



# The Importance of Internationalization in the Promotion of Innovation and Entrepreneurship in Moroccan Universities

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**Abstract.** Internationalization is considered to be a major axis of development for universities on several scales, including the support of innovation and entrepreneurship of the youth bearing ideas in different fields of specialization. Therefore, the purpose of our paper is to highlight the effect of the universities internationalization on innovation and entrepreneurship, through a case study of an Erasmus + Capacity Building in Higher Education - CBHE project, entitled AGRIENGAGE, which brings together eleven (11) African and European partners, including the Mohammed VI Polytechnic University (UM6P) and the Hassan II Agronomic and Veterinary Institute (IAV) as Moroccan partners. Our article will therefore focus on the alliance between these two Moroccan partners, which led to the creation, in 2022, of an incubator for innovative startups in the agricultural sector, called Agri-food Tech Incubator. This paper presents the results of a qualitative study within the Agriengage Erasmus + project, that shows the effect of internationalization through international projects for promoting innovation in HEIs. Our article is mainly aimed at raising awareness among Moroccan university managers about capitalizing on internationalization, through participation in projects in response to funding programs (European Union funding, AUF and other international organizations), as a key asset for strengthening innovation and entrepreneurship among students.

**Research Contribution:** Best practice of the AgriEngage Erasmus + project outputs in terms of innovation and entrepreneurship.

**Keywords:** Higher Education · internationalization · entrepreneurship · innovation

## 1 Introduction

The internationalization of Higher Education Institutions (HEIs) is a key element for the promotion of aspects related to training and scientific research. Indeed, internationalization can be considered a key indicator of performance of HEIs, as well as a major lever for their development.

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Thanks to internationalization, teacher-researchers have the opportunity to collaborate in joint research activities with international partners, thanks to research funding programs (Framework Programs of EU, Erasmus +, ...), as well as to benefit from international mobility. This allows them to acquire skills on scientific and personal levels, build networks and thus make their institutions benefit from their acquired know-how. Thus, among the most important areas from which HEIs could benefit, we can mention innovation and entrepreneurship. These axes are of crucial importance today given the great changes that the socio-economic world and the job market in the world in general and in Morocco in particular.

To do this, we will present in our article an example of this relationship between the internationalization of HEIs and innovation and entrepreneurship, through the AgriEngage project, which is an Erasmus + CBHE project, bringing together a total of 11 partners from 6 countries, including UM6P and IAV as Moroccan partners. Through this international project, the two Moroccan partners have succeeded in deploying their efforts to promote innovation and entrepreneurship, through the completion of the annual hackathon of innovative ideas “AgriChallenge” and the launch of the startup incubator “Agri-Food Tech”. Our article aims to present the good practices of UM6P and IAV in the framework of the AgriEngage project, in order to encourage Moroccan HEIs to follow the same internationalization process by focusing on innovation and entrepreneurship.

In this sense, we will first discuss the importance of internationalization of higher education in promoting research and innovation by providing data from the existing literature. Then, we will present the AgriEngage project as a descriptive study case and describe the outputs this project in terms of innovation and entrepreneurship, through the hackathon “Agrichallenge” and the incubator “Agri-Food Tech”. After that, we will present the results of our qualitative study with 7 AgriEngage project members from UM6P and IAV Hassan II.

## **2 Importance of Internationalization of Higher Education in Promoting Research and Innovation**

Due primarily to the acceleration of globalization after the 1980s, the Internationalization of Higher Education Institutions (HEI) has become a more prominent topic in academic study (Romani-Dias et al. 2019). The internationalization of higher education is being aided by cross-border activities of scholars, such as mobility and cooperative involvement in research projects. According to several studies, the aforementioned activities have grown over the past ten years both internationally (Dumont et al. 2010) and in Morocco in particular (Gaillard and Gaillard 2015). The incidence of these actions in non-OECD nations differs from one country to another, thus if the most developed countries do not appear to be greatly impacted and can profit from the direct or indirect effects of the departure of its elites (in terms of remittances, technology transfers and scientific intelligence) (Docquier and Rapoport 2007), this is not the case for many nations, especially those in Africa and the Caribbean, which have a significant skills gap and are negatively impacted by the exodus of college graduates. This fact demonstrates that the proportion of highly skilled expatriates increases in countries with a smaller pool of highly qualified native resources (Docquier and Marfouk 2006).

On the other hand, Morocco has several benefits when it comes to higher education, research, and innovation, especially a political stability, a long history of universities, close ties with several EU nations, rapid population growth, advanced status with the EU, and a fully rooted S&T diaspora whose deployment should be boosted. In terms of engagement with Europe, Morocco also has a privileged position, both in the context of a specific bilateral relationship (joint agreement, association, advanced status) and in the context of regional strategy (5 + 5 process, Barcelona process) (Zebakh and Finance 2014). These advantages have been correlated for many years with the participation of Moroccan HEIs in various European research programs; mainly FP5, FP6, FP7, Horizon 2020 and Horizon Europe, but also Erasmus (Tempus, Mundus, CBHE, Marie Curie, etc.). This has allowed these Moroccan institutions to become international and to benefit from a range of advantages of these participations, particularly in the areas of research, innovation, training and mobility.

