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ASSESSING YOUTH EMPLOYMENT OPPORTUNITIES IN AGRIBUSINESS: A CASE STUDY FROM THE PELAGONIA REGION

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ABSTRACT

The agri-food sector in the Pelagonia region of North Macedonia, despite its importance to the local economy, struggles to attract young people to employment opportunities. This study surveyed 15 companies of different sizes and an academic institution to understand the skills and competencies employers need and to explore the factors behind youth unemployment in this sector. The findings point to a mismatch between the skills taught in formal education and those demanded by the industry, as well as certain gender disparities in job opportunities in agri-food sector. Employers emphasized the need for both soft skills, such as teamwork and flexibility, and hard skills, including practical agricultural expertise. A major barrier identified is the gap between formal education and the practical needs of the workplace, along with a lack of motivation and awareness among youth about the potential careers in the agri-business sector. The study recommends enhanced collaboration between academia and industry, increased internship opportunities, and efforts to make the agri-food sector more appealing to young people. By addressing these issues could help build a more skilled and inclusive workforce, supporting the sustainable growth of Pelagonia region's agri-food sector.

Key words: Youth Employment, Agribusiness, Skills Gap, Gender Disparity, Pelagonia Region.

INTRODUCTION

Youth unemployment is a pressing socio-economic issue worldwide, posing serious challenges to both economic development and social stability. This issue is particularly evident in agribusiness, a key sector in the economies of rural and developing regions, where the participation of young people is essential for long-term sustainability. North Macedonia's Pelagonia region, well known for its agricultural productivity, faces this challenge. Youth engagement remains evidently low, indicating systemic barriers that prevent young individuals from entering and thriving in agrifood sector Leavy and Hossain (2014) suggests that rising food prices, land availability, and employment conditions significantly influence youth aspirations and their reluctance to engage in farming careers. In addition, White (2012) discusses the "generation problem" in agriculture, where older generations continue to dominate farm ownership and management, limiting the opportunities for younger people.

This study focuses on the Pelagonia region, aiming to explore and address the dual issues of educational misalignment and gender biases that potentially hinder youth employment in agribusiness. The agricultural sector's rapid technological advancement underscores the increasing need for a workforce that is not only educated but also skilled in modern agricultural practices. However, educational institutions often lag behind, providing curricula that are misaligned with contemporary industry needs, exacerbating the skills gap (Proctor & Lucchesi, 2012).

This study focuses on the Pelagonia region, aiming to explore and address the dual issues of educational misalignment and gender biases that potentially hinder youth employment in agribusiness. The agricultural sector's rapid technological advancement underscores the increasing need for a workforce that is not only educated but also skilled in modern agricultural practices. However, educational institutions often lag, providing curricula that are misaligned with contemporary industry needs, thereby exacerbating the skills gap. Furthermore, gender disparities in employment within agribusiness are pronounced, with societal norms and perceived physical limitations influencing hiring practices. This study posits that addressing these gender biases and aligning educational outputs with market demands are crucial for leveraging the potential of youth in enhancing the agricultural sector's growth and sustainability.

The aim of this study is to explore the reasons behind youth unemployment in the agri-food sector of North Macedonia's Pelagonia region, focusing on the skills and competencies employers need and the barriers that keep young people from entering this field. The study looks closely at the disconnect between what is taught in formal education and what the industry requires, as well as the gender inequalities that affect job opportunities. By examining these challenges, the study aims to suggest ways to improve collaboration between academia and the industry, create more internship opportunities, and make agribusiness more appealing to young people, helping to build a skilled workforce that can support the region's sustainable agricultural growth.

MATERIAL AND METHODS

This study employed a mixed-methods approach to examine the barriers to youth employment in the agribusiness sector of North Macedonia's Pelagonia region. It utilized both quantitative data from structured surveys and qualitative insights from semi-structured interviews. The research sample included 15 agribusiness companies of various sizes—small, medium, and large and one academic institution specializing in agri-food education. The companies were selected using purposive sampling to ensure representation from diverse sub-sectors, including production, processing, and distribution. The academic institution was chosen for its pivotal role in agricultural education in the region, offering valuable insights into the alignment, or lack thereof, between formal education and industry requirements.

