
Improving competitiveness between EU rural regions through access to tertiary education and sources of innovation

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Abstract: The aim of this research is to highlight the relationship between tertiary education, nutritional standards and agricultural production. The authors performed the comparative theoretical analysis. The evidence shows that rural areas are lacking in role models and motivation, coupled with poor dietary standards and poorly educated elder generations. Two main issues arise from this: a society with a lack of social mobility due to poor educational standards, poor social health involving cases of childhood obesity, malnourishment and underachievement. Our solution would address the issues by putting in place a comprehensive plan of action, catering to the needs of both the educational and agricultural systems in marginalised, rural areas. The paper goes on to expand the idea of a synthesis of the two major sectors – access to tertiary education, and innovation – with a view to reaching the above goals, i.e. regional competitiveness, social welfare, viable economies and knowledge creation.

Keywords: access to tertiary education; innovation systems; networking; intellectual property.

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1 Introduction

The paper engages with several themes central to current debate within youth educational spheres. A literature study of qualitative-descriptive character was carried out of the bibliographic material that addresses the study of related areas, considering the scientific articles as a unit of analysis. The authors chose to focus on the concept of improving access to tertiary education amongst a target group (11 to 18-year olds) resident in rural areas of pan-European countries. This target group often lack awareness and access to tertiary education due to limited school funding, constrained parental outlook and a disadvantaged social milieu. Teaching staff are often held back due to lack of resources, funding and the fact that they are often confronted with a group of demotivated, disenchanted pupils, suffering from the trappings of a disadvantaged background. Money is scarce in struggling rural economies and, sadly, this is a crucial factor in a child's development. Academics at tertiary education level are unaware of how to approach disadvantaged groups and schools without provoking a degree of class warfare. Rural areas are lacking in role models and motivation, coupled with poor dietary standards and poorly educated elder generations. Unemployment is problematic as more people move to the cities and children do not wish to stay and learn local trades, subsequently, those who do stay are often poorly educated or lack skills. Schools lack funding due to a weakened economy in the aftermath of the financial crisis of 2008. The agricultural sector struggles and lacks support. Two main issues arise from this situation: a society

with a lack of social mobility due to poor educational standards, poor social health involving cases of childhood obesity, malnourishment and underachievement.

Tertiary education provides a much-needed platform for knowledge exchange and transfer. Innovation systems work on the basis that a constant flow of technology and information between people, businesses and educational institutions takes place. The model involves the interactions between decision-makers which are necessary to turn a good idea into a process, product or marketable service.

Over the last few years, the concept of open innovation has gripped the economy and changed the way in which organisations innovate. Open innovation and crowd business can accelerate the exchange of knowledge, ideas and capital not only between companies and investors, but also between regions.

The paper goes on to expand the idea of a synthesis of the two major sectors – access to tertiary education and innovation – with a view to reaching the above goals, i.e. regional competitiveness, social welfare, viable economies in less populated areas and knowledge creation.

2 How are tertiary education, nutritional standards and agricultural production related?

Each person's education may be perceived as an effective investment in their personal human capital which allows them to contribute to their society in a productive way. Educational policy constitutes a crucial determinant of an economy's capability to achieve economic growth whilst offering high wages, low unemployment levels and a strong sense of social cohesion. It is, therefore, vital that the European Union ensures a high-standard of education is on offer to all EU citizens: in short, an educational system which requires appropriate educational investment, efficient use of the educational resources provided and an equitable distribution of educational opportunities. In the competitive and dynamic environment which is the modern knowledge-based economies of today, education policies take centre stage and, if correctly implemented, can take on roles which were formerly confined predominantly to physical-investment or social-security policies.

The analysis of economic and social determinants and consequences of education refers to the discipline entitled economics of education. Education economists analyse the impact of education on wages, employment, economic growth & social equity and measure non-monetary outcomes and the external effects of human-capital accumulation. They scrutinise the role of education and how it is reflected in society's capability to advance knowledge through research, entrepreneurship and innovation. They examine and analyse family backgrounds, schools' resource endowments and institutional features of education systems which determine the quality of education, using observational and experimental data to measure the efficacy of the same.

2.1 Access to tertiary education

According to FAO (Food & Agriculture Organisation of the United Nations), people living in rural areas constitute "70% or 840 million of the world's poor". In the year 2000, rural inhabitants represented "53% of the world population" and it was expected that they would account for "48% in 2010" and "43% by 2020" (FAO, 2001, p.1).

