSSEA
Balouli.houssame.eddine@gmail.com
Lazhar CHINE
Faculty of economics, commercial and management Boumerdes University
drlchine@gmail.com

ABSTRACT: This study aims to analyses the actors' strategies of the agricultural entrepreneurship in Algeria using MACTOR method. MACTOR (Matrix of Alliances and Conflicts: Tactics, Objectives and Recommendations) is based on the analyses of the influences between actors on one hand, and between actors and objectives on the other hand. MACTOR attempts to give a global view of the importance and possible outcomes of the different issues, as well as expected actors' strategies, the balance of power and potential alliances and conflicts. Nineteen actors and thirteen objectives are identified through interviews with experts in the field. The analyses of the different tables, matrices and graphs shows us the key actors that play a great role in the development of the agricultural entrepreneurship in Algeria, divergences and convergences between actors to the objectives, and balance of power for each actor. The final step of the study is the strategic recommendations and key questions of the future.

Key words: Agricultural entrepreneurship; Algeria; Actors' strategy analysis; MACTOR.

1. INTRODUCTION

At the end of the 16th century, entrepreneurship refers to the agricultural activity. Olivier de serres in his book "Théatre d'agriculture et ménage des champs" insisted on the important role of "ménager" in the management of the agricultural enterprise (Laurant, 1989). Later, Cantillon said that the land is the source or matter from whence all wealth is produced and the labor of man is the form that produces it (Cantillon, 1755). Although the French physiocrats of the 18th century associated entrepreneurship with agriculture. Today the term entrepreneurship is rarely used to refer to an agricultural activity.

The Algerian agricultural sector contributes on average about 10 percent of Algeria's GDP (2014 estimates) and employs at least 14 percent of the Algerian population. Algeria has about 8.4 million hectares of arable land (3.5 % of its total surface area). The agriculture in Algeria is mostly rainfed, and it often suffers from drought over consecutive years. Only 12 % of this arable land is irrigated. About 51 percent of the total arable land is dedicated to field crops, mostly cereals and pulses, 6 percent to arboriculture, and 3 percent to industrial crops. About 70 percent of agricultural farms are of small scale with less than 10 hectares, and 80 percent of these farms are individual farms (Sahli, 2010).

Table 1: Financing agricultural projects in Algeria

The period	Number of funded agricultural projects
From inception to 31/12/2010	15171
2011	3686
2012	6705
2013	8225
2014	10487
2015	6862
2016	3479
From inception to 31/12/2016	54615

Source: National Agency for Youth Support and Employment

The National Agency for Youth Support and Employment has funded projects in various sectors. Most of the projects are based on two main sectors: the services sector with 31.52% and the agriculture sector 20.61% of the total projects submitted. The number of agricultural projects funded until the end of 2016 is 54615 in agriculture and fishing, with 29,729 jobs created, and total cost of 24725106 dinars.

The agricultural entrepreneurship is considered as one of the newest areas of research in the entrepreneurship field. The transition from classical agriculture to modern agriculture through the introduction of the concept of entrepreneurship is an issue to the country in order to realize and achieve a step towards diversification of the economy.

2. BACKGROUND

Many recent studies in the agricultural field using MACTOR method are published:

2.1 Food Security and environment (Godet, 1991)

Food Security and environment: Actors' strategy analysis with MACTOR method is a foresight project published in 1999 by Laboratory of Investigation in Prospective Strategy and Organization (LIPSOR), at the initiative of BASF agriculture France. The work took place from January to July 1991. The first phase is devoted to the techno-economic issues of the agricultural distribution. The confirmation of strategic importance of the issues is the second phase. Leaders of cooperatives, agricultural traders, representatives of several actors (public authorities, consumer associations…) are involved in the seminar work. The objective of this reflection is to analyze the short / medium term issues in food security and environment, and identify their consequences in terms of requirements and / or opportunities for the sector.

The direct influence / dependency plan shows us the important actors. The relay actors are national and regional authorities, the agricultural professional bodies, large agri-foodstuffs industries and mass marketing corporations. Dominant actors are international organizations, the media and consumer or environmental organizations. Regarding to the powers of influence indicators, the results shows us that international organizations,

consumer associations, environmental protection associations and media have the higher power of influence indicator.

2.2 Using social network analysis to identify key stakeholders in agricultural biodiversity governance and related land-use decisions at regional and local level (Hauck et al, 2016)

The research served to identify and select stakeholders relevant in the context of agricultural biodiversity governance and related land-use decisions at regional and local level. Data collection and analysis is realized by Net-Map interviews using a bottom-up approach from regional level to local level. In total, for both local and regional level, 72 different actors were mentioned, within 41 in local level and 61 in regional level (An actor can be mentioned twice). The most important actors are farmers, federal state agency, landowners, technical journals and agricultural wholesaler.

