ADAPTATION OF THE FARMERS' SKILLS TO THE REQUIREMENTS OF THE FUTURE AGRICULTURE

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Abstract

This research explores the evolving skill requirements in the agricultural sector, driven by changing business environments and technological advancements in the labour market. As agriculture undergoes significant transformation with the integration of technologies like drones, soil sensors, and data analytics, the role of farmers is shifting towards that of data-driven, business-savvy professionals. To assess modern agriculture's skill needs, the study employed a multi-faceted approach. Firstly, we utilized the European Skills/Competences, Qualifications and Occupations (ESCO) classification to identify agriculture-related skills. Secondly, we analysed job advertisements from Romanian profile websites to compare the skills mentioned in job postings with the ESCO taxonomy. Lastly, we administered questionnaires to agronomy students and practicing farmers to gauge their perspectives on necessary skills. The study revealed a comprehensive skill set relevant to agriculture, with a strong emphasis on information skills, effective communication, and management abilities. These findings highlight the multifaceted nature of contemporary agriculture careers, which require technical expertise, sales acumen, analytical skills, and adaptability to navigate the evolving landscape.

Key words: agriculture skills, technological transformation, contemporary farming, skill gap analysis

INTRODUCTION

In recent years, changes in the business environment, new technologies, an increasingly competitive level, and dynamism have contributed to the need for acquiring new skills. (Mulder et. al., 2007; Dolce et al., 2019) [16, 7]. Maybe now more than ever, the labour market is deeply influenced by VUCA characteristics (Volatile, Uncertain, Complex, and Ambiguous) (Cedefop, 2022; Howard et. al., 2022) [5, 13].

In this context, even the profession of farming is on the verge of undergoing radical changes which requires updated and new skills [1, 2]. The use of drones has already become common for monitoring fields and treating them with herbicides or spray fertilizers. The future image of agriculture is realized through a combination of soil sensors, weather prediction apps, satellite imagery, and tractors controlled by joysticks.

Of course, this transformation does not lead to the disappearance of the farmer's profession, but it does radically change it. The farmer of the future will work in a completely different way compared to the present (Erickson et. al., 2018; Sorensen et al., 2021) [9, 17]. "They will coordinate machines, give commands to drones from a computer, analyse data, and make decisions based on this data." (INACO - Inițiativa pentru Competitivitate, 2021) [14].

Furthermore, according to INACO experts, future farmers will need skills more akin to those of business people. Their time will be much more valuable if spent creating connections and finding markets for their products rather than working the land. They will need to study demand in order to adapt their offerings to consumer needs. Successful farmers will be those who attend conferences to stay connected with the latest technological developments in the field. Those who want to remain relevant will test new, more resilient seeds with higher production capacities (INACO - Inițiativa pentru Competitivitate, 2021) [14].

This study aims to conduct a comprehensive assessment of the extent to which there is alignment between the competencies that entrepreneurs in the agricultural sector expect from their employees and the skills that students pursuing education in agriculture identify as essential for their future employment [6]. By analyzing the perspectives of both agricultural entrepreneurs, who represent the employer's viewpoint, and students, who are potential future employees, this research seeks to identify commonalities and discrepancies in the expectations and perceived necessities of skills and knowledge in the agricultural job market [4, 7, 11, 15].

This investigation is intended to contribute to a deeper understanding of the educational and training needs in the agriculture sector, facilitating better preparation of students for their professional careers and assisting employers in aligning their expectations with the emerging workforce's capabilities

MATERIALS AND METHODS

In order to assess the skills needed by farmers nowadays we took a number of important steps.

First, we assessed and extracted all the skills labelled as dealing with agriculture in the European Skills/Competences, Qualifications and Occupations/ESCO classification of the European Commission (European Commission, 2023) [10].

Second, using scraping and crawling tools, we extracted a series of job advertisements available on Romanian profile websites and compared the skills mentioned in them to the skills from the ESCO taxonomy.

The data was collected dated from the 2022 – 2024 timeframe.

Third, we created a questionnaire which we applied both to students in the agronomy field, as well as to present farmers, trying to assess which skills the future and present farmers believe they need for succeeding in this field of work.

RESULTS AND DISCUSSIONS

In December 2023 the following 26 skills were connected to the agriculture field in the ESCO taxonomy (Table 1).

