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Entrepreneurial Prospects of Animal Breeding and Genetics: The Perspectives of Undergraduates in Two Nigerian Universities

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ABSTRACT

The study explored the entrepreneurial prospects of animal breeding and genetics from the viewpoints of undergraduates at two Nigerian institutions. The study looked at how undergraduates perceive the potential for entrepreneurship in the fields of animal breeding and genetics; it determined whether they intend to pursue entrepreneurship in any of the identified fields of the discipline; and examined the relevance of the curriculum to the entrepreneurship knowledge needed to succeed in the fields; and identified the difficulties that these undergraduates might face in their entrepreneurial intention endeavors. The study adopted a qualitative methodology to explore the entrepreneurial prospects of animal breeding and genetics from the viewpoints of undergraduates at two Nigerian institutions. 30 undergraduate students from two universities were taken to represent the sample for the study. An open-ended survey created on Google form was used for the collection of data. The link of the Google form was sent to the students' platform in the Department of Animal Genetics in the two selected universities. The findings demonstrated that Animal Breeding and Genetics undergraduate students perceive the potential for entrepreneurship in animal breeding and genetics to be numerous including setting up animal clinic, animal breeding laboratory, establishing a poultry business, setting up a consultancy outlet on animal breeding and genetics, among others. Majority of the undergraduate students indicate their intention to pursue entrepreneurship in animal breeding and genetics instead of looking for the white-collar jobs. Furthermore, the current curriculum in Animal Breeding and Genetics in the two universities are very relevant to the fields and the knowledge they have gathered so far is enough to succeed if taking into entrepreneurship after the completion of the bachelor's degree programme. The challenges envisaged by the respondents include lack of initial capital to setting up entrepreneurship business in Animal Breeding and Genetics, cooperation, understanding and support from parents and family members, government policy including registration of the business, among others. Data and information gathered through the administration of the open-ended survey was analysed thematically following the objectives of the study. The study drew it conclusion based on the findings from the study and also makes appropriate and relevant recommendations.

Keywords: *animal breeding and genetics, animal production, entrepreneurship, agropreneurship, undergraduate students.*

1. INTRODUCTION

In an effort to improve the job opportunities and standard of living for graduates after graduation, nearly all academic disciplines around the world have adopted and made entrepreneurship an integral part of their curricula. Some of the graduates depended on their acquired knowledge and experiences from teaching courses on entrepreneurship as their primary source of income today. In most disciplines particularly in social sciences, it is refers to as entrepreneurship, in engineering and technology, they refer to it as tecnhopreneur while it is refers to as agropreneur in agricultural sciences.

While entrepreneurship has long been discussed, agropreneurship is a topic whose discussion is currently gathering momentum. Some experts have proposed that advisory service

Vol.2, No. 1, January 2023, Page 1-10
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providers and other means of extension should be used to encourage, support, and promote agropreneurship. In non-industrialized nations of Asia and Africa, where farmers are primarily concerned with doing things well rather than creating new things, agriculture is traditionally viewed as a way of life. The situation is rapidly shifting, nevertheless, primarily due to the factors listed below, which include increased literacy and education levels, economic liberalization and commercialization, deregulation or openness of agricultural markets, and improved communication and transportation systems.

The consumer has a wide range of options due to shifting market conditions. Agricultural enterprises in particular must adapt more and more to the market's demands, shifting customer preferences, tighter environmental restrictions, and new standards for product quality, chain management, food safety, sustainability, and other factors (Lans *et al.*, 2011). These adjustments have made room for fresh competition, innovation, and portfolio entrepreneurship. Politicians, practitioners, and scientists have acknowledged that in order for farmers and growers to remain sustainable in the future, they will increasingly need entrepreneurship in addition to good management and craftsmanship (McElwee 2008; Pyysiäinen *et al.,* 2005). According to research, agricultural entrepreneurship has a significant impact on a company's ability to expand and survive (Lans *et al.,* 2011; Verhees *et al.,* 2011).

In recent decades, the agriculture sector's need for an entrepreneurial culture has come to light (Bergevoet *et al.*, 2004; McElwee & Bosworth, 2010). Agricultural scientists are required to be able to work in an organized manner and create lasting competitive advantages in order to compete successfully in regional, national, and international markets by building entrepreneurial and organizational competencies. Agriculture scientists as well as illiterate farmers must strengthen their organizational and entrepreneurial skills if agricultural land is to be developed sustainably. However, there hasn't been enough research done on the educational processes involved in such development, particularly in emerging economies (Daz-Pichardo *et al.*, 2012; Diaz-Richardo *et al.*, 2019).