2.3 Data gathering for actor analyses: A research note on the collection and aggregation of individual respondents data for MACTOR (Rees, 2017)

This research aims to reduce uncertainty and to account for extreme or unexpected future outcomes in the context of New Zealand's health workforce forecasting environment. The interviews allows the experts to list six actors. These actors are consumers, education providers, government, health providers, professional body, regulatory body and representative body.

3. METHODOLOGY

Actors' strategy analysis is one of the crucial steps in *La prospective*. The MACTOR method proposes a process of analysis of the set of actors, some simple tools that allow taking into account the richness, and the complexity of the information to be treated (Godet 2004). A method for analyzing stakeholder strategies, Mactor seeks to estimate the power relations between actors and to study their convergences and divergences with regard to a number of issues and associated objectives. Based on this analysis, the aim of using the Mactor method is to provide an actor with decision-making support for the implementation of its policy of alliances and conflicts. From a methodological point of view, Mactor comprises seven phases.

3.1 Mactor phases

Phase 1: build the "actors' strategy" table

The construction of this table concerns the actors who control the key variables resulting from the structural analysis. The play of these actors explains the evolution of the variables ordered (note that the useful number of actors is Often between 10 and 20). We establish on the one hand a true identity card of each actor: its motivations, constraints and internal means of action (coherence), its past strategic behavior (attitude). On the other hand, we examine the means of action available to each actor over the others in order to bring to fruition his projects.

Phase 2: Identify strategic issues and associated objectives

The meeting of actors according to their objectives, their projects and their means of action reveals a number of strategic issues on which the players have convergent or divergent objectives.

Phase 3: Position the actors on the objectives and identify the convergences and divergences (simple positions)

In this step, we describe in a matrix "actors x objectives" the current attitude of each actor in relation to each objective, indicating its agreement (+1), its disagreement (-1) or its neutrality (0). In order to identify the possible sets of alliances and conflicts, the Mactor method specifies the number and objectives on which actors, taken in pairs, are converging or diverging. The first two complete graphs of the convergence and then the possible divergences are then established. They allow visualizing groups of actors in convergence of interest, to evaluate their apparent degree of freedom, to identify the most potentially threatened actors and to analyze the stability of the system.

Phase 4: prioritize for each actor its objectives

The graphs built previously remain rather elementary since they take into account only the number of convergences and divergences of objectives between actors. To bring the model closer to reality, it is also necessary to take into account the hierarchy of objectives for each actor. The intensity of the positioning of each actor is thus evaluated using a specific scale.

Phase 5: Assess the powers of influence of the actors

We build a matrix of direct influences between actors based on the strategy table of the actors by valuing the means of action of each actor. The powers of influence indicators are calculated by the Mactor software taking into account both direct and indirect means of action (one player can act on another through a third). An influence-dependency plan of the actors is then constructed. The analysis of the powers of influence indicators of the actors highlights the strengths and weaknesses of each of these actors, their possibilities for locking, etc.

Phase 6: Integrate the balance of power in the analysis of convergences and divergences between actors

To say that one actor weighs twice as much as another in the overall powers of influence is implicitly giving double weight to his involvement in the objectives that interest him. The object of this stage is precisely to integrate the power ratio of each actor to the intensity of its positioning in relation to the objectives. We obtain new graphs of possible convergences and divergences between all the actors. The comparison between the series of graphs makes it possible to observe the distortion of potential alliances and conflicts, taking into account the hierarchies of objectives and the powers of influence between actors.

Phase 7: formulating strategic recommendations and key issues for the future

Through the interplay of alliances and potential conflicts between actors it highlights, the Mactor method contributes to the formulation of the key questions of foresight and strategic recommendations. It helps, for example, to examine the possibilities for changing relations between actors, the emergence and disappearance of actors, changes in roles, etc.

3.2   The organization of the study

The analysis of the set of actors concerning agricultural entrepreneurship in Algeria was based on the Mactor method. The first step is to identify the dimensions of the problem, to look for the alliances or the conflicts, to identify the main actors concerned by these stakes and to identify the objectives pursued by these actors on these conflicts. The second step consists in analyzing and describing the operation of the set of actors in two forms:

✓ Identifying the direct influences of the actors on each other (this is the matrix actors / actors or matrix of direct influences MID),

✓ The description and measurement of the position of each of the actors in relation to each of the objectives (it is the matrix actors / objectives or matrix of positions valued 2MAO).This second stage is the fruit of work, at several meetings.

In the third step, and based on these two matrices, the Mactor software processes the data and determines a series of results to better understand the positions of the actors in the game (dominant or dominated actors). To identify the most important objectives for the actors, the controversial objectives or not, to make appear the oppositions of interest or conversely the convergences in the positions of the various actors. The fourth step is the interpretation of the results. Then, of course, each actor will be able to see the work, analyze the results in the light of his own situation, his own vision of the issues and draw strategic lessons for his own system.