Data Collection

Structured surveys were distributed to HR managers or equivalent roles within the selected companies. The survey included sections on current employment practices, skill requirements, perceptions of educational adequacy, and gender-specific questions to assess biases in hiring. The survey used a five-point Likert scale for most questions, allowing for quantitative analysis of perceptions and practices.

Semi-structured interviews were conducted with key representatives from the academic institution and a subset of the surveyed companies to gain deeper insights into the challenges and expectations concerning youth employment in agribusiness. The interviews delved into several key themes, including the adequacy of existing curricula in meeting industry demands, the influence of technological advancements on employment needs, the underlying reasons for the lack of motivation among youth to pursue careers in agriculture, and strategies to improve gender inclusivity in hiring practices. These discussions provided deeper insights into the challenges faced by both employers and educational institutions in bridging the gap between education and the evolving needs of the agribusiness sector, while also addressing critical social issues such as gender disparities in the workforce.

RESULTS AND DISCUSSION

The survey examined multiple aspects of the agribusiness sector in North Macedonia's Pelagonia region, with a focus on company profiles, human resource capacity, and employment opportunities. Medium-sized enterprises made up the majority of the 15 companies surveyed, with employee numbers ranging from 8 to 530. The leadership of these companies was largely well-educated, with most managers holding advanced degrees in economics or agricultural engineering. This high level of educational achievement among management suggests that while leadership is well-prepared, challenges may lie in aligning the workforce and educational institutions with the industry's evolving demands. About 46% of these companies maintained dedicated human resource departments (HR), underscoring the recognized importance of strategic human resource management in addressing workforce challenges. However, the investment in ongoing professional development for HR personnel was minimal, with only a few individuals receiving regular training, suggesting an area needing enhancement.

Employment Opportunities and Skills Gap

The survey clearly highlighted a significant gap between the skills that educational programs impart and those that the agribusiness sector demands. A vast majority (82%) of the companies surveyed reported that recent graduates were notably deficient in essential practical skills, especially in modern agricultural technologies such as precision farming and sustainable resource management. This gap was particularly prominent in larger companies, as confirmed by statistical analysis showing a significant association ($\chi^2 = 14.65, p < 0.05$), likely reflecting their higher expectations and advanced technological applications. According to a study by Tadele and Gella (2012), this gap between education and industry needs is common in many developing countries, where curricula often focus on outdated methods, leaving graduates unprepared for the challenges of modern agribusiness.

In another study, Sumberg et al. (2017) emphasize the importance of practical, hands-on training in agricultural education, especially in regions like Pelagonia, where technological advancements in farming require a workforce capable of handling modern tools and techniques. By addressing this skills gap, educational institutions can better align their programs with industry demands and contribute to reducing youth unemployment in agriculture.

Approximately 60% of the companies employed agricultural engineers, highlighting their vital role in advancing agricultural practices and productivity in the region. The competence of these engineers, assessed via a Likert scale, averaged at 5.4, meaning a moderately high level of proficiency. This competence level suggests that most agricultural engineers are effectively contributing to their companies, enhancing the agri-food sector's productivity.