Naturally, if we examine this progression, we can only but conclude that, although this proportion is not necessarily rising, it is, nevertheless, a societal sub-group which requires attention from a body such as the EU within the realms of the educational, nutritional and agricultural sectors.

This societal group frequently lacks proper access to and awareness of tertiary education opportunities, which includes all possible higher education pathways, such as university, apprenticeships, further education courses, internships or traineeships. Gasperini (2003, p.15) explained that “rural people commonly suffer from unequal access to education, healthcare, infrastructure, technology, institutional support and markets” and notes that, despite the fact that international aid organisations have stressed the importance “of concentrating on the poor, it has neglected rural areas and thus, the majority of disadvantaged people, a phenomenon which is particularly true for education”. If Gasperini’s thinking is explored further, we may draw the conclusion that rural communities are at a significant disadvantage. This has wider-reaching social consequences. Following a logical train of thought, if these groups have limited access to this commodity, then this must affect the average level of qualification attained in these outlying areas. The OECD’s Tertiary Education Review (OECD, 2017) supports this supposition in that they recognise that “tertiary education is a major driver of economic competitiveness in an increasingly knowledge-driven global economy [thus making]...high-quality tertiary education more important than ever before”. Expanding this theory further, it can be extrapolated that, as these areas have a population which tends to be less-qualified than their urban counterparts and that the OECD clearly states that tertiary or higher education, in general, represents a fundamental vehicle for a geographical area’s economy, it can be assumed that rural areas possess a local economy which has lesser propensity to thrive due to the lack of highly-skilled and specialised workforce.

To gain a clear understanding of the root cause of this observation, the early life of the target group requires examination. It can be argued that, in families where elder generations have not visited institutions for higher education, awareness and experience of the processes leading to entry, the study or trainee period itself or the financial implications of the decision to study or train further is lacking. Santiago et al. (2008) data indicated that “social background, in particular parental educational background, plays a significant role in influencing children’s opportunities. On average, in OECD countries, children with lower-educated parents have just a 15% chance of attaining tertiary education, whereas, they are four times more likely (63%) to finish university if at least one of their parents has attained tertiary education. Children with better-educated parents are six times less likely to drop out at lower secondary level or before, compared to students whose parents have a lower educational background”.

Thus, it can be surmised that the child originating from a background with limited access to academic or otherwise specialised educational familial role models is less likely to foster this idea and motivation alone. As Van Tassel-Baska (1989) corroborates, amongst children who go on to take advantage of higher education opportunities, there is a strong propensity toward reliance on parental guidance: “There is a common belief that most academically-talented learners come from a middle to high socio-economic background that reinforces natural ability through access to important educational opportunities”. Not only this, studies performed by Clark (1984) and Bloom (1985) have also indicated that the home plays a vital role in the establishment of “achievement patterns, attitudes and talent”.

However, if a parental role model is not available to the minor, arguably a member of teaching staff at the relevant educational institution should be able to provide the child with a similar or the same degree of encouragement. Although, in areas where educational budgets are lacking, teaching staff are frequently under-paid, over-worked and coping with limited resources, meaning that focussing on individual children proves difficult. In disadvantaged areas, there is arguably greater propensity towards a lack of educational resources and expertise. Lupton (2004, p.4) stated that ‘three main issues’ have been highlighted in the case of such schools: “resources (including staff); relationships; and the impact of both resources and relationships on school practice, on curriculum coverage, classroom practice, teachers’ activities and time allocation, and organisation and management”.

2.2 Agricultural support in the European Union and nutritional standards

In order to further support marginalised areas, agricultural financial aid is an area of key focus for the EU. A significant proportion of EU budget is channelled into agricultural support. Looking at statistics available for the sector, it can be observed that a huge proportion of the European workforce is employed in agriculture – 22 million people within the EU. EU agricultural policy secures food sources, the existence of rural businesses, appropriate pricing on agricultural goods and products and the promotion of environmental causes and animal welfare and conservation. Financial aid is divided up into five categories: firstly, price approximation, which involves raising the prices of non-EU goods flowing into the EU with the intention of matching them with that of EU produce. This ensures that EU goods are not priced out of the market and, subsequently, marginalised. The difference is then pocketed by the EU and invested back into the agricultural system. Secondly, intervention prices have been introduced which ensure that there is a minimum price on EU goods, helping to support farmers, rural businesses and local and regional economies, by extension. Thirdly, direct income support is provided to farmers to ensure that they can afford to farm but in a general application sense to ensure that they don’t just decide to produce that which is rewarded with the most EU monetary incentives, but rather that which sells best on the wider market. This helps to ensure that food sources are maintained and that we end with a range of products being produced within Europe’s borders. Fourthly, naturally environmentally-friendly farming is supported and, as such, farmers who adhere to strict rules in this area can look to receive more aid. “Lastly, general financial aid is provided to the rural area, making sure that employment levels thrive and that economically sound conditions can be found in these areas” (Boehm and Lahodinsky, 2018, pp.59–65).