3.2.1 Nineteen actors and thirteen objectives

From the interviews of the first phase, we finalized a list of nineteen actors playing a central role on the future of agricultural entrepreneurship in Algeria. The list of actors is the following:

Fertilizer suppliers (Fert_sup); Equipment suppliers (Equip_sup); Agri-food suppliers (agr-fd-sup); Universities and research centers (Univ-ins); Banks and insurances (Banks-ins); Consumers (Consumers); Formal farmers (Formal-far); Informal farmers (Informal-f); Competitors (Competitor); Investment support agencies (Inv-sup-ag); Chambers of agriculture and commerce (Cham-ag-cm); Professional training centers (prof-tr-ce); Investors (Investors); Fishermen (Fishermen); Breeders (Breeders); Regulators (Regulators); Importers of agriculture products (Importers); Exporters of agricultural products (Exporters) and Logistic companies (Logistic-E).

We finalized the list of objectives as follows:

Diversification of the economy (Diver_econ); Improvement of the agricultural sector (impr-agr-s); Food security (Food-sec); Markets regulation (Market-reg); The realization of profits (realiz-pro), Improving productivity (improve-prod); The accompaniment of young agricultural entrepreneurs (accom-entr); Export of agricultural products (Exp-agr-pr); The reduction of unemployment rate (red-unem-r); Reduction of rural exodus (Red-rur-ex); The access to professional life (ac-prof-li); Fighting tax evasion (Figh-tax-e) and The rational distribution of water (rat-dist-w).

3.3   Input matrices

Table 1: Matrix actors / actors or Matrix of Direct Influences (MID)

MID	Fert_sup	Equip_sup	agr-fd-sup	Univ-res	Banks-ins	Consumers	Formal-far	Informal-f	Competitor	Inv-sup-ag	Cham-ag-cm	prof-tr-ce	Investors	Fishermen	Breeders	Regulators	Importers	Exporters	Logistic-E
Fert_sup	0	0	0	0	2	0	2	2	0	0	0	0	1	2	2	0	0	0	0
Equip_sup	0	0	0	0	2	0	2	2	0	0	0	0	1	2	2	0	0	0	0
agr-fd-sup	0	0	0	0	2	2	0	0	3	0	0	0	2	0	0	0	3	3	0
Univ-res	0	0	0	0	2	0	2	2	0	0	0	0	2	2	2	0	0	0	0
Banks-ins	2	2	2	0	0	0	2	2	0	0	0	0	2	2	1	0	0	0	0
Consumers	0	0	3	0	0	0	2	2	0	0	0	0	0	2	2	0	2	2	0
Formal-far	2	2	2	1	2	1	0	0	0	0	1	0	2	0	0	1	3	2	0
Informal-f	2	2	2	0	2	1	0	0	0	0	1	0	0	0	0	4	3	2	0
Competitor	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0
Inv-sup-ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cham-ag-cm	3	3	3	0	0	3	0	4	0	0	0	0	1	1	0	0	3	2	0
prof-tr-ce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Investors	2	2	0	0	2	0	2	2	0	0	0	0	0	2	2	0	0	0	0
Fishermen	0	2	2	0	2	0	0	0	0	0	1	0	0	0	0	1	3	2	0
Breeders	0	2	2	0	2	0	0	0	0	0	1	0	0	0	0	1	3	2	0
Regulators	3	3	3	0	1	0	1	4	1	0	1	0	1	1	0	0	1	1	0
Importers	0	0	2	0	1	2	2	2	0	0	1	0	0	1	2	1	0	2	0
Exporters	0	0	2	0	1	2	2	2	0	0	1	0	0	2	2	1	2	0	0
Logistic-E	1	2	2	0	0	0	2	2	0	0	1	0	1	2	2	0	2	2	0

© LIPSOR-EPITA-MACTOR

Source: MACTOR outputs

The table is filled using the following scale:

4: the actor "i" can call into question the actor "j" in his existence / is indispensable to his existence,

3: the actor "i" may call into question the fulfillment of the missions of the actor "j"

2: the actor "i" may call into question the success of actor "j" projects,

1: the actor "i" can question in a limited way in time and space the operating processes of the actor "j"

0: the actor "i" has little influence on the actor "j".