The goal of undergraduate and graduate students in the social sciences disciplines, the arts and humanities, the sciences, engineering, and technology, of developing intention in entrepreneurship as well as their prospects of doing so, have been widely reported. The situation appears to be different, though, when it comes to animal breeding and genetics in agricultural sciences. In light of these considerations, the current study uses a qualitative methodology to explore the entrepreneurial prospects of animal breeding and genetics from the viewpoints of undergraduates at two Nigerian institutions. Therefore, the study will look into how undergraduates perceive the potential for entrepreneurship in the fields of animal breeding and genetics; it will also determine whether they intend to pursue entrepreneurship in any of the identified fields; it will look into how relevant the curriculum is to these fields; and it will look into the potential difficulties that these undergraduates might face in their entrepreneurial endeavours. The study will draw it conclusion based on the findings from the study and also makes appropriate and relevant recommendations.

Aim and Objectives of the Study

The study explored the entrepreneurial prospects of animal breeding and genetics from the viewpoints of undergraduates at two Nigerian institutions.

Objectives of the Study

To achieve the aim of the study the following objectives are developed:

1. Find out the perspective of undergraduates on the potential for entrepreneurship in the fields of animal breeding and genetics;
2. Determined whether undergraduates intend to pursue entrepreneurship in any of the fields of animal breeding and genetics;
3. Examined the relevance of the curriculum to the entrepreneurship knowledge needed to succeed in animal breeding and genetics; and
4. Identified the difficulties that these undergraduates might face in their entrepreneurial intention endeavors.

Vol.2, No. 1, January 2023, Page 1-10
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https://journal.unm.ac.id/index.php/IJOBER

Entrepreneur

A person who organizes and runs a firm by taking a financial risk is known as an entrepreneur. The term "entrepreneur" first appeared in French in 1723. Entrepreneurship is the act or process of being an entrepreneur. It is traditionally defined as the process of creating, developing, and operating a new business. This usually starts as a small firm, such as a start-up company, that sells a product, a process, or a service (Yetisen *et al.* 2015). The ability and willingness to plan, organize, and run a business enterprise while accepting all of its dangers in order to turn a profit are further definitions for it.

An idea or vision can be turned into a new business or enterprise by an individual, a group of people, or an established business, or it can be expanded. This is what is meant by the concept of entrepreneurship (Reynolds *et al.* 1999; Global Entrepreneurship Monitor, 2013). Today, it typically connotes traits like initiative, leadership, and creativity in the conception of new ventures. But unlike self-employment, entrepreneurship is also characterized by the spirit of the entrepreneurs.

A person who is willing to take risks, a person who eliminates disequilibrium between aggregate supply and aggregate demand by taking advantage of market opportunities, a person who owns and runs a business, or a person who creates new combinations of production factors like new methods of production, new products, new markets, finds new sources of supply, and new organizational forms are all examples of entrepreneurs (Tyson *et al*, 1994). Many various professions have given their own definitions of entrepreneurship, and while there isn't just one, they all share some characteristics.

Agripreneurship/Agropreneurship

As was stated in the study's introduction, nowadays, the term "entrepreneurship" is applicable to almost all academic fields, including agricultural science. Agripreneurship, Agripreneurship, or Agriculture Entrepreneurship are terms used to describe entrepreneurship issn the agricultural sector. Thus, there is no fundamental difference between agripreneurs and entrepreneurs. I discovered some of the agripreneurs to be highly eloquent in their personal, interpersonal, and process abilities while profiling them (Chander, 2016; 2016a; 2016b). They are more inclined than traditional farmers to take advantage of the potential presented by new agricultural initiatives because of their pro-risk mentality. They continually attempt to establish their credibility as well as their belief in new ventures and new profits. They are the farmers who set the trends.

The significance of encouraging agripreneur or agropreneur is worth noting. Despite the fact that farmers and agriculturalists may be imaginative and creative, they may not have the necessary experiences, connections to resources, knowledge of target markets, or skills to flourish as entrepreneur (Wongtschowski *et al.* 2013);. Similar to this, systemic external factors including societal and economic constraints, laws, and policies have an impact on agricultural entrepreneurs (Khan 2012);. While these restrictions have an impact on all farmers, particularly smallholders, young people in college with business aspirations are more severely impacted. Therefore, they require assistance in order to improve their livelihoods, including the possibility of becoming successful agripreneurs, and to deal with the numerous current and future challenges they face in their entrepreneurial endeavors.