Within the scope of EU policies, the promotion of rural areas is essential for supporting local inhabitants’ nutrition in the area and helping the younger generation to understand where food comes from, the importance of good nutrition and healthy eating and the benefit to the environment of eating food sourced locally. Nutrition plays a vital role in children’s’ brain development and their ability to concentrate in the classroom – thus securing them a future with good career prospects. Sorhaindo and Feinstein’s (2006) thoughts corroborate that there is “a complex interrelationship between nutrition, social and economic factors and health and education”, namely that “children with nutritional deficiencies are especially vulnerable to changes in metabolism that impact upon cognitive ability and performance of the brain” and “evidence has shown that treatment with nutritional supplements can improve performance” (Roininen et al., 2004).

The EU plays an instrumental role in maintaining appropriate nutritional standards. The provision of organic fruits and vegetables of both high-quality and at an affordable price is a key focus. 'Natural' products, grown without the aid of pesticides, other forms of protection or growth intensifier, can contribute towards providing Europe with healthier food options as the EU incentivises the purchase of such goods by keeping prices at a low level. The Quality Low Input Food (QLIF) project was set up to "improve the quality and nutritional value of ecologically and extensively produced food", to sink prices of said food, to "minimise food risks in the nutritional chain established between producer and consumer", as well as ensuring "further reduction of negative environmental influences which these farming methods" might have. An additional aim of the project was to discover exactly what expectations people had of the food they purchased and to ascertain whether ecologically-produced food or conventional food sources were healthier. Results have shown that "ecologically-cultivated fruit and vegetables contain 40% more antioxidants and organic milk 60% more antioxidants and healthy fatty acids" than the same produce's unecological counterpart. Projects such as these are vital for the promotion of healthy eating within the EU and ensuring that the products consumed by the theoretical target group are of the most beneficial variety (The European Commission, 2019a, pp.16–17). As well as providing children with the most nutrients possible, these products raise awareness of organic farming methods and promote agricultural knowledge amongst the target group, as well as securing a higher rate of academic success as mentioned above.

Our solution would address the issues analysed above by putting in place a comprehensive plan of action catering to the needs of both the educational and agricultural systems in marginalised, rural areas. An analysis of the concrete needs of the target group reveals that these comprise of a dietary and nutritional reform in the educational sector. This would include school food schemes involving free school meals for children from deprived backgrounds, breakfast provided as an option for those arriving at school on an empty stomach and perhaps some sort of evening meal provision, such as a cooked meal or a cold snack. Fruit and vegetables as well as dairy products should always be available on site. Water should be the drink on offer and no alternatives provided. Movement should also feature more heavily, school sport, for example, must be compulsory, well-funded and should foster the idea of healthy competition.

To secure a sustainable source for the above resources, the local agricultural sector should be commissioned to provide the organic produce. This would ensure that the local agriculture benefits from the scheme and would lower the running costs of the scheme. This would, in turn, encourage the younger generation to engage more within the agricultural sector, perhaps to choose to stay in rural areas and continue working in traditional sectors. In conjunction with this project, ideally local farmers would also be receiving adequate EU funding support. The rural financial aid schemes help to ensure that these rural areas remain attractive to buyers and that the land is not simply abandoned, thus causing significant financial loss to the local economy and making regions less attractive. This will make the food scheme costs more viable and support local farmers which will, in turn, be seen as an act for the common good and instil a sense of community spirit.