Table 2: Actor / objective matrix or matrix of valued positions (2MAO)

2MAO	Diver_econ	impr-agr-s	Food-sec	Market-reg	realiz-pro	improv-pro	accom-entr	Exp-agr-pr	red-unem-r	Red-rur-ex	ac-prof-li	Figh-tax-e	rat-dist-w
Fert_sup	1	2	0	1	4	3	1	2	1	0	2	0	2
Equip_sup	1	2	0	1	4	3	1	2	1	1	2	0	2
agr-fd-sup	0	2	0	1	4	3	1	2	1	0	2	0	2
Univ-res	3	0	3	1	1	1	3	1	2	2	2	-2	2
Banks-ins	1	0	0	2	4	1	0	0	0	0	1	-3	0
Consumers	0	0	2	2	0	0	0	2	0	0	0	-2	0
Formal-far	1	2	2	2	4	3	2	2	2	2	2	-3	3
Informal-f	1	2	2	2	4	3	2	2	2	2	2	4	3
Competitor	0	0	0	0	0	0	0	-3	0	0	0	0	0
Inv-sup-ag	0	0	0	0	0	0	0	0	0	0	0	0	0
Cham-ag-cm	3	0	3	4	2	0	1	3	3	2	2	-3	1
prof-tr-ce	0	0	0	0	0	0	0	0	0	0	0	0	0
Investors	0	3	0	2	4	3	0	0	2	0	1	-2	2
Fishermen	0	3	0	2	4	3	0	0	2	0	1	-3	3
Breeders	0	2	1	2	4	3	2	2	2	2	2	-3	3
Regulators	0	3	0	0	0	0	0	0	1	0	0	-4	0
Importers	0	0	1	1	4	0	0	-3	0	0	0	0	0
Exporters	2	0	0	3	4	0	0	0	0	0	0	-2	0
Logistic-E	0	2	0	0	4	0	0	3	1	0	0	0	1

© LIPSOR-EPITA/MACTOR

Source: MACTOR outputs

The filling of the table of the positioning of the actors on the objectives is carried out by specifying:

(A) The agreement or disagreement of the actor in relation to the objective by means of the following agreement:

- (+) if actor "i" is in favor of objective "j"
- (-) if the actor "i" is unfavorable to the objective "j"
- ( ) if the actor "i" is neutral or indifferent to the objective "j"

(B) The intensity of the agreement or disagreement that characterizes the priority of the objective for the actor and for which there are four levels:

- 4: the objective involves the actor in his existence / is indispensable to his existence,
- 3: the objective calls into question the performance of the actor's tasks / is essential to his missions,
- 2: the objective calls into question the success of the projects of the actor / is essential to its projects,
- 1: the objective involves, in a limited way, the actor's operational processes (management, etc.) / is essential to his operational processes.

4. THE RESULTS OF THE STUDY

4.1. Direct and indirect influences

The table (the actors / actors matrix) which indicates the direct influences between each pair of actors makes it possible to make sums of influence (in line) and the dependency (column) of each actor on the system. It is possible to calculate indicators that allow each actor to be placed in an "influence / dependency" plane and to visualize these relative positions. The influence of an actor is not only exerted directly on another, it can also pass through other actors. A simple calculation makes it possible to take account of these indirect influences (and dependencies) to give an image closer to the reality of the powers of the actors on each other.

Figure 1: The dominant actors, the relay actors, the dominated actors

Plan des influences et dépendances entre acteurs
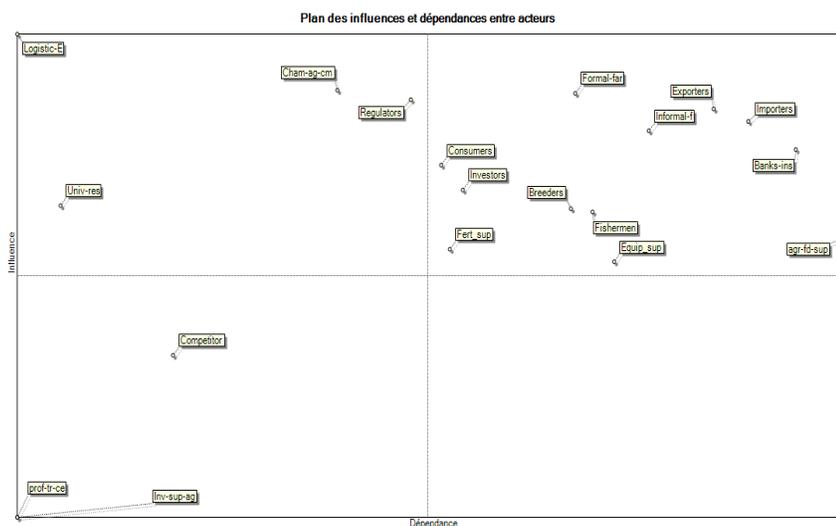
Source: MACTOR software

The plan of influences and dependencies provides a graphical representation of the positioning of the actors according to their direct and indirect influences and dependencies (Ii and Di). The arrows indicate the main movements observed. The plan, built directly from the input data developed by Mactor software:

✓ **The dominant actors**: having a strong influence on the other actors. These actors are logistic companies, Universities and research centers, Chambers of agriculture and commerce and regulators.

✓ **The relay actors** those who are both highly influential and strongly influenced. These actors are consumers, investors, fertilizer suppliers, breeders, anglers, equipment suppliers, formal farmers, informal farmers, importers of agriculture products, exporters of agriculture products, banks and insurances and agri-food suppliers.