### 3 Presentation of the Agriengage Project

The goal of the Erasmus + CBHE project AgriENGAGE is to cover a significant human capacity gap by developing the agricultural science graduates needed to support the transformation of the agribusiness sector and increase global competitiveness, as outlined in the national agenda of many African economies. Universities, lecturers, and students are the action's target audiences. Farmers, employers, research organizations, and the governments of the project partner nations are its resultant benefactors.

The AgriENGAGE project (2020–2024) therefore intends to empower HEIs to deliver exceptional training programmes in agribusiness and community engagement responsive to increasing labor market demands to stimulate agricultural transformation and better agricultural sector competitiveness. Following are the project's particular goals:

- Access to current agricultural and community engagement training programs at HEIs
- Undergraduates and postgraduates who are proficient in demand-driven agripreneurship, agribusiness development services, and community engagement.
- Enhanced training competencies in business development services and community engagement among HEIs' academic staff.
- Increased interaction between HEIs and business

By developing staff and student skills in community engagement, business management, and entrepreneurship, AgriENGAGE aims to improve the capabilities and employability of agricultural workers in East, West, and North Africa. This will help to accelerate the evolution of farming communities and industry in Africa. The project aims to improve academic staff pedagogical skills in delivering curricula for agripreneurship and community engagement, review existing curricula, develop new modules in agripreneurship, and strengthen students' skills in these areas as well as collaboration between HEIs institutions in Africa and Europe. The anticipated outcomes are consistent with the goals of CBHE's actions, which include supporting the modernization, accessibility, and internationalization of higher education in the eligible Partner Countries; assisting the eligible Partner Countries in tackling the issues facing their higher

education institutions and systems, especially ones related to quality, relevance, equitable access, management and governance; and promoting collaboration between the EU and Partner Countries. Eight African Partner HEIs and one Association of HEIs are both involved in AgriENGAGE as follows:

- Kenya: Egerton University – EGU and Pwani University- PU
- Uganda: Gulu University - GU; Uganda Martyrs University and Regional Universities Forum for Capacity Building in Agriculture - RUFORUM
- Benin: University of Abomey Calavi – UAC and National University of Agriculture - NUA
- Morocco: Mohammed VI Polytechnic University – UM6P and Institut Agronomique et Vétérinaire Hassan II - IAV
- Europe: University of Pavia and University of Copenhagen

Along with the RUFORUM network, four of the institutions HEIs (EGU, PU, GU, and UMU) are from East Africa. Two of the HEIs are from Morocco and North Africa, IAV and UM6P, and two are from Benin, University of Abomey Calavi and National University of Agriculture (West Africa). In order to provide a benchmarking opportunity for best practices, the cross-regional contact between the HEIs will be valuable for peer learning about how entrepreneurial and community engagement activities are carried out in the various areas of East, West, and North Africa. While RUFORUM is making investments in boosting community participation, research excellence, and transformational student learning, as well as in possibilities for innovation, knowledge co-generation, and policy support and change in higher education. In order to improve innovative teaching and learning techniques, RUFORUM is participating in the AgriENGAGE project. This will involve organizing both network members and non-network members, catalyzing cross-national and regional collaboration, and collecting all of the learning experiences.

Concerning Morocco, law 01–00 is centered on the creation of an adaptable educational system that generates graduates who are prepared for the labor market, the development of a positive dynamic between universities, the establishment of higher education institutions in the context of international cooperation, the reinforcement of lifelong learning, the development of skills and pedagogical engineering, the validation of knowledge and skills, and the creation of educational tools. As a result, the AgriENGAGE project addresses both national priorities and needs that have since been taken into account by the relevant universities in Morocco, particularly by enhancing the quality of pedagogy and regional and national cooperation, both of which are consistent with the goals of the action CBHE.

For the Moroccan partners, UM6P is a contemporary university committed to the promotion of scientific innovation. Its programs are globally established, but they are heavily science oriented and need to include entrepreneurial skills. Master Tropical Agriculture and Master Fertilizers Science and Technology are the two programs that will be reviewed in this frame. UM6P project team will support the interconnection with industry and will take part in hosting curriculum design and review workshops for the Partner HEIs, they will take part in dissemination, they will train at least 30 students, 15 faculty members, and staff members, they will place at least 20 students in industry/farm attachments, and they will link up with at least 10 private sector companies.