Table 1 not only categorizes 26 distinct skills but also aligns them with their respective ESCO level 1 categories, offering a structured overview of the competencies deemed essential in agriculture. These skills range from managerial tasks, such as assigning duties to agricultural workers and developing agricultural policies, to more technical abilities like maintaining agricultural machinery and operating agricultural or forestry equipment.

A noteworthy aspect of this classification is its emphasis on a diverse skill set that spans management, information skills, assisting and caring, working with machinery and specialized equipment, working with computers, communication, collaboration and creativity, handling and moving, and organizing, planning, and scheduling work and activities. This diversity reflects the multifaceted nature of the agricultural industry, which requires professionals to possess a blend of technical, managerial, and interpersonal skills to effectively address the challenges and demands of modern agriculture.

The inclusion of skills related to the development and implementation of agricultural policies and production plans underscores the sector's strategic importance and its need for forward-thinking leadership. Furthermore, the focus on operating machinery and specialized equipment highlights the technological advancements in agriculture, such as precision farming and the use of agricultural information systems and databases, which are critical for enhancing productivity and sustainability.

The classification also acknowledges the importance of soft skills, such as teamwork and the ability to provide advice to farmers, indicating that successful agricultural professionals must be able to communicate effectively and work collaboratively. Additionally, the attention to compliance with agricultural codes of practice and farm regulations reflects the growing emphasis on sustainable and ethical farming practices.

Overall, the ESCO taxonomy's detailed mapping of agriculture-related skills provides valuable insights into the competencies that are currently prioritized in the agricultural sector. This information is crucial for educational institutions, policymakers, and industry stakeholders aiming to develop training programs and policies that align with the evolving needs of the agriculture industry, ensuring that the future workforce is well-equipped to meet these challenges.

Table 1. Agriculture-related skills identified in the ESCO classification

Skills	ESCO level 1 category they belong to
Assign duties to agriculture workers	Management skills
Develop agricultural policies	
Develop agricultural production plans	
Carry out work related calculations in agriculture	Information skills
Maintain agricultural machinery	
Inspect agricultural fields	
Strive for nutritional improvement of food manufacturing	
Supervise hygiene procedures in agricultural settings	Assisting and caring
Comply with agricultural code of practice	
Comply with farm regulations	
Drive agricultural machines	Working with machinery and specialised equipment
Operating agricultural or forestry equipment	
Diagnose fuel systems	
Maintain air conditioning systems	
Operating mobile plant	
Apply precision farming	
Use agricultural information systems and databases	Working with computers
Promote agricultural policies	Communication, collaboration and creativity
Provide advice to farmers	
Working in teams	
Work in a land-based team	
Advise on weather-related issues	
Cultivating land and crops	Handling and moving
Harvest crop	
Manage time in agricultural production	Organising, planning and scheduling work and activities

Source: ESCO taxonomy [10].

Following the extraction of 78 job ads related to the agriculture field found on specific Romanian internet websites (BestJobs, 2023; eJobs, 2023; Hipo, 2023) [3, 8, 12].

The agriculture-related jobs we identified during this endeavour include:

Agronomist (Responsibilities: Providing agronomic consultancy, conducting market research and offering technical support to clients, helping them optimize their agricultural practices)

Agribusiness Sales Representative/ Consultant (Responsibilities: Promoting and selling agricultural equipment and products)

Key Account Manager (Responsibilities: Working closely with major clients, negotiating contracts and aiming to increase sales and client satisfaction)

Automation Engineer (Responsibilities: Monitoring and improving industrial control systems, ensuring their proper functioning)

Utilities Engineer (Responsibilities: Coordinating activities related to environmental protection, waste management, water and air quality, and maintaining utility systems)

Contract Administrator - Agribusiness (Responsibilities: Registering and managing sales and purchase contracts, maintaining master data, and ensuring compliance with internal procedures)

Depot Manager - Vegetable/Fruit Warehouse (Responsibilities: Efficiently managing warehouse activities, stock monitoring, team coordination, and problem-solving)

Business Development Manager (Responsibilities: Expanding the company's business, identifying new clients and forming strategic partnerships)

Assistant Manager – Warehouse (Responsibilities: Assisting with warehouse management, including order processing, inventory control, and logistics coordination)

Technical Support and Training Roles (Responsibilities: providing specialized training to clients on the use and maintenance of agricultural equipment or technology, ensuring customer satisfaction and addressing technical issues)

Additional Roles (Responsibilities: management positions or roles in the automotive industry related to agriculture)

Further, we cleaned the data, translated it in English and analysed the specific skills required from the candidates, categorizing them according to the ESCO taxonomy.