2.3 How to align EU programmes for improved integration of agricultural policy, public health, tertiary education and competitiveness of rural regions

In aid of the above cause, many funding programmes are available for analysis, which indicate that this synthesis of sectors is crucial and the components thereof interdependent. These programmes fall, naturally, within the objectives set out for Horizon 2020, which are jobs, growth and investment, health and agriculture. These encompass individual schemes run to try and achieve the given objectives set within these sectors. Firstly, the milk, vegetables and fruit scheme, whereby €250 million is made available to support healthy eating habits for European school children. This programme reached out to over 20 million children in the EU during 2017–2018. €145 million was spent on fruits and vegetables and €105 million on milk and dairy products. In conjunction with this expenditure, educational schemes were set up, instructing the children in healthy eating and the importance of agricultural systems and how they work. According to an evaluation report published by the European Commission, roughly 159,000 schools were involved in the scheme during the 2017/2018 academic year. Over that period, “a total of 255,500 tonnes of fresh fruit and vegetables and 178 million litres of milk were distributed to European children” which was able to take place “thanks to more than €182 million” of the EU budget being invested. Member States were allowed to take an active decision as to how the scheme was implemented, including “what agricultural products children [were to] receive or the themes of the educational measures rolled out”. The option to finance the scheme using national funds in conjunction with EU funding was also made available. The selection of products to be distributed was based on “health and environmental considerations, seasonality, variety and availability”. Member States had the option to “encourage local or regional purchasing, organic products, short supply chains, environmental benefits [and] agricultural quality schemes” (The European Commission, 2019b, pp.1–6).

To feed into the above scheme, the EU supports the rural sector with the help of the ‘Less Favoured Areas Scheme’, which provides farmers with financial compensation and supports productive areas of land at risk of abandonment. Analysis would include discussion of using food cultivated to provide local schools with regional products – and sale to the local population in supermarkets thus driving down the price of organic products in supermarkets. Roininen et al. (2004) corroborated this as they state that “rural consumers associate short transportation distances [with] superior taste, lower price, freshness and saving money, whereas urban consumers mainly make associations [with] animal welfare and a respect for nature’. This confirms that ploughing investment into rural economies encourages increased production in the local area and provides an incentive for these products to then also be sold locally. This drives down prices for consumers, encouraging people to choose to live in the countryside or to remain there and this, in turn, creates jobs in the agricultural sector in the fields of cultivation, production, harvest, logistics, food retail and gastronomy.

This would, in turn, help to combat the issue of childhood obesity and, in the long run, preserve the health systems in place and valuable resources. This financial support is also vital: “57 % of the overall Utilised Agricultural Area in the EU is classified as Less Favoured Area (LFA)”. However, sadly, despite the fact that a significant percentage of surface area is designated as LFA, only a limited proportion of farmers receive compensatory allowance. As of 2005 “approximately 1.4 million farms, representing

about 13% of the total number of farms in the EU, received support under all LFA schemes” (The European Commission, 2019b, pp.1–15). This has wider reaching consequences. If agricultural economy goes unsupported, these areas fall into decline and can no longer compete with other regional areas, let alone densely populated areas, such as towns and cities. According to the World Economic Forum, “Rapid urbanisation in the developing world inevitably increases the development gap between cities on the one hand, and small towns and rural areas on the other. Cities often boost standards of living by providing job opportunities and access to services”. A trend develops whereby younger members of society migrate to the urban centres in search of higher employment rates. Naturally, this opens another debate as to whether urbanised environments will have an outreach effect on rural areas economically, or whether the trend will continue to develop as is and produce urbanised wealth pockets and marginalised countryside (WEF, 2014).

This is where education performs a fundamental function. The EU ploughs significant funds into this area. Erasmus Plus promotes education in a borderless Europe, increases an individual’s level of employability and teaches a range of life skills as well as opening the mind to the possibility of inter-cultural enlightenment. This scheme would constitute another aspect of tertiary education which could be advertised more widely in disadvantaged areas. The program is well integrated into the tertiary educational system across the EU and could act as an attractive incentive for young people looking to pursue an enriching university or further educational career. The program organises “mobility projects for young people (Youth Exchanges) and youth workers”, promotes “capacity building in the field of youth” and “improve[s] the level of key competences and skills of young people, including those with fewer opportunities”. The scheme “promote[s] participation in democratic life in Europe” and strengthens links between the labour market and young individuals. Active citizenship and intercultural dialogue are key topics and social inclusion and solidarity are, of course, vital. This system provides increased learning mobility opportunities for young people and for those active in youth work or youth organisations and youth leaders. The program fosters quality improvements in youth work, in particular through enhanced cooperation between organisations in the youth field and/or other stakeholders (The European Commission, 2019c, pp.1–5).