Institut Agronomique et Vétérinaire Hassan II (IAV) is a reputable institution that has been specializing since 1968. It will offer technical assistance in the administration of the CHBE project, train at least 20 employees, set up entrepreneurship practical training, educate at least 30 students, and create case studies for the improvement of entrepreneurship and business management abilities. Also, it will assist with AgriENGAGE's efforts at quality control as well as the distribution of outputs and results.

## **4 AgriEngage Outputs in Terms of Innovation and Entrepreneurship**

In order to achieve the outputs of the AgriEngage project in terms of innovation and entrepreneurship, UM6P and IAV have joined efforts in organizing hackathons for innovative startups, namely the AgriChallenge, but also the launch of a startup incubator named Agri-Food Tech Incubator.

### **4.1 Agrichallenge Presentation**

AgriChallenge is a two-day hackathon inviting all university students in Morocco. This hackathon is organized by Mohammed VI Polytechnic University in collaboration with Hassan-II Agronomic and Veterinary Institute. Its objective is to provide solutions to the issues Moroccan farmers are facing and to suggest original ideas, practical solutions, and cutting-edge start-up projects to address those issues. The AgriChallenge's goal is to establish a nationwide contest with worldwide standards for topics pertaining to the agriculture industry. The goal is to inspire students from all levels and institutions to tackle these problems by providing them with the chance to collaborate and interact.

The first edition of the AgriChallenge was held on the 18th and 19th December 2021, and 8 startups out of more than 100 were selected for the final session of pitching. At the end of the first edition, 3 startups won the first prizes and will benefit from the services of the Agrifood Tech Incubator which we will present below. At the present time, the Agrichallenge team is preparing for a second edition which will take place in December 2022.

### **4.2 Agrifood-Tech Incubator Presentation**

Mohammed VI Polytechnic University and the Hassan II Agronomic and Veterinary Institute have joined forces to help strengthen Morocco's entrepreneurial ecosystem through the creation of the Agri-Food Tech incubator, an initiative in line with the new development model and the Generation Green 2020–2030 strategy for inclusive, sustainable and human-centered agriculture. This initiative is supported by the participation of UM6P and IAV in the Erasmus + CBHE AgriENGAGE project, aiming to support the growth of agricultural start-ups in Morocco and more widely in Africa. Established through two sites in Rabat and Benguerir, the Agri-Food Tech incubator will also benefit from the extended networks of 11 institutions from 6 African and European countries, all partners of the AgriENGAGE project.

The Agri-Food Tech incubator is committed to the evolution of agriculture and agri-food in Morocco by helping young people with innovative and high-potential ideas to create startups and transform them into sustainable and competitive businesses. This incubator is a support structure for startups in the agricultural and agri-food sector developed jointly by UM6P and IAV Hassan II. The incubator targets all disciplines related to the agricultural sector such as smart agriculture, water management, animal production and health, etc. Its main function is to help young people with innovative and high-potential ideas to create start-ups and develop into sustainable and productive businesses, thus contributing to the improvement of agriculture and rural development in Morocco, in line with the new Generation Green strategy (2020–2030). The support offered to young entrepreneurs includes mentoring, business and technical training, fundraising assistance, networking and a multitude of visibility and promotion opportunities for startups. As a result, the mission of the Agri-Food Tech Incubator revolves around the following axes:

- Developing the culture and spirit of entrepreneurship among Moroccan students, laureates and researchers;
- Participating in the valorization of research work of national institutions of higher education and research;
- Contributing to the emergence of successful startups in the field of agribusiness and agritech in Morocco;
- Helping to establish a community of practice in the field of agricultural and agribusiness entrepreneurship composed of actors and partners from the academic, economic, societal and governmental spheres.

This will be implemented through the regular launch of hackathons, the organization of online and face-to-face training workshops, as well as the incubation of innovative startups in the two partner institutions. Thus, the Agri-Food Tech incubator offer is based on the following services.

- **Training:** The training of incubated companies will take place according to a schedule determined and validated in advance by the two partners;
- **Mentoring:** Qualified experts based in Morocco and abroad will participate in mentoring. Both partners will mobilize their resources and call upon their national and international partners to facilitate these mentoring efforts.
- **Market access:** A multitude of market access and visibility opportunities will be provided through the organization of demonstration days and bootcamps, during which project leaders will have the opportunity to present their work to a range of companies and farmers who are likely to collaborate with them.
- **Fundraising assistance:** The incubator will offer advice on obtaining grants and setting up a suitable financing strategy.

## **5 Research Methodology**

In our case study, which is devoted to the analysis of the effects of internationalization on innovation in HEIs, we conducted a qualitative empirical study through semi-directive

interview guides. We interviewed 7 members of the AgriEngage project team from the Mohammed VI Polytechnic University and IAV Hassan II, since these Moroccan partners are the founders of the agrichallenge hackathon and the agri-food tech incubator.