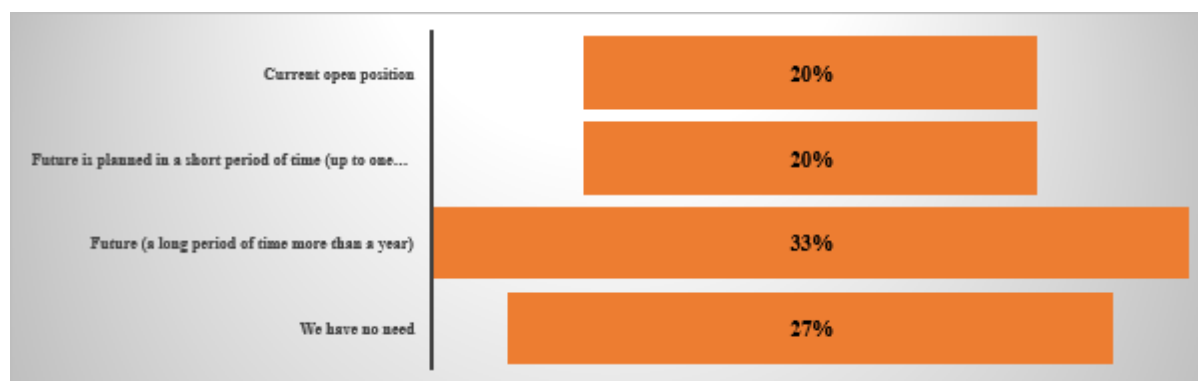


Figure 1. Current Opportunities for Employment of Young Students and Agricultural Engineers

Companies' Perspective on Causes of Youth Unemployment in the Agricultural Sector

The survey provided important insights into the perspectives of companies in the agricultural sector regarding the most common causes of youth unemployment. Respondents rated each factor's influence on a scale from 1 (no impact) to 7 (high impact), revealing several key challenges. One of the predominant concerns highlighted by the surveyed companies in the Pelagonia region is the quality of education. The disconnect between the curricula offered by educational institutions and the practical skills required by the agricultural sector is seen as a major barrier to young graduates securing employment.

This challenge is compounded by a noticeable lack of motivation among young people, which companies attribute to limited awareness of career opportunities in agriculture, negative perceptions of the sector, and inadequate career guidance. Additionally, a significant mismatch exists between the job offerings in agribusiness and the expectations of young workers, with factors such as wage disparities, restricted career advancement prospects, and unfavorable working conditions deterring youth engagement.

Further intensifying these issues is a substantial brain drain, driven by the allure of better job opportunities abroad, which exacerbates the local skills shortage and poses a serious threat to the sustainability and growth of the agricultural sector. These interrelated factors collectively highlight the pressing need to address both educational reforms and the restructuring of employment practices to enhance youth employment opportunities in agriculture.

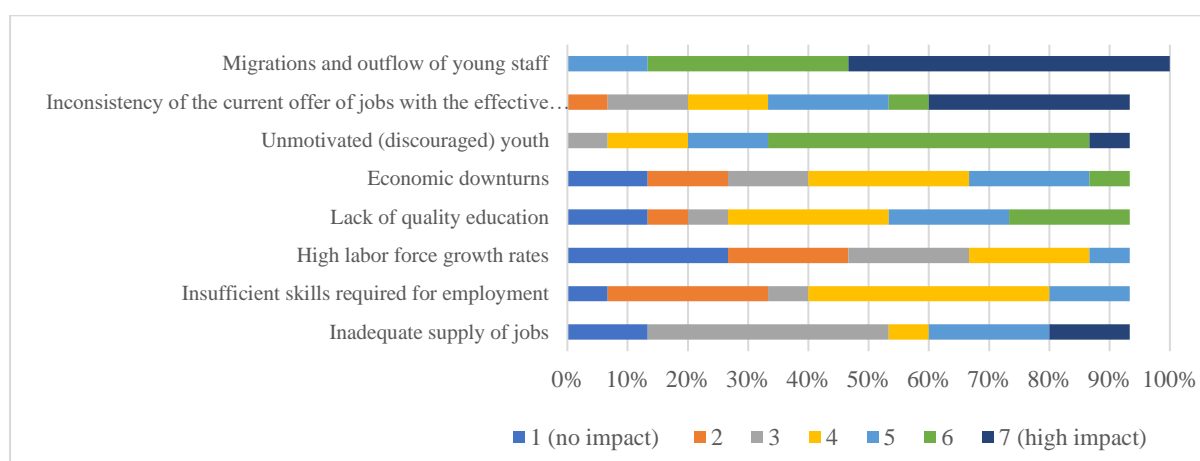


Figure 2. Companies's perspective on the most common causes of youth unemployment in the agricultural sector

Additionally, there is a notable gap between the current job offerings in agribusiness and the expectations of young workers, with factors such as wage disparities, limited opportunities for career advancement, and unfavorable working conditions contributing to the lack of engagement.