Related Studies

As was already indicated, discussion and study on agripreneurship or agropreneurship have only recently picked up steam. There do not appear to be many similar studies, though. The small ones that are offered are discussed in this section. Lemma (2014); for instance, argued that issues underlying livestock entrepreneurship are not fully addressed in light of a complex set of issues, such as the lack of institutional arrangements, which can be a barrier to realizing the potential of self-employment on this industry, while justifying the need for a study to be conducted. In light of this, the researcher compiled and synthesized knowledge on main features of livestock enterprises, support services, and information needs for graduates who work for

Vol.2, No. 1, January 2023, Page 1-10
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https://journal.unm.ac.id/index.php/IJOBER

themselves. The implications for additional research, interventions, and guiding the development of institutional policies on livestock enterprises as a growing source of employment are also addressed. The study concluded that apart from embedding entrepreneurship education in every department; support services including livestock-related technical skills and science-based information; and policy/strategies that engage the potential roles of all stakeholders (academic institutions, Micro and small enterprises agency, urban agriculture and Ministry of Agriculture offices and other relevant governmental and Non-governmental organizations and private sectors) should be put in place to make use of Livestock entrepreneurship as a viable career option in the emerging interest of graduates and meet the growing demand of livestock products/commodity.

Getabalew, Alemneh, and Sewdie (2020); emphasized that the direct altering of an organism's genome via biotechnology is known as genetic engineering, also referred to as genetic modification. By applying methods that remove heritable material from an organism's genetic composition or that introduce DNA generated outside the organism straight into the host or into a cell that will later fuse or hybridize with the host, genetic engineering modifies the genetic make-up of a living thing. This entails creating novel heritable genetic material combinations utilizing recombinant nucleic acid (DNA or RNA) procedures, and then incorporating that material either directly by micro-injection, macro-injection, or micro-encapsulation techniques, or indirectly through a vector system Cattle, sheep, pigs, and poultry have benefited greatly from genetic improvement in terms of the efficiency of the desired traits. It has sophisticated uses in livestock breeding, such as raising animal productivity (meat, milk, and wool production), enhancing disease resistance, and biomedical applications (vaccine production). Knowledge of the effects of particular genes and gene combinations on crucial qualities in livestock could result in improved control over these traits to produce new, more useful populations. On that point, the authors gave an overview of genetic engineering and its use in animal breeding and highlighted the fundamental ideas, methods, and types, as well as the significance and restrictions of this use.

By reviewing the related studies, it is clear that the studies did not actually addressed entrepreneurship in animal breeding and genetics. The studies focus on farmers with the claim that issues underlying livestock entrepreneurship has not been fully addressed. The studies were conducted in Ethiopia in Africa but not in Nigeria. It is also evident from the literature that while there is data available on other disciplines (e.g. Sciences, Engineering, Social Sciences, and Management) regarding entrepreneurship intention of the undergraduates in those disciplines in Nigeria, there seems to be no related empirical study that focus directly on entrepreneurial intention of undergraduates in animal breeding and genetics.

2. METHODS

The study adopted a purely qualitative methodology to explore the entrepreneurial prospects of animal breeding and genetics from the viewpoints of undergraduates at two Nigerian institutions. The population of the study comprises undergraduate students of animal breeding and genetics in two Nigerian universities (Federal University of Agriculture, Abeokuta, Ogun State Nigeria, and Ladoke Akintola University of Technology, Ogbomosho, in Oyo State, Nigeria). A sum of 30 undergraduate students was purposively taken from the two universities to represent the sample for the study. An open ended survey created on Google form was used for the collection of data. The link of the Google form was sent to the students' platform in the Department of Animal Breeding and Genetics in the two selected universities. The author adopted this method of data collection following the strike action embarked upon by the academic staff Nigeria universities which has led to the closure of university beginning from February 14th 2022. With this development, there is no way the author could reach the respondents in this study except through the creation of Google form. The link of the created Google form was sent to each of the school platform. The respondents filled the Google form and

Vol.2, No. 1, January 2023, Page 1-10
P-ISSN: 2985-4636
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https://journal.unm.ac.id/index.php/IJOBER

returned the filled form to the author. A total of 50 forms was filled and returned o the author. However, only 30 (15 from each university) were properly filled and used for the analysis in the study. To analyse the data, data and information gathered through the administration of the open ended survey via Google form was analysed thematically following the objectives of the study.

3. RESULTS

The results of the analysis are presented as follows.

Perspective of undergraduates on the potential for entrepreneurship in the fields of animal breeding and genetics

To achieve this objective, animal breeding and genetics undergraduates were asked to indicate whether or not there opportunity for entrepreneurship in their discipline and to explain what they perceive as entrepreneurship potentials in the field of animal breeding and genetics.

The results reveal that majority of the respondents 88.9% agreed that there are numerous entrepreneurship opportunities in animal breeding and genetics. Many potential areas identified where they can take up entrepreneurship in the discipline. Some of the narratives from the responses of the respondents are as follows.

