

The 3<sup>rd</sup> International Conference on Economics and Social Sciences  
**Innovative models to revive the global economy**  
October 15-16, 2020  
Bucharest University of Economic Studies, Romania

**Entrepreneurial Competences in Training  
Future Romanian Farmers**

Victor-Marian DUMITRACHE<sup>1\*</sup>, Iulian GOLE<sup>2</sup>,  
Petronela-Evelina BĂLU<sup>3</sup>

DOI: 10.2478/9788395815072-024

**Abstract**

*Since 2014, when the entrepreneurship education became a strategic direction for the EU policies in education, the EU has been providing increasing support to national policymakers in education, to universities and schools, in order to improve their approaches in entrepreneurship education. In 2016, the EntreComp Framework was launched, being not only a landmark for the public authorities but also a tool for analysing the entrepreneurial orientation of various curricula and training standards.*

*This paper aims to make an analysis of the current Romanian Professional Training Standard, EQF level 4, Agricultural Technician specialization, from the perspective of the EntreComp framework. The intention is to point out the gap between what is already being taught and what should be taught regarding entrepreneurship as a transversal competence and to question the framework's level that the Romanian VET system should aim for through its standard in the above-mentioned specialization.*

**Keywords:** entrepreneurship, education, training standard, farmer, EntreComp.

**JEL Classification:** L26, A22, I21, Q13

**1. Introduction**

In Romania there is a mix of needs and strengths supported by data, that makes the professionalization of farmers both a necessity and an opportunity to bring added value in economy. By revising the Professional Training Standard for Technician in agriculture specialization, we can train not only good technicians, but also potential successful farmers with strong entrepreneurial mindset and abilities who will balance

---

<sup>1</sup> Bucharest University of Economic Studies, Bucharest, Romania, victor.dumitrache@gmail.com.

<sup>2</sup> Bucharest University of Economic Studies, Bucharest, Romania, iuliangole@yahoo.com.

<sup>3</sup> Bucharest University of Economic Studies, Bucharest, Romania, evelina.balu@yahoo.com.

\* Corresponding author.

the aging among farmers population and who will also capitalize the high agricultural potential of Romania.

This paper aims to make an analysis of the current Professional Training Standard for Technician in agriculture specialization, from the perspective of the Entrepreneurial Competences framework, to bridge the gap of entrepreneurial skills in farmers training.

## **2. Problem Statement**

Between 2007 and 2018, Romania's total cereal production increased 4.5 times, from 7.81 million tonnes in 2007, to 31.55 million tonnes in 2018, leading Romania to 3<sup>rd</sup> place in the EU for production cereals. In 2019, production of cereals was 30.3 million tonnes, 1.2 million lower than in 2018 (Eurostat, 2019).

These results – the annual production of cereals - are well below the agricultural potential of Romania which is of approximately 97.3 million tonnes of cereals/year. (PWC, 2017).

Among the factors that determine the non-valuation of the agricultural potential of Romania are:

- the small size of agricultural holdings (farms) – 75% of the farms are less than 2 hectares;
- the aging of the population employed in agriculture;
- the lack of theoretical and practical training in agriculture of farmers;
- the lack of investments in modern technologies (Lăcătușu, G., 2019).

In 2017, 25% of the country's active population was engaged in agriculture, but the productivity of agriculture was 83% lower than the EU average. The cause: 70% of the farms are in fact semi-subsistence farms, each having an income of less than 2,000 EUR / year (Eurostat, 2020). The cause of semi-subsistence agriculture: less than 3% of Romanian farmers are qualified in the field of agriculture (Eurostat, 2019).

Another threatening trend in agriculture is aging. At EU level, 31% of all farmers are over 65 years old, and 45% of them come from Romania (Eurostat, 2019).

Thus, in order to capitalize on the agricultural potential of the country and to counteract the effects of aging of the active population employed in agriculture, in Romania special attention must be paid to the training of future farmers.

Taking care not only of the technical skills of the future farmers, but also considering their entrepreneurial skills as key factors of success, will ensure the long-term growth of the Romanian agriculture.

Entrepreneurial farmers are innovative and shape markets rather than being governed by them. The forerunner farmers can create new markets and implement competitive strategies: they can operate as processors to enhance local markets, collaborate with livestock farms, operate as suppliers and develop their own usage (Suvanto et al., 2020).