## 6 Results and Discussion

### 6.1 Interviews Similarity Analysis

We limited the number of individuals who responded to our interview guides to 7 because we found saturation in the participants' responses. By calculating the Pearson correlation coefficients on the NVIVO software, we found that these coefficients are between 0.72 and 0.85. This explains that the similarity is good between the different responses.

The extraction of the similarity tree below (Fig. 1) shows us that there is a strong similarity between the respondents "Member1" and "Member6". We also see that the intersection between these two responses have a similarity link with the rest of the responses. We also note the existence of a similarity between the responses of "Member5" and "Member7". The latter also share a similarity with the answers of "Member4". Finally, we note the existence of similarity between the responses of "Member2" and "Member3", which share similarity with the previous 3 respondents.

These similarities are also explained in the graph in Fig. 2.

The textual analysis of the interviews revealed, through the extraction of the word cloud in the NVIVO tool, that the most quoted and repeated words are "Innovation", "Internationalization", "incubator", "agri-food tech", "international", "projects", "agrichallenge", "HEIs". This explains that the respondents affirm the importance of the internationalization of HEIs and international projects on innovation. We can also understand the importance of the initiatives of the agriengage project, including the agri-food tech incubator and the agrichallenge hackathon in enhancing innovation (Fig. 3).

### 6.2 Interpretation of Interview Responses

The respondent "Member1", considers that the first edition of the hackathon Agrichallenge helped the students to develop innovative ideas and build their start-ups. In the meantime, "Member2" affirms that the agri-food Tech incubator helps students to enlarge

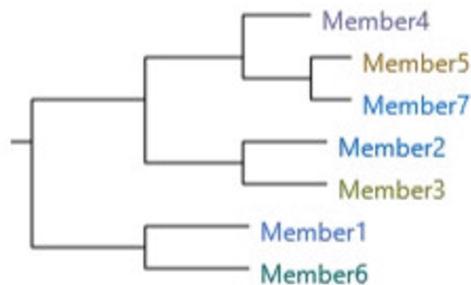
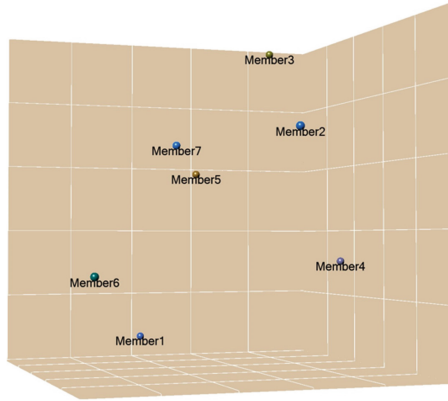


Fig. 1. Similarity tree of the answers (Source: NVIVO)



**Fig. 2.** Graph of similarity of responses (Source: NVIVO)



**Fig. 3.** Word cloud of responses Source: NVIVO

their network and search for some interesting opportunities, while the agrichallenge helps to increase competitiveness between the teams.

For “Member3”, the agri-food Tech incubator provides business and technical training for students to enforce their soft skills. It helps HEIs to improve innovation. In a same way, “Member 4” asserts that the services of the agri-food tech incubator are made to increase the entrepreneurial spirit of the participants and enhance innovation in HEIs. The agrichallenge mentoring is also very important for students motivated to promote their innovative ideas.

Moreover, “Member5” states that the agri-food tech incubator and the Agrichallenge are a very important means to catalyze innovation in HEIs. Thus, the first edition of the Agrichallenge has shown very interesting results on the participant teams. The teams that won this edition have the opportunity to be part of the agri-food tech incubator, declares “Member6”.



Finally, “Member7” asserts that the agri-food tech incubator and the Agrichallenge are the best means to enhance innovation in our HEIs.

## 7 Conclusion

This article has allowed us to see concretely the importance of the internationalization of HEIs to promote the axes of innovation and entrepreneurship. Indeed, the participation of UM6P and IAV in the AgriEngage project has allowed these two institutions to make considerable progress in these areas, allowing Moroccan students with innovative ideas to bring their projects to fruition. The initiative of these two institutions also serves as a pilot experience for the African partners of the AgriEngage project, but also for the Moroccan HEIs.

Our empirical qualitative study showed that internationalization, through the participation in the AgriEngage project, could have a considerable effect on innovation in the partner organization, especially thanks to the Agrichallenge hackathon and the agri-food tech incubator.

For future research activities and dissemination of the project, it would be pertinent to conduct an empiric quantitative study with students from partner institutions, to explore how AgriEngage had an impact on innovation within their entrepreneurial projects.

Finally, it would be appropriate to conduct future studies to find solutions for the financial sustainability of innovation and entrepreneurship activities of HEIs, after the completion of projects that have enabled these initiatives to start and take off.

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