Another EU scheme, going by the name of the Europe 2020, exists which plans to achieve the following goals: “75% of the population aged 20–64 should be employed” and that “the share of early school leavers should be under 10% and at least 40% of the younger generation should have a tertiary degree”. This functions as a direct feed into the jobs, growth and investment sector (The European Commission, 2013, p.3). This is in keeping with the EU’s plan to rejuvenate disadvantaged rural areas and to encourage and promote education as the main vehicle thereof.

Promotion of the youth employment market is crucial.

These funding programmes provide a positive impression of the EU’s actions and level of intervention in regional politics. Looking at some of these schemes, many would come to the conclusion that the EU does what it says on the tin – it supports our economy, ensures social welfare and, generally, works to create a Europe in which we all wish to live. This is certainly a truth. However, problematisation of their activities is also key to ensure that a balanced approach is taken.

3 Tertiary education, entrepreneurship, and innovation in rural communities

Education shapes the innovation landscape around it. Let's examine a small rural community. This rural community might provide schooling for early years, primary and secondary level. These schools equip local young people with the skills needed to progress on to tertiary education, employment or a traineeship or apprenticeship of some kind. However, if young people wish to progress to higher education, they are required to move away, to the nearest town or city providing this. As such, if a Higher Education Institutions (HEI) were to be integrated into a rural community, it can be argued that provision of access to tertiary education could transform the innovative backdrop against which this rural community resides purely because it would dramatically alter how rural inhabitants access educational services and this would begin to have wider-reaching effects on the conurbation's economic microcosm.

We can thus come to the conclusion that, if tertiary education is providing a ready breeding ground for innovation, provision of access to tertiary education will fundamentally affect the innovation landscape in which rural communities reside. Tertiary education provides this strategic transformation. Tertiary education institutions create a culture in which new methods can be cultivated and these methods turned into new opportunities. This "culture" can be referred to more accurately as "organisational culture". This form of culture is "created by the beliefs and assumptions about what and how things are doing within an organisation" and "manifests as the perceived values of the organisation and its leadership through the rituals (celebrations, communications, policies, etc.) that support those beliefs, assumptions and values" (Kotter and Heskett, 1992; Schein, 1992). What is clear is that those responsible for creating and sustaining "organisational culture" are leaders. Leaders can thus be described as being held "accountable for building a culture of innovation". According to Zairi and Al-Mashari (2005), "managers at all levels of an organisation must transparently exercise interest and commitment to the activities that foster innovation and nurture the development of a culture that sustains it".

In order to embed innovation, it needs to be integral to the organisation, company or university. Tertiary education institutions create a culture in which new methods can be cultivated and these methods converted into new opportunities. The technological and engineering sector provides a ready example of the role which universities play in introducing innovation to the student curriculum. According to Sandeen and Hutchinson (2010), "colleges and universities are best suited to respond to the challenge of fostering the skills of creative thinking and innovation in their engineering and technology students through engaging and relevant curricula". The engineering and technology sectors provide ideal breeding grounds for innovation. In the future, the call for infrastructure and complex technological solutions will be great. In the past, great importance was attached to traditional research and education as these were seen as fundamental to economic development. However, in recent years, it has become clear that it is necessary to expand "the role universities play in innovation and competitiveness" with a view to creating capital. The Association of Public and Land-Grant Universities' Commission on Innovation, Competitiveness and Economic Prosperity produced a summary including key suggestions for tertiary education institutions and areas which they could be involved in. These include "developing and commercialising technology, increasing industrial collaboration, developing economic policy, developing STEM talent, fostering

entrepreneurship, and creating deeper partnerships” within the educational system. These strategies can be used by universities to create “knowledge-based innovation economies”. Higher education leadership teams “can accomplish this by placing emphasis on creating an entrepreneurial culture to cultivate a fertile ecosystem to promote new business growth”. Thanks to this cultural shift, “these universities tend to attract more creative entrepreneurs who have a penchant for innovation and can discover and commercialise new technologies focusing on business attraction” (Sandeem and Hutchinson, 2010). The university thus functions as the proverbial honey pot, around which innovative and entrepreneurial minds can meet, exchange ideas and, ultimately, unite forces with a view to increasing chances of success within this sector.