At this moment, there is no analysis of the professional training standards from the field of agriculture, telling whether high school graduates are equipped with the best mix of entrepreneurial competences which will make them not only good

technicians in agriculture, but also potential successful farmers, running their businesses in agriculture.

Most of the young people being qualified in agriculture study in one of the 58 agricultural Romanian high schools. Their training in agriculture is based on the Professional Training Standard for Technician in agriculture specialization, EQF level 4, approved through OMENCS nr. 4121/13.06.2016

The Standard consists of 12 Learning Results Units. For each Learning Results Unit, the standard:

- describes the technical learning results in terms of knowledge (to know), abilities (to do) and attitudes (to be);
- describes non-technical learning results, related to each of the 8 Key Competences (EC, 2006), where entrepreneurial competences represent one of the eight;
- presents a list of learning resources needed to obtain the learning results;
- presents the assessment standard and evaluation criteria to measure the learning results obtained by the students.

Before 2010, much of the work done on entrepreneurial skills was related to the European research project Entrepreneurial Skills of Farmers (ESoF). The ESoF project explored the area and identified three essential entrepreneurial skills, namely: 1) recognising and realising business opportunities, 2) developing and evaluating a business strategy and 3) networking and utilising contacts (Wolf and Schoorlemmer, 2007). These entrepreneurial skills were presented as so called 'higher order skills'. While professional and management skills are basic requirements for farmers, the three entrepreneurial skills were found to be essential to create and develop new business activities (Wolf and Schoorlemmer, 2007).

As a more recent initiative in the field of entrepreneurship education, the European Commission developed Entrepreneurship Competence Framework, also known as EntreComp, which is a tool designed to empower the entrepreneurial capabilities of European organizations and citizens. The framework aims to build consensus around a common understanding of entrepreneurship as a competence. It does this by defining 3 competence areas, 15 competences, learning outcomes and proficiency levels, which current and future initiatives, like ours, can refer to (EU, 2016).

EntreComp could be considered as additional support provided by the EU to private actors and public authorities in order to improve their mentoring, training and guidance services for job seekers and young people, and at the same time further an entrepreneurial mindset among citizens (EU, 2016).

The framework's conceptual model consists of two main dimensions: the 3 competence areas: Ideas & Opportunities, Resources and Into Action, and the 15 competencies.

The way the 3 area are interconnected reflects the definition of entrepreneurship. They became part of the framework aimed to emphasize that the entrepreneurship competence is the ability to transform ideas and opportunities into action by mobilising and using resources.

Each of the 15 competencies is named and briefly explained through descriptors. Each competence is split in 3 up to 6 threads and then each thread explained and detailed on the 8<sup>th</sup> levels of proficiency resulting in 442 learning outcomes (Dumitrache et al., 2018). The framework describes entrepreneurship as a broader transversal competence, not limited to business.

### **3. Research Questions/Aims of the research**

This paper aims to make an analysis of the current Professional Training Standard for Technician in agriculture specialization, from the perspective of the EntreComp framework, through a comparative method:

- to point out the gap of entrepreneurial skills in farmers training and what should be taught regarding entrepreneurship as a transversal competence;
- to question the framework's level that the standard should aim for in the case of the above-mentioned specialization.

This Professional Training standard is used by all the VET teachers from the agricultural schools when designing new curriculum or adapting an existing one.

Through this study, by bridging the gap between the Standard and EntreComp, we might support the entire agricultural education system to adapt the curriculum and make their students not only good technicians in agriculture, but also potential successful farmers due to their strong entrepreneurial mindset and abilities.

### **4. Research Methods**

Aiming to describe the Professional Training Standard for Technician in agriculture specialization and to compare it with the EntreComp framework, we used two widespread research methods: document analysis and comparative analysis. We preferred these methods because:

- They are efficient: they require data selection, instead of data collection, so they are less time-consuming;
- They are cost-effective as they are less time-consuming, comparing to any other quantitative methods;
- Many documents are available in the public domain, especially on the Internet, and are obtainable without the authors' permission (Bowen, 2009).