Table 2 presents a detailed analysis of agriculture-related skills as identified in job advertisements (ESCO taxonomy Level 2).

Table 2. Agriculture-related skills identified in the job ads, classified according to the ESCO taxonomy

Category according to ESCO Level 2	No. of mentions
S2.3 - managing information	223
S2.9 - monitoring developments in area of expertise	150
S2.2 - documenting and recording information	150
S2.7 - analysing and evaluating information and data	132
S4.2 - organising, planning and scheduling work and activities	105
S1.2 - liaising and networking	95
T4.1 - communicating	94
S4.6 - building and developing teams	92
S2.8 - monitoring, inspecting and testing	87
S4.5 - leading and motivating	86
S4.9 - making decisions	81
S3.4 - providing information and support to the public and clients	77
T2.2 - planning and organising	74
S3.3 - protecting and enforcing	74
S4.1 - developing objectives and strategies	72
S4.8 - supervising people	65
S1.0 - communication, collaboration and creativity	60
S1.8 - working with others	59
T3.2 - taking a proactive approach	57
T4.2 - supporting others	49
T2.1 - processing information, ideas and concepts	49
S4.3 - allocating and controlling resources	45
S1.6 - promoting, selling and purchasing	42
S1.5 - advising and consulting	39
T3.3 - maintaining a positive attitude	37
T3.1 working efficiently	34
S2.1 - conducting studies, investigations and examinations	34
T3.4 - demonstrating willingness to learn	32
T6.3 - applying civic skills and competences	32
S1.11 - designing systems and products	29
S4.0 - management skills	28
T4.5 - following ethical code of conduct	26
S1.15 - using more than one language	26
T1.1 - mastering languages	26
T6.1 - applying health-related skills and competences	22
S1.1 - negotiating	21
S3.1 - counseling	19
S3.0 -assisting and caring	19
T6.5 - applying entrepreneurial and financial skills and competences	18
T6.6 - applying general knowledge	16
S1.9 - solving problems	15
S1.4 - presenting information	15
S2.0 - information skills	14
S2.4 - processing information	14
T2.4 - thinking creatively and innovatively	10
T2.3 - dealing with problems	10
T6.2 applying environmental skills and competences	10
S1.7 - obtaining information verbally	10
T1.3 - working with digital devices and applications	10
S4.4 - performing administrative activities	9
S2.6 - calculating and estimating	4
S3.2 - providing health care or medical treatments	4
S3.6 - providing general personal care	4
T1.2 - working with numbers and measures	2

Source: ESCO taxonomy [10].

This analysis provides a quantitative overview, showcasing the frequency of mentions for each skill category, which offers insightful data on the current demand for specific competencies within the agricultural sector.

The most valued skills according to our analysis are the ones belonging to **S2 – information skills** (with a total of 383 mentions). These include skills in using various software tools, including MS Office, ERP systems, and industry-specific software like Autocad, drafting bills of materials, filing documents, preparing financial documents and records, reports or budgets, handling e-mail, analysing information and data as well as technical knowledge and experience in the agriculture domain.

The second most valuable set of skills belongs to the **S1 – communication, collaboration and creativity** category (a total of 370 mentions). These include effective communication, both verbal and written, often in more than one language (especially English), coordinating with teams, working with others and dealing with clients.

The third set of skills belongs to the **S4 – management skills** category (a total of 340 mentions). This includes team leadership, project management, the ability to face constant change or the ability to delegate and supervise tasks, as well as the ability to plan events and programmes, directing, to supervise and coordinate projects, manage transport and logistics activities and plan production processes.

Fourth are the skills belonging to the **T4 – social and communication skills and competences** (a total of 169 mentions). Besides communication, support, customer orientation and the ability to sell, these transversal competences also include integrity, respect, loyalty and ethics.

Fifth are the skills belonging to the **S3 – assisting and caring** category (153 mentions). These involve customer orientation, friendliness, support, as well as a preoccupation for the environment and compliance with regulations. Understanding of local and international regulations and standards, including environmental and safety regulations, is important, especially in roles related to compliance and quality control.