✓ **The autonomous actors:** having little influence and little dependent. These actors are competitors, Investment support agencies and Professional training centers.

4.2 Histogram of the mobilization of the actors on the objectives (3 MAO)

8

This histogram allows us to visualize the mobilization of the actors on the objectives, taking into account the weighted evaluated positions. It is calculated from the 3MAO matrix.

Figure 2: Histogram of the mobilization of the actors on the objectives (3 MAO)

Histogramme de la mobilisation des acteurs sur les objectifs 3MAO
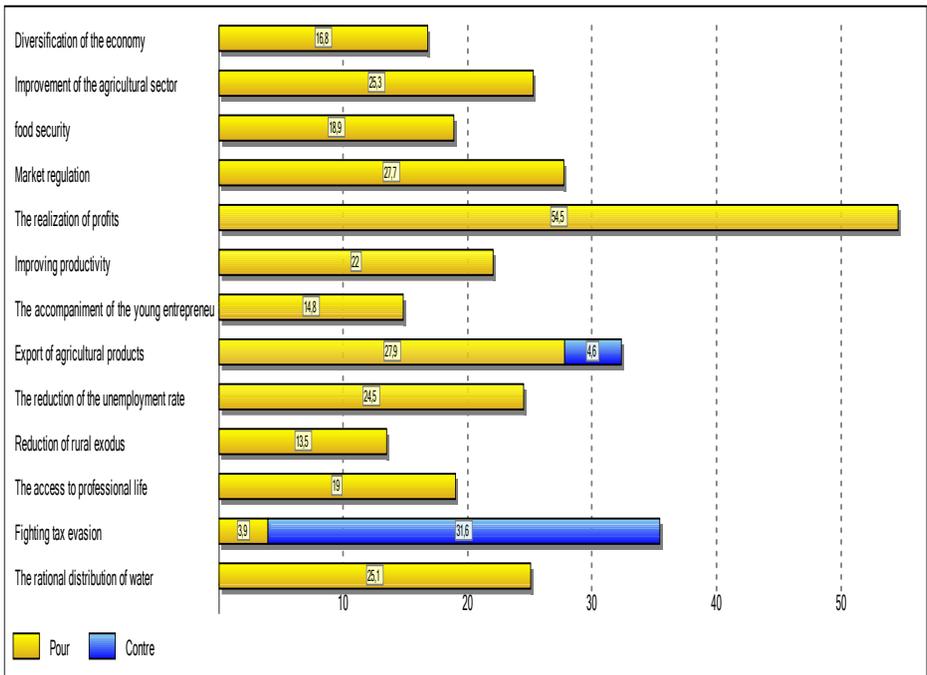
Source: MACTOR outputs

According to this histogram, the majority of actors are mobilized on at least five objectives:

- The realization of profits
- Markets regulation
- Improvement of the agricultural sector
- The reduction of unemployment rate
- The rational distribution of water

While there are two objectives, on which actors are torn between the pros and cons:

- Fighting tax evasion
- Export of agricultural products.

4.3 Convergence between actors
4.3.1 Matrix of weighted convergences (3CAA)

The Weighted Valued Matrix of Convergences or Weighted Convergences Weighted Actors X Actors (3CAA) is associated with the Matrix of Weighted Positions Weighted Actors X Objectives (3MAO). It identifies for each pair of actors the average intensity of the convergences when the two actors have the same position (favorable or opposite). The figures in this matrix measure the intensity of these alliances by integrating their hierarchies (preferences) of objectives and their power relations. This matrix is symmetric.

Table 5: Matrix of weighted convergences (3CAA)