The Professional Training Standard for Technician in agriculture specialization was developed by the National Centre for TVET Development under the Ministry of National Education and Scientific Research through a European Social Fund Project called "Revised curriculum in TVET". The Standard was elaborated by a working group of 12 VET teachers of agriculture, under the coordination of two curriculum experts. The Professional Training Standard was approved through OMENCS no. 4121/13.06.2016 and it is in force since 2016.

The Standard characterizes the Technician in agriculture as follows: The Technician in agriculture carries out his/her activity under the direct coordination of an agronomist engineer, dealing with: planning, organizing and carrying out the agricultural works necessary for the growth and harvesting of different types of

field crops for the purpose of selling or delivering regularly to buyers or specialized organizations, or in markets.

The standard creates the framework in which students acquire technical and specialized knowledge regarding the technologies of plant cultivation, skills of planning and organizing production and work, coordination of activities, quality control of works and products in agricultural farms.

The 12 Learning Results Units are the following: 1) Using agropedological elements, 2) Animal husbandry, 3) The use of agricultural and livestock machinery, 4) Market related activities of the farm, 5) Farm management, 6) Environmental protection, 7) Driving tractor and car, 8) Plants protection, 9) Organizing the field plant cultivation works, 10) Organizing the horticulture plant works, 11) Animal husbandry and feed production, 12) Organization of mechanization works from the agricultural exploitation.

Each learning result is coded under a 3 digits code, as following: x.y.z where x is the number of the learning results unit, y is the type of result (1 is for knowledge, 2 is for abilities, 3 is for attitudes) and z is counting the number of results of a kind under a specific learning results unit. For example, 2.2.10 Daily control of animals' health is 10<sup>th</sup> in the list of abilities under the learning results unit number 2, Animal husbandry, and 11.3.3 Collaborating with team members for planning animal breeding correctly is 3<sup>rd</sup> in the list of attitudes under the learning results unit number 11, Animal husbandry and feed production.

For the purpose of the analysis, only the codes in the column 4 of the table 1 were used.

**Table 1. Professional Training Standard analysis**

<b>Competences of EntreComp Framework (EU, 2016)</b>			<b>Level of each competency in the Professional Training Standard according to EntreComp Framework</b>
<b>Area</b>	<b>Competences</b>	<b>Hints</b>	
1. Ideas and opportunities	1.1 Spotting opportunities	Use your imagination and abilities to identify opportunities for creating value	5.2.15 – L2 – Uncover needs 5.2.16 - L2 – Uncover needs
	1.2 Creativity	Develop creative and purposeful ideas	5.3.4 – L2 – Design value 5.2.31 – L5 – Be curios and open
	1.3 Vision	Work towards your vision of the future	N/A
	1.4 Valuing ideas	Make the most of ideas and opportunities	N/A
	1.5 Ethical and sustainable thinking	Assess the consequences and impact of ideas, opportunities and actions	6.2.7-20 – L4 – Think sustainably

<b>Competences of EntreComp Framework (EU, 2016)</b>			<b>Level of each competency in the Professional Training Standard according to EntreComp Framework</b>
<b>Area</b>	<b>Competences</b>	<b>Hints</b>	
2. Resources	2.1 Self-awareness and self-efficacy	Believe in yourself and keep developing	N/A
	2.2 Motivation and perseverance	Stay focused and don't give up	N/A
	2.3 Mobilizing resources	Gather and manage the resources you need	4.1.3 – L1 – Manage resources 4.2.4 – L1 - Manage resources 11.2.16, 20, 21 – L5 Manage resources
	2.4 Financial and economic literacy	Develop financial and economic know how	4.1.5, 6, 7 - L1 - Understanding economic and financial concepts 4.2.6 – L3 – Budget 4.1.7 – L1 – Find funding 4.2.7, 8, 5.2.11 - L2 - Understanding economic and financial concepts 5.2.18, 19, 20, 21 - L4 - Find funding 5.2.30 – L6 – Understanding economic and financial concepts
	2.5 Mobilizing others	Inspire, enthuse and get others on board	1.3.d, 2.3.d, ..., 6.3.d – L1 - Communicate effectively
3. Into action	3.1 Taking the initiative	Go for it	1.3.a, 2.3.a, 3.3.a, 6.3.a - L2 – Work independently 1.3.b, 2.3.b, 4.3.b, 6.3.b, 7.3.b, ..., 12.3.b - L2 – Take responsibility
	3.2 Planning and management	Prioritize, organize and follow-up	2.3.21, 3.3.10, 4.3.6, 5.3.3, 12.3.12 - L1 - Monitoring your progress 1.2.45, 6.2.38, ..., 11.2.35 - L1 - Monitoring your progress 11.2.16 – L1 – Plan and organize
	3.3 Coping with uncertainty	Make decisions dealing with uncertainty, ambiguity and risk	2.3.17 – L2 – Calculate risk
	3.4 Working with others	Team up, collaborate and network	1.3.c, 2.3.c, 4.3.c, 5.3.c, 6.3.c, 8.3.c, ..., 12.3.c - L2 – Work together 9.2.7, 12, 23, 33 – L5 – Team up 10.2.11, 14, 15, 18, 20, 25, 30, 35 – L4 – Work together 11.2.7, 35 – L5 – Team up
	3.5 Learning through experience	Learn by doing	N/A