Sixth are the **T6 – life skills and competences** (148 mentions). These include

critical thinking, quick reactions, assuming responsibility, as well as assessing risk, the ability to analyse market trends, customer needs, and technical problems, and then develop effective solutions.

Seventh are **T3 – self management skills and competences** (123 mentions). These include curiosity and willingness to learn, attention to detail, determination and initiative. Especially for roles that involve fieldwork or visiting different sites, having a driving license and being open to travel is often a prerequisite.

Eighth come **T2 – thinking skills and competences** (109 mentions). These are skills such as planning and organising, positive attitude, ability to work under pressure and in stressful environments, creative thinking and improvisation.

Ninth and last place are **T1 – core skills and competences** (38 mentions), which include languages, calculations and programming skills.

In summary, a career in agriculture today requires a blend of technical expertise, sales and customer service skills, analytical abilities, and strong communication, along with computer proficiency and management capabilities. Adaptability and a solid educational foundation also play significant roles in this field.

Interestingly, we haven't found any mentions of skills such as inspiring, encouraging, being a role model, deciding, interpreting, dealing with frustrations, ability to concentrate, patience, negotiation skills, entrepreneurial skills, innovative thinking, the ability to listen, the ability to express through visual materials, or teaching skills.

In the third stage of our research, we created two sets of questionnaires: one dedicated to students from the University of Life Sciences" Regele Mihai I" from Timişoara (students in the agriculture field), and one dedicated to farmers.

54 students answered the first questionnaire. Most of them were enrolled for obtaining a bachelor degree, but there were several enrolled into masters or doctoral studies.

Most were aged 20-25 years old and declared they had previous experienced with working in the agronomy field, mostly within the family farm. On the other side, 12 farmers answered the second questionnaire.

5 of them were 20-35 years old, while 7 were 35-50 years old. Most of them had formal degrees in the agronomy field, and ran farms of different sizes (from under 10 ha to over 500 ha).

Each of the respondents was asked to rank the 54 soft skills identified in the job ads, using a scale from 1 to 10, according to their perceived relevance in succeeding in the agronomy field.

Table 3 offers an insightful perspective on the importance of various soft skills in the agronomy field, as ranked by students. This ranking is predicated on their perceived relevance for success in this domain, with ratings on a scale where a higher value indicates greater importance.

Notably, "S1.6 - promoting, selling and purchasing" and "S4.9 - making decisions" both received the highest importance rating of 9.57, highlighting the critical role of marketing and decision-making skills in the agronomy sector. These competencies are deemed vital for navigating the complexities of agricultural markets and making strategic decisions.

Close behind, with ratings above 9.5, are "S1.9 - solving problems," "S4.3 - allocating and controlling resources," "T2.3 - dealing with problems," "T3.1 working efficiently," and "T4.5 - following ethical code of conduct." These skills underscore the necessity for problem-solving abilities, resource management, efficiency in work, and adherence to ethical standards, reflecting the multifaceted challenges faced in agronomy.

Organizational skills, as represented by "S4.2 - organising, planning and scheduling work and activities," along with effective communication ("T4.1 - communicating"), are also highly valued, each with a rating of 9.48. These competencies are essential for managing complex agricultural operations and ensuring clear, effective communication within the field.

Table 3. Agriculture-related skills identified in the job ads, ranked by students in the agronomy field according to their relevance for succeeding in this field