To conclude this section, the establishment and maintenance of tertiary education institutions in rural communities attracts individuals who are committed to investment in their own personal human capital as well as corporate and not-for-profit organisations wishing to promote this sector, with either workforce or societal good in mind. Tertiary education institutions based in rural communities can act as a form of human capital investment. As such, these institutions provide a ready pool of human capital for innovative and entrepreneurial purposes. Thus, in rural locations, accessible higher education institutions can drive a healthy local economy. Communities with tertiary educational institutions on offer are more likely to produce individuals who are capable of innovative and entrepreneurial behaviour. As discussed earlier, tertiary education has been shown to be linked to cognitive activity which promotes the environment required for innovative thinking. Universities and colleges develop strategies of influence which stimulate individuals and prompt collaborative work. Students are encouraged to think innovatively within their fields of interest and the institution brings together like-minded individuals.

“Concepts” are crucial for the process of embedding innovation. They are indispensable during the process of embedding innovation. These could refer to products, services, business model changes or initiatives. A company may develop a product which has great potential, however, if the surrounding culture of the business environment in which it is developed is not accepting or supportive, then the product will never reach a point of lucrative commercialisation. Hence, the division of innovation into ‘culture’ and ‘strategy’. One could, at this point, argue, what sort of products does a university have to offer its customers? The university’s main product is a facility in which students can invest time and energy in their own human capital. However, in conjunction with this, as discussed previously, the universities of today must also provide alternative products which feed back into the local economy. This could be a partnership with industrial sponsors which agrees that research and findings on the topic relevant to the company is provided to the company, that the university will specialise in this area where the relevant teaching material or disciplines are concerned and that the university will become a feeder organisation for the company.

4 Open innovation and crowdbusiness as methods of cooperation between regions

Over the last few years, the concept of open innovation – the opening of the innovation process to make active and strategic use of the environment so as to enlarge an organisation’s innovation potential (Volk, 2012) – captured the economy and changed

the way in which organisations innovate. Open innovation is “an important component of the foreseen European Innovation System [...] which helps [to solve] key European challenges” (The European Commission, 2019d). Open innovation embraces, i.e. the concepts of crowdsourcing and crowdfunding. Crowdsourcing describes the phase of joint idea development with the crowd via online platforms and social media. Crowdfunding is an instrument for early-stage financing which helps to find investors and generates risk capital for the establishment of start-ups or the financing of innovation projects (WKO, 2019). However, crowdfunding is not only about financing but also about building networks that allow individuals to further develop ideas, jointly with customers, who wish to use the product (OeGZ, 2016). Different crowdfunding models exist, such as donation-based, reward-based, lending-based and equity-based models.

In principle, no constraints exist with regards to company size or market segment for the purpose of crowdbusiness. However, the benefits do differ: in high risk start-ups, crowdbusiness services can significantly reduce the risk of failure in crowdfunding marketplaces. In contrast, SMEs build on existing structures, resources and customer networks in order to decrease the risk of failure. Crowdbusiness in SMEs can support promising business model innovations by combining crowdsourcing and crowdfunding and enhancing existing business structures using crowd-based technologies and professional communication services. Thirdly, crowdbusiness run within substantial established industries can attain extremely high funding goals and enterprises can take advantage of the crowd participation for further marketing and distribution activities.

Open Innovation and crowdbusiness can accelerate the exchange of knowledge, ideas and capital not only between companies and investors, but also between regions. Regional crowdbusiness actively integrates regional actors – companies, professional investors, citizens, citizens’ initiatives – into the innovation process. The regional crowd is strongly encouraged to contribute to regional projects and support regional companies as they invest in the region they live in, thereby strengthening the regional economy and increasing regional quality of life. This process allows local inhabitants to follow up what is done with their money and reap personal benefit from the project. However, exclusive focus on the regional crowd can lead to difficulties when a critical mass is required and individuals wish to make successful use of crowdbusiness.

Rural areas generally do not benefit from good endowment within R&D infrastructures as their capacities for R&D and innovation are still fragmented. Thus, critical mass is lacking. Regions show high heterogeneity in R&D intensity. Enterprises in peripheral areas, in particular, suffer from poor access to R&D infrastructure and knowledge. Better collaboration could help to reduce the gaps between regions’ differing levels of development and the extent to which the less-favoured regions lag behind. R&D and innovation activities are confined to a strong but finite, larger leading enterprises located in urban centres. SMEs are lagging behind in this respect.