3CAA	Fert_sup	Equip_sup	agr-fd-sup	Univ-res	Banks-ins	Consumers	Formal-far	Informal-f	Competitor	Inv-sup-ag	Cham-ag-cm	prof-tr-ce	Investors	Fishermen	Breeders	Regulators	Importers	Exporters	Logistic-E
Fert_sup	0,0	11,9	11,0	20,4	7,6	3,3	21,1	18,2	0,0	0,0	21,4	0,0	13,9	12,2	15,2	4,0	4,2	6,8	20,9
Equip_sup	11,9	0,0	9,2	20,8	6,5	3,0	20,7	17,6	0,0	0,0	21,9	0,0	12,4	10,7	14,4	3,7	3,7	6,2	19,8
agr-fd-sup	11,0	9,2	0,0	15,6	5,6	3,0	18,0	15,3	0,0	0,0	16,9	0,0	12,1	10,4	13,1	3,7	3,6	4,8	19,6
Univ-res	20,4	20,8	15,6	0,0	13,7	10,7	37,8	31,1	0,0	0,0	42,8	0,0	17,8	16,6	28,1	7,3	7,3	11,9	19,2
Banks-ins	7,6	6,5	5,6	13,7	0,0	4,2	14,0	9,5	0,0	0,0	16,4	0,0	10,3	9,2	9,9	4,1	4,8	9,6	7,7
Consumers	3,3	3,0	3,0	10,7	4,2	0,0	10,0	6,3	0,0	0,0	15,6	0,0	4,2	4,1	7,6	4,1	3,2	4,8	5,7
Formal-far	21,1	20,7	18,0	37,8	14,0	10,0	0,0	29,9	0,0	0,0	38,5	0,0	22,4	20,8	28,9	10,2	7,8	11,8	24,9
Informal-f	18,2	17,6	15,3	31,1	9,5	6,3	29,9	0,0	0,0	0,0	31,4	0,0	17,3	15,6	22,6	4,9	6,8	8,1	23,3
Competitor	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,3	0,0	0,0
Inv-sup-ag	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Cham-ag-cm	21,4	21,9	16,9	42,8	16,4	15,6	38,5	31,4	0,0	0,0	0,0	0,0	19,3	18,5	29,6	8,8	10,6	15,9	21,5
prof-tr-ce	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Investors	13,9	12,4	12,1	17,8	10,3	4,2	22,4	17,3	0,0	0,0	19,3	0,0	0,0	17,3	17,7	9,4	5,4	8,6	17,8
Fishermen	12,2	10,7	10,4	16,6	9,2	4,1	20,8	15,6	0,0	0,0	18,5	0,0	17,3	0,0	16,1	8,9	4,6	8,0	16,8
Breeders	15,2	14,4	13,1	28,1	9,9	7,6	28,9	22,6	0,0	0,0	29,6	0,0	17,7	16,1	0,0	8,7	5,6	8,1	22,0
Regulators	4,0	3,7	3,7	7,3	4,1	4,1	10,2	4,9	0,0	0,0	8,8	0,0	9,4	8,9	8,7	0,0	0,0	4,0	7,6
Importers	4,2	3,7	3,6	7,3	4,8	3,2	7,8	6,8	2,3	0,0	10,6	0,0	5,4	4,6	5,6	0,0	0,0	6,0	8,1
Exporters	6,8	6,2	4,8	11,9	9,6	4,8	11,8	8,1	0,0	0,0	15,9	0,0	8,6	8,0	8,1	4,0	6,0	0,0	8,2
Logistic-E	20,9	19,8	19,6	19,2	7,7	5,7	24,9	23,3	0,0	0,0	21,5	0,0	17,8	16,8	22,0	7,6	8,1	8,2	0,0
Nombre de convergences	191,9	182,4	161,9	300,9	133,1	89,8	316,7	257,8	2,3	0,0	329,1	0,0	205,6	189,8	247,7	89,4	83,9	122,6	243,2
Degré de convergence (%)	0,0																		

© LIPSOR-EPITA-MACTOR

Source: MACTOR software

Values represent the degree of convergence: the greater the intensity, the more the actors have convergent interests.

4.4 Divergence between actors

4.4.1 Weighted valued matrix of divergences (3DAA)

The Weighted Valued Matrix of Weighted Divergences or Weighted Actors X Actors (3DAA) is associated with the Matrix of Weighted Positions Weighted Actor X Objectives (3MAO). It identifies for each pair of actors the average intensity of the divergences when the two actors are in opposition (one actor is favorable to the objective, the other is unfavorable). The figures in this matrix measure the intensity of these conflicts, integrating their hierarchies (preferences) of objectives and their power relations. This matrix is symmetric.

Table 6: Weighted valued matrix of divergences (3DAA)

3DAA	Fert_sup	Equip_sup	agr-fd-sup	Univ-res	Banks-ins	Consumers	Formal-far	Informal-f	Competitor	Inv-sup-ag	Cham-ag-cm	prof-tr-ce	Investors	Fishermen	Breeders	Regulators	Importers	Exporters	Logistic-E
Fert_sup	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,2	0,0	0,0
Equip_sup	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,0	0,0	0,0
agr-fd-sup	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,9	0,0	0,0
Univ-res	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,8	1,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,3	0,0	0,0
Banks-ins	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Consumers	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,1	2,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,5	0,0	0,0
Formal-far	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,8	2,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,7	0,0	0,0
Informal-f	0,0	0,0	0,0	3,8	3,2	3,1	3,8	0,0	1,8	0,0	4,5	0,0	3,0	3,1	3,1	4,9	2,4	3,0	0,0
Competitor	1,6	1,4	1,4	1,8	0,0	2,0	2,1	1,8	0,0	0,0	3,4	0,0	0,0	0,0	1,6	0,0	0,0	0,0	5,5
Inv-sup-ag	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Cham-ag-cm	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,5	3,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,0	0,0	0,0
prof-tr-ce	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Investors	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Fishermen	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Breeders	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,1	1,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0	2,2	0,0	0,0
Regulators	0,0	0,0	0,0	0,0	0,0	0,0	0,0	4,9	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Importers	2,2	2,0	1,9	2,3	0,0	2,5	2,7	2,4	0,0	0,0	4,0	0,0	0,0	0,0	2,2	0,0	0,0	0,0	6,0
Exporters	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Logistic-E	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	5,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	6,0	0,0	0,0
Nombre de divergences	3,7	3,3	3,3	7,8	3,2	7,6	8,6	39,7	22,6	0,0	12,0	0,0	3,0	3,1	7,0	4,9	28,2	3,0	11,5
Degré de divergence (%)	0,0																		