Soft skills according to ESCO Level 2	Imp. acc. to students
S1.6 - promoting, selling and purchasing	9.57
S4.9 - making decisions	9.57
S1.9 - solving problems	9.52
S4.3 - allocating and controlling resources	9.52
T2.3 - dealing with problems	9.50
T3.1 working efficiently	9.50
T4.5 - following ethical code of conduct	9.50
S4.2 - organising, planning and scheduling work and activities	9.48
T4.1 - communicating	9.48
T2.4 - thinking creatively and innovatively	9.46
T4.2 - supporting others	9.46
S4.0 - management skills	9.44
S4.1 - developing objectives and strategies	9.44
S4.6 - building and developing teams	9.44
T6.6 - applying general knowledge	9.44
T2.2 - planning and organising	9.43
T3.4 - demonstrating willingness to learn	9.39
S2.6 - calculating and estimating	9.37
T6.5 - applying entrepreneurial and financial skills and competences	9.37
S4.5 - leading and motivating	9.35
S1.1 - negotiating	9.31
S1.5 - advising and consulting	9.31
S2.2 - documenting and recording information	9.31
T1.3 - working with digital devices and applications	9.31
T6.3 - applying civic skills and competences	9.31
S2.8 - monitoring, inspecting and testing	9.30
S1.8 - working with others	9.28
S4.8 - supervising people	9.28
T2.1 - processing information, ideas and concepts	9.28
T3.3 - maintaining a positive attitude	9.28
S1.4 - presenting information	9.26
S2.4 - processing information	9.24
S2.9 - monitoring developments in area of expertise	9.24
T6.2 - applying environmental skills and competences	9.24
S4.4 - performing administrative activities	9.22
T1.2 - working with numbers and measures	9.22
T6.1 - applying health-related skills and competences	9.22
S2.7 - analyzing and evaluating information and data	9.20
S3.0 -assisting and caring	9.20
S3.3 - protecting and enforcing	9.20
S2.1 - conducting studies, investigations and examinations	9.19
S2.0 - information skills	9.15
S2.3 - managing information	9.13
S1.7 - obtaining information verbally	9.11
S3.1 - counseling	9.11
S3.2 - providing health care or medical treatments	9.11
S1.0 - communication, collaboration and creativity	9.09
S1.11 - designing systems and products	9.07
S3.6 - providing general personal care	9.07
T3.2 - taking a proactive approach	9.06
S3.4 - providing information and support to the public and clients	9.02
S1.2 - liaising and networking	8.98
T1.1 - mastering languages	8.76
S1.15 - using more than one language	8.74

Source: original research. Students' answers.

Innovative thinking and support for others, indicated by "T2.4 - thinking creatively and

innovatively" and "T4.2 - supporting others," with ratings of 9.46, emphasize the importance of creativity and teamwork in addressing the dynamic challenges of agronomy.

Management and leadership skills, including "S4.0 - management skills," "S4.1 - developing objectives and strategies," and "S4.6 - building and developing teams," each rated at 9.44, highlight the demand for leadership qualities that can drive strategic direction, team development, and organizational success in the agricultural sector.

This ranking vividly illustrates the broad spectrum of soft skills that students in agronomy perceive as crucial for their future success. It underscores the importance of not only technical knowledge but also of interpersonal, managerial, and ethical competencies in the agricultural profession. This insight can guide educational institutions in tailoring their curriculum to better prepare students for the challenges and opportunities in the field of agronomy, ensuring they are well-equipped with the skills necessary to thrive in their future careers.

Table 4 illustrates the prioritization of agriculture-related soft skills as ranked by farmers, reflecting their assessment of what is most relevant for success in the field. This evaluation provides a practical perspective on the competencies valued by those actively engaged in farming operations.

At the top of the list, "S4.3 - allocating and controlling resources" is considered most critical, with a rating of 9.58, emphasizing the importance of efficient resource management in farming. Skills in "S1.4 - presenting information," "S1.9 - solving problems," "S2.6 - calculating and estimating," and "T2.3 - dealing with problems" are all highly valued, each with a rating of 9.41. These skills underscore the necessity for effective communication, problem-solving capabilities, and analytical thinking in the agriculture sector.

Table 4. Agriculture-related skills identified in the job ads, ranked by farmers according to their relevance for succeeding in this field