Source: the author

Synthetic description of Table 1 (table heading as in Dumitrache et al., 2018):

- Column 1 – area of the EntreComp Framework;
- Column 2 – competence as in EntreComp Framework;
- Column 3 – hint about the competence as in EntreComp Framework;
- Column 4 – competences from the Professional Training Standard, related to the Entrepreneurship Competences and their level according to EntreComp.

Other notations:

- x.3.a describes various competences (attitudes) of working independently when performing different tasks related to the field of agriculture;
- x.3.b describes various competences (attitudes) of taking the responsibility over a specific task related to the field of agriculture;
- x.3.c describes various competences (attitudes) of working together with others for carrying out different tasks specific to agriculture;
- x.3.d describes various competences (attitudes) of communicating effectively within the team.

By analysing column 4, we can estimate the extent in which the Professional Training Standard covers each of the 15 entrepreneurship competences. As table 1 shows, a thread of an entrepreneurial competence can be covered at different levels by multiple competences from the Professional Training Standard. For example, the thread called Monitoring your progress, associated with Planning and management, is covered by one competence from each learning results unit (1-12) up to Proficiency Level 1 (L1).

All these competences can be found under multiple learning results units.

## 5. Findings

Below there is an analysis of table 1, telling the extent to which the Professional Training Standard covers each of the 15 entrepreneurship competences of the EntreComp.

The first entrepreneurial competence, called *Spotting Opportunities*, is covered by the Standard in 1 out of 5 threads: *Uncover needs* (L2). The 4 uncovered threads are *Identify, create and seize opportunities*, *Focus on challenges*, *Analyse the context*.

The second entrepreneurial competence, called *Creativity*, is covered by Standard in 2 out of 5 threads. The 2 covered threads are *Be curious and open* (L?) and *Design value* (L?). The 3 uncovered threads are: *Develop ideas*, *Define problems*, *Be innovative*.

The third entrepreneurial competence, called *Vision*, is totally uncovered by the Standard, in all its 3 threads: *Imagine*, *Think strategically* and *Guide action*.

The fourth entrepreneurial competence, called *Valuing ideas*, is totally uncovered by the Standard, in both of its threads: *Recognise the value of ideas* and *Share and protect ideas*.

The fifth entrepreneurial competence, called *Ethical and sustainable thinking*, is covered by the standard in 1 out of its 4 threads, *Think sustainably*, up to L4. The 3 uncovered threads are *Behave ethically*, *Assess impact* and *Be accountable*.

The sixth entrepreneurial competence, called Self-awareness and self-efficacy, is totally uncovered by the Standard, in all its 4 threads: *Follow your aspirations*, *Identify your strengths and weaknesses*, *Believe in your ability* and *Shape your future*.

The seventh entrepreneurial competence, called Motivation and perseverance, is totally uncovered by the Standard, in all its 5 threads: Stay driven, Be determined, Focus on what keeps you motivated, Be resilient and Don't give up.

The eighth entrepreneurial competence, called *Mobilising resources*, is covered by the Standard in 1 out of its 4 threads, *Manage resources*, up to L5. The 3 uncovered threads are *Use resources responsibly*, *make the most out of your time* and *Get support*.