In the Pelagonia region, a survey conducted to determine the most in-demand employee categories within the agricultural sector revealed three critical roles essential for its sustainability and growth. **Workers** emerged as the foundational group, crucial for everyday agricultural operations such as planting, harvesting, irrigation, and maintenance, particularly vital during peak seasons to meet increased labor demands. This highlights the labor-intensive nature of agriculture and the need for a skilled workforce. **Agricultural Engineers** were also in high demand, bridging traditional practices with modern technologies to enhance efficiency, and optimize resources. **Technologists**, skilled in food technology, were identified as key to developing new products, implementing quality controls, and optimizing processes to meet market standards. Together, these categories underscore the diverse skill sets required to drive

the agricultural sector forward, reflecting both traditional labor needs and the increasing importance of technological and scientific expertise in modern agribusiness.

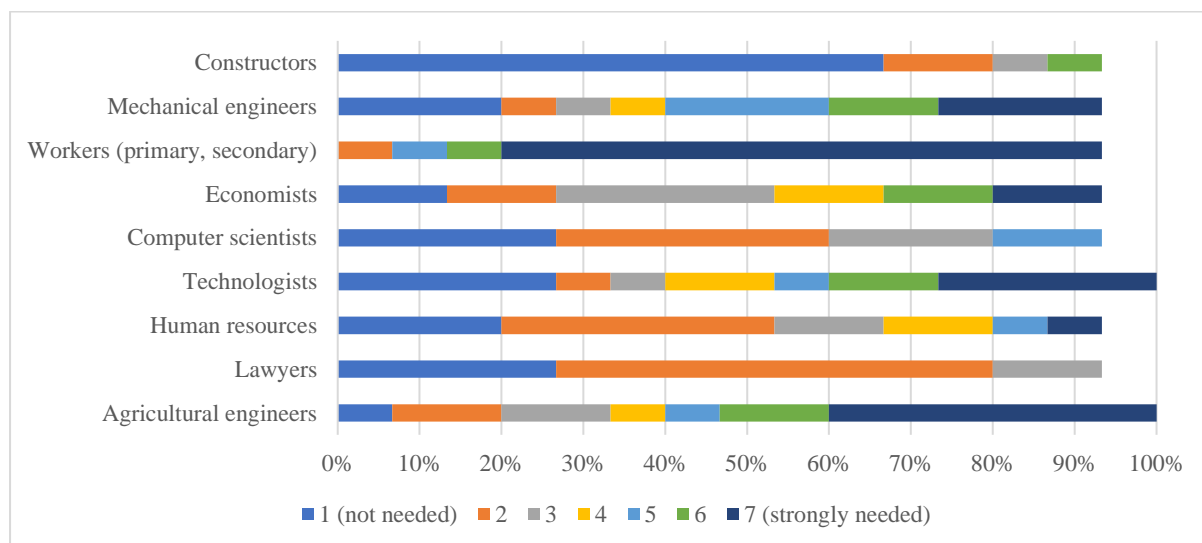


Figure 1. Most often needed profiles for employment

In the Pelagonia region, the survey revealed important insights into the agricultural sector's demand for specific skills, both soft and hard, as well as the perceived adequacy of skilled staff, particularly young graduates. Companies highlighted a strong need for **soft skills** like communication, teamwork, and adaptability, which are crucial for navigating the collaborative and often unpredictable nature of agricultural work. Equally important were **hard skills**, such as technical expertise in modern agricultural methods and the ability to work with advanced technologies. These skills are seen as essential for improving productivity and staying competitive in an increasingly technology-driven sector. Recognizing the evolving complexity of agricultural roles that require a blend of interpersonal and technical skills, Sumberg et al. (2017) argue that the agri-food sector's future depends significantly on cultivating a workforce that is proficient in both domains. Their study underscores the necessity for educational programs to integrate soft skills training with traditional technical learning, ensuring that graduates can effectively communicate and collaborate while also applying advanced technological solutions. This holistic approach to skill development is essential for preparing a workforce capable of addressing the multifaceted challenges of modern agriculture.