Soft skills according to ESCO Level 2	Imp. acc. to students
S4.3 - allocating and controlling resources	9.58
S1.4 - presenting information	9.41
S1.9 - solving problems	9.41
S2.6 - calculating and estimating	9.41
T2.3 - dealing with problems	9.41
S1.0 - communication, collaboration and creativity	9.33
S4.5 - leading and motivating	9.33
T3.1 working efficiently	9.33
S2.7 - analysing and evaluating information and data	9.25
S4.2 - organising, planning and scheduling work and activities	9.25
S4.8 - supervising people	9.25
S1.1 - negotiating	9.16
S2.0 - information skills	9.16
S4.0 - management skills	9.16
S4.6 - building and developing teams	9.16
S4.9 - making decisions	9.16
T2.2 - planning and organising	9.16
T4.1 - communicating	9.16
S2.3 - managing information	9.08
S2.8 - monitoring, inspecting and testing	9.08
T3.2 - taking a proactive approach	9.08
S1.2 - liaising and networking	9
S2.1 - conducting studies, investigations and examinations	9
S2.9 - monitoring developments in area of expertise	9
T2.1 - processing information, ideas and concepts	9
S4.1 - developing objectives and strategies	8.91
T3.4 - demonstrating willingness to learn	8.91
T4.5 - following ethical code of conduct	8.91
S1.8 - working with others	8.83
S2.2 - documenting and recording information	8.83
S2.4 - processing information	8.83
T1.3 - working with digital devices and applications	8.83
T2.4 - thinking creatively and innovatively	8.83
T3.3 - maintaining a positive attitude	8.83
S3.3 - protecting and enforcing	8.75
T1.2 - working with numbers and measures	8.75
T6.6 - applying general knowledge	8.66
S1.5 - advising and consulting	8.58
S3.0 -assisting and caring	8.58
S4.4 - performing administrative activities	8.58
T4.2 - supporting others	8.58
T6.1 - applying health-related skills and competences	8.58
T6.5 - applying entrepreneurial and financial skills and competences	8.5
S1.6 - promoting, selling and purchasing	8.41
S1.7 - obtaining information verbally	8.41
S1.11 - designing systems and products	8.41
T1.1 - mastering languages	8.41
T6.2 - applying environmental skills and competences	8.41
T6.3 - applying civic skills and competences	8.41
S3.1 - counseling	8.33
S1.15 - using more than one language	8.25
S3.4 - providing information and support to the public and clients	8
S3.6 - providing general personal care	7.91
S3.2 - providing health care or medical treatments	7.83

Source: Original research. Farmers' answers.

"Communication, collaboration and creativity" (S1.0), along with "leading and motivating" (S4.5) and "working efficiently" (T3.1), each receive a rating of 9.33, highlighting the essential role of teamwork, leadership, and productivity in agricultural success.

"Analysing and evaluating information and data" (S2.7), "organising, planning and scheduling work and activities" (S4.2), and "supervising people" (S4.8) are also considered important, with ratings of 9.25. These skills reflect the need for analytical capabilities, strategic planning, and effective supervision in managing farm operations.

Negotiation, information management, and decision-making skills, along with the ability to build and develop teams, are further identified as key competencies, with ratings ranging from 9.16 to 9.25. This indicates a recognition of the multifaceted nature of farming, which requires a blend of managerial, interpersonal, and technical skills. Skills related to "managing information" (S2.3), "monitoring, inspecting and testing" (S2.8), and taking a "proactive approach" (T3.2) are also ranked highly, with ratings around 9.08, pointing to the necessity for continuous monitoring, quality control, and proactive management in agricultural practices.

This ranking by farmers sheds light on the practical skills deemed essential for navigating the complexities of modern agriculture. It underscores a blend of managerial, technical, and interpersonal skills, reflecting the dynamic and challenging nature of the sector. This insight can inform educational and training programs aimed at preparing individuals for successful careers in agriculture, ensuring they are equipped with the competencies valued by industry practitioners.

Several interesting aspects surfaced from the three stages of our research when the results were compared

For instance, S2.3 - managing information, the soft skill which ranked first in the job ads with no less than 233 mentions, only ranked in the 43rd place in the students' hierarchy and on the 19th place in the farmers' hierarchy. (Fig.1; Fig 2; Fig. 3)

The soft skill which ranked first in the students' hierarchy, S1.6 - promoting, selling and purchasing, only ranked on the 23rd place in the job ads and on the 44th place in the farmers' hierarchy.

The soft skill which ranked first in the farmers' hierarchy, S4.3 - allocating and controlling resources, only ranked on the 22nd place in the job ads, but ranked on a close 5th place in the students' hierarchy.

The students graded the importance of soft skills higher than the farmers. The highest average score given by the students was 9.57, and the lowest one was 8.74. The highest average score given by the farmers was 9.58, while the lowest one was 7.83.

Soft skills such as providing health care, medical treatments or personal care scored the lowest in all the created rankings.