The ninth entrepreneurial competence, called *Financial and economic literacy*, is covered by the standard in 3 out of its 4 threads, as following: *Understanding economic and financial concepts* up to L6, *Budget* up to L3, *Find funding* up to L4. The uncovered thread is *Understand taxation*.

The tenth entrepreneurial competence, called *Mobilising others*, in 1 of its 4 threads, *Communicate effectively* up to L1. The 3 uncovered threads are *Inspire and get inspired*, *Persuade* and *Use media effectively*.

The eleventh entrepreneurial competence, called *Take the initiative*, is covered in 2 of its 3 threads, as follows: *Take responsibility* up to L2 and *Work independently* up to L2. The uncovered thread is called *Take action*.

The twelfth entrepreneurial competence, called *Planning and management* is covered by the Standard in 2 out of its 6 threads: *Plan and organize* up to L1 and *Monitor your progress* up to L1. The uncovered threads are *Define goals*, *Develop sustainable business plans*, *Define priorities* and *Be flexible and adapt to changes*.

The thirteenth entrepreneurial competence, called *Coping with uncertainty, ambiguity and risk*, is covered by the Standard in 1 of its 3 threads, *Calculate risk* up to L2. The two uncovered threads are *Cope with uncertainty and ambiguity* and *manage risk*.

The fourteenth entrepreneurial competence, called *Work with others*, is covered by the Standard in 2 of its 6 threads: *Work together* up to L4 and *Team up* up to L5. The 4 uncovered threads are *Accept diversity*, *Develop emotional intelligence*, *Listen actively* and *Expand your network*.

The fifteenth entrepreneurial competence, called *Learning through experience*, is totally uncovered by the Standard, in all its 3 threads: *Reflect*, *Learn to learn* and *Learn from experience*.

Overall, out of the 15 competences of EntreComp, 5 have 2 or more threads covered, 5 have only one thread covered and other 5 are not covered at all by the Standard. We can say that the graduates of *Technician in agriculture* specialization are rather not entrepreneurial. The entrepreneurial skills that they are equipped with at the end of the 4 years training program are rather not enough for empowering them to start a business in agriculture. Further revision of the Standard, based on this analysis, is recommended.



## 6. Conclusions

The research shows that Professional Training Standard for Technician in agriculture specialization covers only 10 out of 15 entrepreneurial competencies described by the Entrepreneurship Competences Framework. The 5 uncovered competences could be covered by revising the Standard, as data shows that the need for farmers with entrepreneurial skills is high in Romania.

Further research having a similar purpose may target Professional Training Standards of other specializations from the field of agriculture.

Further research could also be focused on the effectiveness of the learning content and the methods used in various teaching subjects, as well as on new approaches to increase the effectiveness of the entrepreneurial learning.

## References

---

- [1] Annex 4 to OMENCS nr. 4121/13.06.2016, Standard de Pregătire Profesională, Calificarea profesională: Tehnician în agricultură.
- [2] Bowen, G. (2009). Document Analysis as a Qualitative Research Method, *Qualitative Research Journal*, 9(2), pp. 27-40.
- [3] Dumitrache, V. et al. (2018). Entrepreneurial competences in economical engineering curriculum in Romania, *Social and Behavioral Sciences*, 238, pp. 737-742.
- [4] European Commission, Joint Research Centre (2015). Entrepreneurship Competence: An Overview of Existing Concepts, Policies and Initiatives.
- [5] European Commission (2006). The Education & Training 2010 Work Program.
- [6] European Union, Joint Research Centre (2016). EntreComp: The Entrepreneurship Competence Framework.
- [7] Eurostat (2019). Agricultural production – crops. *Report*.
- [8] Eurostat (2019). Agriculture statistics – family farming in the EU. *Report*.
- [9] Lăcătușu, G. (2019). Progrese în agricultură. *Report*.
- [10] PWC (2017). Potențialul dezvoltării sectorului agricol din România. *Report*.
- [11] Suvanto, H. et al. (2020). Entrepreneurial identity and farmers' protein crop cultivation choices, *Journal of Rural Studies*.
- [12] de Wolf, P., & Schoorlemmer, H. (2007). Exploring the significance of entrepreneurship in agriculture. Report, *Research Institute of Organic Agriculture*, Frick, Switzerland.