SMEs form the basis of the economy in rural regions. However, SMEs, in particular, are generally confronted with a lack of personal financial resources for innovation purposes, have difficulty accessing funding for innovation projects and lack managerial skills for innovation, intellectual property and knowledge processes. Moreover, they are characterised by a lack of internal research and their weaknesses lie in networking and cooperation with innovation stakeholders (Neves, 2013). Therefore, SMEs, but also large enterprises, public organisations and start-ups need to receive cross-regional cooperation in order to increase knowledge and innovation capacities.

The solution should respond to these challenges and needs in various ways: The implementation of a cross-regional model for crowdbusiness supportive collaboration and networking would lead to increased knowledge creation and transfer, innovation capacities and investments in innovations and start-ups. By fostering innovations and their funding, the region's innovation performance would further improve, territorial competitiveness increased, the establishment of new business models supported and the introduction of organisational, marketing and service innovations and technologies, as well as the development and improvement of products and cross-regional services, encouraged. Cross-regional collaboration can help to overcome the issue of lacking critical mass, create synergies, broaden the basis for innovation and increase investment. The potential for cross-regional collaboration in the sense of a common research and innovation area will be fostered. The solution will ultimately lead to sustainable growth, new enterprises and, consequently, new jobs in rural areas.

The model established would function as a supporting service to increase cross-regional innovation. It will encourage the use of innovation and funding capacities jointly, not only independently, but also with cross-regional connections. This will help to reach the »critical mass« for successful competition with major regions in the globalised world and will help to avoid performance duplicity and the development of potential conflict situations.

The improved innovation and financing ecosystem will aid in broadening the basis for innovating enterprises, other organisations (communities, public organisations) and start-ups. Companies, especially SMEs, will be supported in the implementation of innovation activities by providing them with an alternative funding method. Crowdsourcing offers SMEs a broader innovation partner network as the general public, experts and companies can all participate in crowdsourcing and that can, in some cases, better meet SMEs' innovation needs than highly scientific approaches.

As crowdbusiness performed via online platforms does not require physical transactions, companies in peripheral rural areas have the same opportunities to make use of the services provided. This contributes to homogenisation of the level of innovation activities throughout rural areas. Businesses are more aware potential partners thanks to the active platform networking.

Furthermore, universities and R&D providers in the region benefit from direct access to the business sector. Many higher education institutions face challenges when collaborating, especially with SMEs, due to several barriers (resources such as time and financial resources where collaboration with universities is concerned, and the tendency of SMEs to be hesitant concerning the practicability of academic inputs). A dedicated platform that exchanges and transfers innovative ideas and solutions based on research will enable universities to increase their outreach and societal, as well as economic, impact on the region. Moreover, potential entrepreneurs from universities benefit from the project's tools and models since they can fast-track their corporate development and gain access to funding for their business ideas.

Cross-regional collaboration is necessary in order to benefit from broader innovation and financing capacities, ensure a critical mass and exploit synergies. In addition, cross-border crowdsourcing profits from the crowd's diverse different cultural background as it creates a bank of varied ideas. This is cross-regional added value.

5 Conclusions

Tertiary education institutions are capable of introducing innovation to local communities and businesses by offering courses and learning opportunities that challenge and unite like minds. Individuals committed to investing in their own personal human capital and both corporate and not-for-profit organisations wishing to promote their sector, with either workforce or societal good in mind, are attracted by the establishment and maintenance of tertiary education institutions. Thus, tertiary education institutions based in rural communities can act as a form of accelerator for young businesses as they provide a ready pool of human capital for innovative and entrepreneurial purposes. Thus, in rural locations, accessible higher education institutions can drive a healthy local economy.

The topics of this paper respond to a pan-European phenomenon. Over the last few years, due to increasing opportunities and the importance of online communications, collaboration and social media, the way in which organisations innovate has changed dramatically. Open innovation has become an important keyword within organisations across Europe. The creation and use of multiple crowdsourcing and crowdfunding platforms was the consequence.

In future, the new crowdbusiness model is expected to gain further significance. All types of organisations will fall back on innovation capacities outside their organisational borders with a view to jointly developing innovative ideas within the crowd and receive funding in order to implement them. Studies show that there is huge potential for crowdbusiness in rural areas; crowdfunding transaction values are expected to demonstrate high annual growth rates over the next five years. However, currently, rural areas are only in their infancy in this respect and need to make efforts to catch up with more advanced European regions. Therefore, these issues are crucial for the programme area to ensure its innovative nature and, consequently, its ability to compete with other European regions.

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