© LIPSOR-EPITA-MACTOR

Source: MACTOR software

Values represent the degree of divergence: the greater the intensity, the more divergent the actors have divergent interests.

4.5 The position of the actors on the objectives
4.5.1 The objectives that involve the most players

The input data table (the 2MAO actors / objectives matrix) indicates the "valued" position of each actor on each of the objectives. It makes it possible to reveal the "involvement" of each of the actors on the objectives, which takes into account the importance that the actor attaches to each objective.

The matrix of invalidated positions (matrix 1MAO where only the meaning of the position - positive, negative or indifferent - of the actors on the objectives, without importance) is indicated for each objective the number of positions Actors ", whether for, against or indifferent, and for each actor the number of objectives for which it is for, against or indifferent.

The matrix of valued and weighted positions (3MAO) takes into account the powers of influence indicator of each actor to weight an actor's attachment to the different objectives. It gives an idea of the "mobilization" of this actor and somehow the degree of his commitment and power in the game. We find that the actors most involved in the game and all the objectives are chambers of commerce and agriculture, formal farmers, informal farmers, universities and research centers and logistic enterprises.

4.5.2 Balance or imbalance of forces around conflicting objectives

Multiple convergences and some small divergences between the actors

We note the results obtained by the Mactor software, that there are multiple convergences between the actors as regards the objectives of the project. However, we envisage some convergences and divergences between the actors on the following objectives:

Figure 3: Diversification of the economy

Balance des positions par objectif valuées et pondérées par les rapports de force

Objectif : Diver_econ

Fert_sup
Equip_sup
Univ-res
Banks-ins
Formal-far
Informal-f
Cham-ag-cm
Exporters
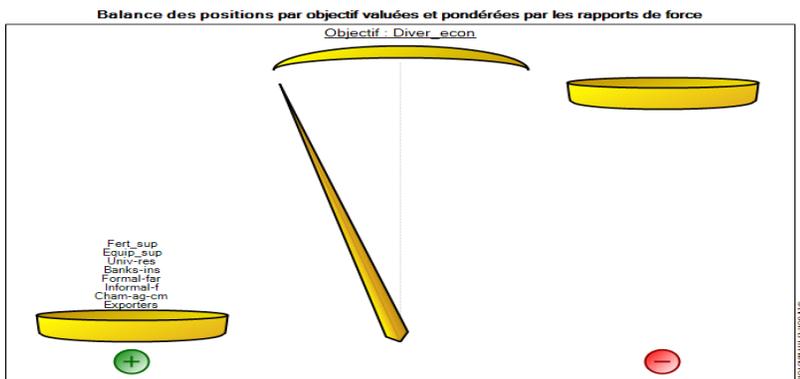
Source: MACTOR outputs

The scientific research in the universities and research centers consider the diversification of the economy an issue that they must find a solution. Fertilizer suppliers and equipment suppliers play a great role in the diversification of the economy by the procurement of the agricultural activity of formal and informal farmers, which is the best alternative to the petrol and gas.

Figure 4: Fighting tax evasion
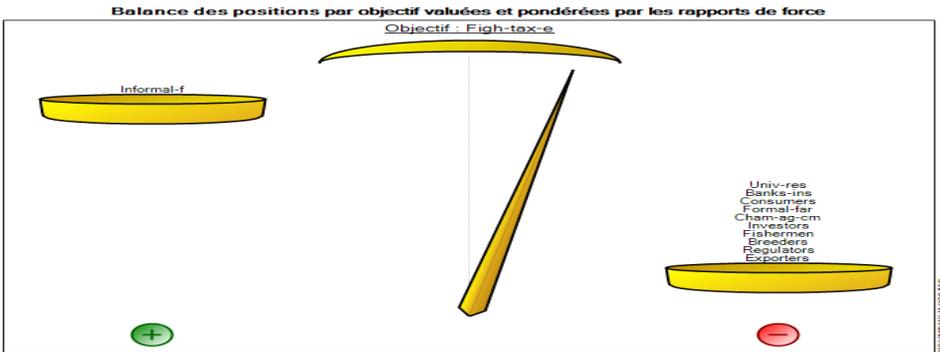
Source: MACTOR outputs

Many actors such as investors and exporters evade taxes in order to maximize profits. However, informal farmers are outlaw and they are very far from any legal situation facing banks, insurances and social security funds.