Also, applying environmental skills and competences ranked extremely low in the job ads and the farmers' hierarchy, but much higher, on the 34th place, in the students' hierarchy.
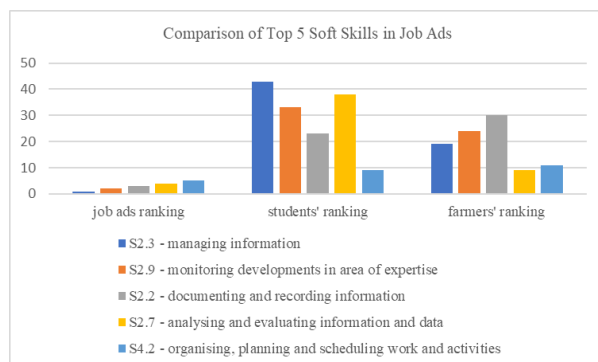

Fig. 1. Comparison of Top 5 Soft Skills in Job Ads
Source: Original research.

The top 5 soft skills ranked by the farmers seem to most align with their according ranking done by the students. However, they are not reflected in the job ads mentions.

In fact, it appears that more often than not, the job ads in the agriculture domain do not reflect the real needs of the farmers or the beliefs of the students when it comes to mentioning soft skills needed for jobs in the field.
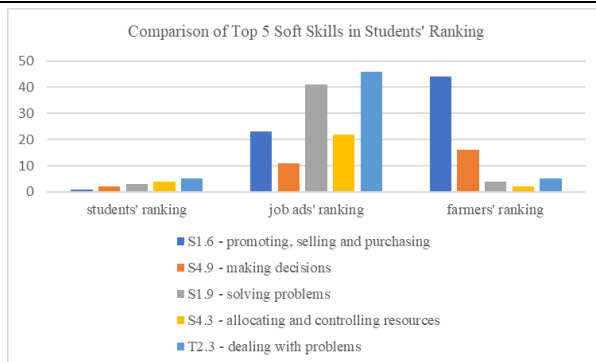

Fig. 2. Comparison of Top 5 Soft Skills in Students' Ranking
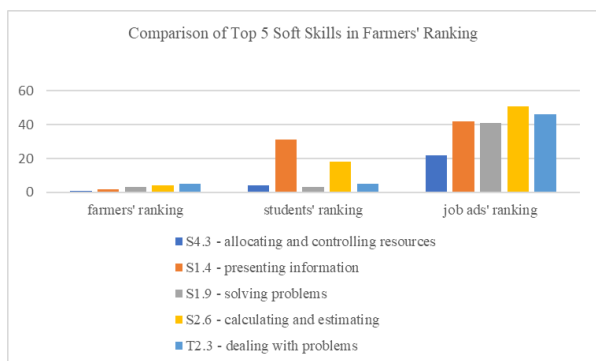Source: Original research.

Fig. 3. Comparison of Top 5 Soft Skills in Farmers' Ranking
Source: Original research.

CONCLUSIONS

In conclusion, the agriculture sector is undergoing a profound transformation driven by technological advancements, changing market dynamics, and the need for greater sustainability. This transformation is reshaping the skills and competencies required of farmers and agricultural professionals. The study conducted a comprehensive analysis of the skills demanded in contemporary agriculture-related job advertisements and identified key skill categories.

The most valued skills in the agriculture sector according to the job ads are information skills, emphasizing the importance of digital literacy and data analysis in modern farming practices.

According to the farmers, the most important skills to have in this domain are the ones related to allocating and controlling resources, presenting information, solving problems,

calculating and estimating and dealing with problems.

According to the students, the most valuable skill involves promoting, selling and purchasing, followed by making decisions, solving problems, allocating and controlling resources and dealing with problems.

Effective communication, collaboration, and creativity skills also rank high, reflecting the need for farmers to work in diverse teams and engage with clients and stakeholders. Management skills, including leadership and project management, are essential for overseeing complex agricultural operations.

Furthermore, the job ads highlighted the importance of social and communication skills, caring for the environment, and compliance with regulations in the agriculture industry. Life skills such as critical thinking, risk assessment, and self-management are crucial for addressing challenges and seizing opportunities in this dynamic field.

Overall, a successful career in agriculture today requires a diverse skill set that combines technical expertise, sales and customer service skills, analytical abilities, and strong communication, along with computer proficiency and management capabilities. Adaptability and a solid educational foundation are also key factors in thriving in the evolving agricultural landscape. However, there is a notable absence of certain skills, such as negotiation, innovation, and teaching skills, which may become increasingly important as the agriculture sector continues to evolve.

The farmers and the students seem to be much more aligned when it comes to predicting the soft skills that lead to success in the agriculture domain than the job ads.

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