Despite acknowledging the importance of these skills, companies rated the adequacy of their current workforce with an average score of 4.7 on a 7-point Likert scale, suggesting that while some needs are being met, there's still room for improvement. This score indicates that, although many companies feel reasonably satisfied with their employees' abilities, there is a clear recognition that more could be done to fully develop the workforce, especially in terms of ongoing skill development and training.

When it came to the need for young, skilled graduates, companies gave a slightly higher average score of 4.9, reflecting a moderate appreciation for fresh talent. However, this also suggests that while businesses see the potential value in hiring young professionals with specialized skills, they may not perceive it as an urgent priority. This could partly explain the region's growing challenge with brain drain, where talented young graduates leave for better opportunities abroad. The decoy of higher salaries, more dynamic work environments, and advanced professional opportunities in other countries is compelling for many, who feel that their skills are more appreciated and rewarded elsewhere.

This brain drain poses a significant concern for local companies, who recognize that retaining young talent is crucial for the sector’s future. However, without addressing the gap between what young graduates seek and what the local job market offers, the region risks losing a valuable part of its workforce. Overall, while companies are somewhat satisfied with their current staff, the findings suggest a need for further investment in skill development and job offerings that will both attract and retain young professionals in the local agrifood industry.

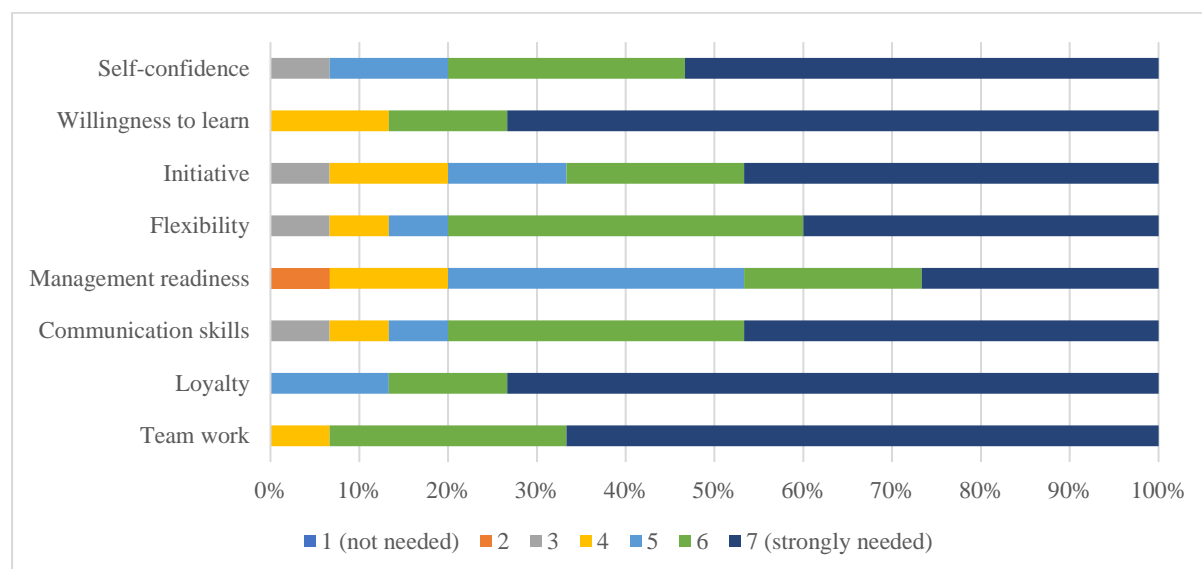


Figure 2. Required soft skills from the potential employees

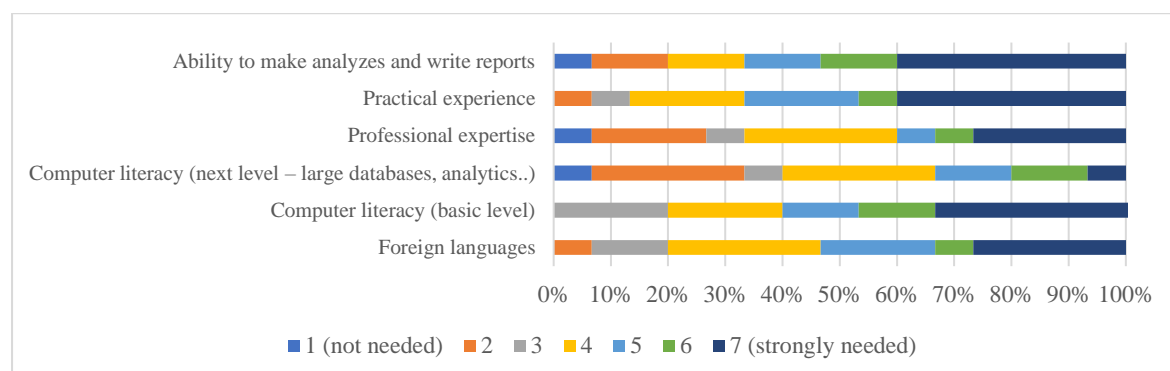


Figure 3. Required hard skills from the potential employees

Gender Disparities in Employment

Our analysis also revealed pronounced gender biases in hiring practices within the agribusiness sector. Two-thirds of the respondents admitted to favoring male employees for physically demanding roles, and more than half-acknowledged that gender influences decisions related to promotions and leadership opportunities. Gender disparities in rural employment are a global issue, as noted by Coles and Mitchell (2011), who found that traditional gender norms often limit women's participation in the agricultural workforce, leading to unequal opportunities. Further analysis by