Figure 5: Exports of agricultural products
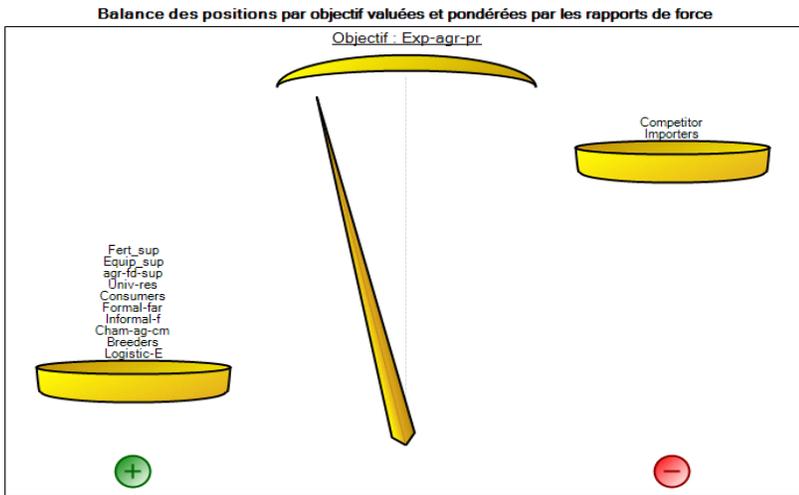
Source: MACTOR software

In addition to meet domestic demand of agricultural products, many actors aims to export the surplus of the domestic agricultural products and entry foreign markets. However, importers of agricultural products and competitors seeking hard to stop or limit the exports of agricultural products.

5. CONCLUSION

In conclusion, and in light of the results of our study, we can build the key questions of the future as well as the strategic recommendations necessary for the success of this project.

Key questions for the future

The sets of alliances and potential conflicts that we have determined between actors by MACTOR allow us to formulate the following key questions of the prospective of agricultural entrepreneurship in Algeria:

✓   How can the informal farmers be integrated into the Algerian agricultural system?
✓   What measures should the state take to encourage the export of agricultural products?
✓   What measures should the state take to reduce the import bill of agricultural products?
✓   How can banks, social security funds and insurance companies be able to integrate informal farmers into their systems?
✓   How can regulators establish a tax system that enables the return of significant funds while not affecting agricultural exports?

Strategic recommendations

As a follow-up to the following key questions for the future, we can propose the following recommendations:

➢   The application of governance principles in banks, social security funds and insurance companies facilitates the integration of informal farmers into their systems.
➢   The exemption of agricultural exports from taxes leads to the promotion of the export of Algerian agricultural products.
➢   Take protective measures to reduce the import bill, especially grains.
➢   Try to benefit from the experience of Tunisia and Morocco in the field.

➢   Exploitation of university research and proposals of research centers regarding the development of the agricultural sector and achieving food security.
➢   Maximize the use of advertising by the chambers of agriculture and commerce to try to get closer to the informal farmers in order to integrate them into the Algerian agricultural system.

BIBLIOGRAPHY :

[1]   **CANTILLON, R**. (1997), Essai sur la nature du commerce en général, Réédition I.N.E.D, Paris (première édition : 1755).
[2]   GODET M (1999), Food Security and environment: Actors' strategy analysis with MACTOR method, LIPSOR.

[3]   **GODET, M**. (1979). The crisis in forecasting and the emergence of the "prospective" approach: with case studies in energy and air transport *Pergamum Policy Studies* (Vol. 15). Oxford: Pergamum Press.

[4]   **GODET, M**. (1982). From Forecasting to 'La Prospective' A New Way of Looking at Futures. *Journal of Forecasting, 1*(3), 293-301.

[5]   **GODET, M**. (2000). The art of scenarios and strategic planning: Tools and pitfalls. *Technological Forecasting and Social Change, 65*(1), 3-22.

[6]   **GODET, M**. (2006). *Creating futures: Scenario planning as a strategic management tool* (2 ed.). Paris: Economica Ltd.

[7]   **HAUK JE, SCLUMIDT J, WERNER** A. (2016). Using social network analysis to identify key stakeholders in agricultural biodiversity governance and related land-use decisions at regional and local level. *Ecology and Society Journal,* 21(2), 49-64.

[8]   **LAURANT, P** L'entrepreneur dans la pensée économique, 1989, Revue internationale P. M. E : économie et gestion de la petite et moyenne entreprise.

[9]   **REES G H S, MAC DONEL S** l. (2017). Data gathering for actor analyses: A research note on the collection and aggregation of individual respondent data for MACTOR. *Future Journal*, 9(1), 115-137.

[10]   **SAHLI Z**, Agriculture and Rural Development in Algeria. Status, Risks and Challenges, Bulletin UASVM Horticulture, 67(2)/2010.