Farnworth, Sundell, and Nzioki (2013) shows that addressing these biases through gender-inclusive policies can significantly improve the productivity and sustainability of agricultural enterprises. By encouraging equal participation, companies not only foster a more diverse workforce but also ensure that they are drawing from the full range of available talent, which is critical for long-term growth in sectors like agribusiness.

A significant correlation between company size and the extent of gender bias was observed ($R^2 = 0.32$, $p < 0.01$), with larger firms showing more pronounced disparities. The survey, conducted in the Pelagonia region, specifically explored the impact of gender on employment decisions, uncovering the ways in which gender perceptions and stereotypes shape recruitment practices.

The findings indicate a moderate yet significant effect of gender on hiring processes and workplace dynamics. While 33% of respondents claimed that gender does not influence their hiring decisions, another 20% acknowledged a substantial impact. This variation suggests a complex landscape where traditional norms and the physical demands of specific agricultural roles lead to explicit gender-based preferences in recruitment.

Further analysis shows that 20% of employers believe certain jobs are inherently suited to one gender, often aligning with traditional views on the suitability of men or women for particular tasks in agriculture. Additionally, 47% of respondents perceived some positions as gender-specific, reflecting the persistence of occupational segregation. A notable 33% of employers contended that men and women cannot occupy the same roles, underscoring the entrenched stereotypes that continue to prevail within the sector.

While many employers recognize the potential impact of maternity on employment opportunities, the majority did not view it as a decisive factor against hiring women. This suggests an awareness of gender equality issues but also points to a continued acceptance of the status quo concerning women's participation in the workforce.

These findings demonstrate that both explicit and implicit gender biases remain prevalent in the employment practices of Pelagonia's agricultural sector. Addressing these biases is essential, not only to promote equity and inclusiveness but also to boost productivity by engaging a more diverse workforce. The implementation of gender-inclusive policies and the active challenging of traditional stereotypes could help create a more dynamic and innovative agribusiness environment in the region.

Table 1. Companies' gender perspective in employment process

	1 (no impact)	2	3	4	5	6	7 (high impact)
When choosing an employee for my company, my decision is affected whether the person is a male or a female	33%	13%	13%	0%	13%	7%	20%
Depending on the open job position, we choose based on whether the future employee is a man or a woman because of the specifics of the agricultural sector	33%	20%	0%	0%	7%	20%	20%
Gender has a strong influence because there is a certain job position for men and a certain job position for women	47%	7%	7%	0%	13%	20%	7%
Men and women cannot work in the same positions in the agribusiness company	27%	0%	7%	7%	0%	27%	33%
The possibility of maternity leave affects the reduction of women's opportunities during the employment process	53%	20%	13%	7%	0%	0%	7%

Educational Alignment

Feedback from the academic institution and HR managers pointed to a misalignment between academic curricula and the industry's needs. Approximately three-quarters of the companies were dissatisfied with the overly theoretical focus of current educational offerings,

advocating for curricula that promote applied learning and include more internships. This call for educational reform was a recurring theme across both quantitative feedback and qualitative discussions, highlighting a pressing need for curricula that adapt to the fast-evolving agricultural sector. The agricultural sector's rapid technological advancement underscores the increasing need for a workforce that is not only educated but also skilled in modern agricultural practices. In line with these advancements, Torero (2019) highlights the importance of harnessing digital technologies to adapt agricultural systems to the needs of the modern market, suggesting that educational programs must evolve to incorporate these technologies, thus bridging the gap between traditional agricultural education and the demands of innovative agri-food systems.

Table 2. Companies' perspective on educational alignment

	1 (not at all)	2	3	4	5	6	7 (completely)
Salary is crucial for candidates to accept a job	7%	0%	7%	13%	13%	27%	33%
Job candidate motivation is crucial to acceptance over salary	7%	0%	13%	20%	20%	33%	7%
Formal university education provides adequate professional staff	0%	0%	27%	33%	27%	7%	7%
A candidate with work experience always has an advantage for employment	7%	13%	7%	0%	13%	27%	33%
The study programs of the faculties (biotechnical sciences) are aligned with trends and the needs for staff expertise in practice	13%	13%	33%	27%	0%	7%	0%

The survey results suggest that some companies feel that study programs may not adequately incorporate the latest developments and advancements in the field or address the specific requirements and challenges faced by the industry. Furthermore, Torero (2019) explore how rapid urbanization has influenced rural employment patterns, particularly for the youth, and suggest that agribusiness can provide substantial opportunities if curricula and training programs are aligned with the evolving dynamics of the sector.

CONCLUSIONS

The survey conducted in the Pelagonia region highlighted several complex factors contributing to youth unemployment in agriculture. One of the primary issues identified is the disconnect between the education provided by academic institutions and the practical skills required by the agricultural sector. This gap underscores the urgent need for educational systems that not only impart essential knowledge but also ignite an early passion for careers in agriculture. Addressing this challenge could improve job satisfaction and retention among young workers by ensuring that job offerings better align with their expectations and professional needs.

Another critical concern is the emigration of young, skilled workers in search of better opportunities abroad. This trend highlights the necessity of developing comprehensive strategies to retain local talent and attract professionals back to the region. Achieving this will likely require strong collaboration between companies, academic institutions, and policymakers to create targeted initiatives that make agriculture a more appealing and supportive sector for young workers.

The survey also reveals significant concerns within the business community about whether current university curricula, particularly in fields like biotechnical sciences, adequately prepare graduates for the realities of the workplace. While universities are recognized for fostering critical thinking and analytical skills, there is a widespread belief that graduates often lack the practical competencies needed in the field.

To bridge these gaps, ongoing dialogue and collaboration between academia and industry are crucial. Strengthening these partnerships can lead to the creation of educational programs that are better aligned with contemporary industry developments and practical demands, ensuring that graduates are equipped to contribute effectively from the start of their careers. Additionally, the survey highlights the importance of a well-rounded skill set and a proactive attitude in young graduates. Employers place high value on qualities such as loyalty, teamwork, initiative, motivation, and dedication, recognizing that these traits, when combined with technical expertise, significantly enhance workplace collaboration and professional development. There's a strong emphasis on hiring graduates who possess not only technical skills but also the soft skills necessary for fostering a positive and dynamic workplace culture.

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