A respondent stated:

"*Yes, there are many areas in this our discipline that one can capitalise on to make his or her leaving after leaving school instead of looking for government job that is not there. I can set of a livestock firm; in fact it is one of my dream areas. I don't even mind setting up and animal breeding clinic, it is time that will tell and the resources I have available to me after graduation".*

Related views of some other respondents reveal this:

"There are many areas that one can minor as agropreneur if having the opportunity after leaving school. Though what first come to mind of many is keeping livestock but better still there are many more areas. Mention can be made of animal clinic, animal breeding laboratory. Setting of a consultancy firm on animal breeding and genetics, consulting for researchers in the field, the research students, animal firms, and the government is doable with relevant expertise, resources and knowledge".

The view of another respondent reveals thus:

"*Honestly, if I have my way, I will not even bother looking for any government job. This discipline is very rich and there are many practical areas that one can major to make his living. I can consider importing and supply animal breeding technology or equipment on animal genetics. Related technologies on this discipline (e.g. C360 genetic stations, Bioevolutis air filtration system, Eau Sure drinking water solution, Trac building scraper, double feeder with individual distribution, LED, lighting solution - all for pig breeding; Transgenesis technology, MAS technology, best of breed technology, Pocket K) most of which are not available in Nigeria. Most times, our lecturers and researchers in this field have to send their data and samples abroad for analysis. This should not be case*'.

The findings here demonstrated that Animal Breeding and Genetics undergraduate students perceive the potential for entrepreneurship in animal breeding and genetics to be numerous including setting up animal clinic, animal breeding laboratory, establishing a poultry business, setting up a consultancy outlet on animal breeding and genetics, among others.

IJoBER
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P-ISSN: 2985-4636
E-ISSN: 2985-4644
https://journal.unm.ac.id/index.php/IJOBER

Table 1. Perspective of undergraduates on the potential for entrepreneurship in the fields of animal breeding and genetics

Numerous entrepreneurship opportunities in animal breeding and genetics	Agree	Disagree
Setting Up Animal Clinic	17.2	1.0
Animal Breeding Laboratory	28.1	3.0
Establishing A Poultry Business	11.6	2.2
Setting Up A Consultancy Outlet On Animal Breeding And Genetics	31.2	2.5
Others	1.0	1.3
Total	89.9%	10.1%

Undergraduates' intention to pursue entrepreneurship in any of the fields of animal breeding and genetics

To achieve the objective, respondents were asked to indicate whether or not they have the intention to pursue entrepreneurship in animal breeding and genetics after graduation instead of looking for white collar job. The results obtained reveal that about 90% of the respondents indicate their readiness to embark on entrepreneurship by annexing any of the potential entrepreneurial areas available in the discipline.

The result here implies that majority of the undergraduate students (90%) indicate their intention to pursue entrepreneurship in animal breeding and genetics instead of looking for the white collar jobs.

Table 2. Undergraduates' intention to pursue entrepreneurship in any of the fields of animal breeding and genetics

Undergraduates intention	**The percentage**
Yes	90%
No	10%
Total	100%

Relevance of the curriculum to the knowledge needed to succeed in taking up entrepreneurship in animal breeding and genetics

To achieve this objective, respondents were asked to indicate the relevance of their current curriculum to the entrepreneurship knowledge needed to succeed in taking up entrepreneurship in animal breeding and genetics. Samples of the narratives from the respondents are presented as follows.

A respondent for instance has this to say:

"*The curriculum is relevant. Nearly all the knowledge we need have been given to us. Even the one that is not included in the curriculum can be read online. No doubt, we have been adequately prepared. The knowledge I have based on the relevance of the curriculum is enough for me to succeed if I eventually decide to into entrepreneurship when I complete my Bachelor Degree in animal breeding and genetics".*

In relation to this, another respondent explained that:

"*We have been properly exposed to the knowledge we need. This exposure is not enough for any of my colleagues to reach of our career in this discipline. I have no doubt that any of us that goes into entrepreneurship after graduate would fail".*

The results here implies that the current curriculum in Animal Breeding and Genetics in the two universities are very relevant and the knowledge the respondents have gathered so far is enough to succeed if taking into entrepreneurship after the completion of the Bachelor Degree programme.

IJoBER
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P-ISSN: 2985-4636
E-ISSN: 2985-4644
https://journal.unm.ac.id/index.php/IJOBER

Table 3. Relevance of the curriculum to the knowledge needed to succeed in taking up entrepreneurship in animal breeding and genetics

Students responses	Relevance of their current curriculum to the entrepreneurship knowledge needed to succeed in taking up entrepreneurship in animal breeding and genetics
Yes	75%
No	25%
Total	100%

Challenges undergraduates might face in their entrepreneurial intention endeavour

To achieve this objective, respondents were asked to identify envisaged challenges they may face if eventually taking into entrepreneurship after leaving school. Some of the natives from the respondents read thus:

For instance, a respondent claim that:

"*No doubt, at the beginning there may be problem because there is no good policy in place in support of graduate to take in entrepreneurship. Therefore, the initial start up may be difficult".*

Another respondent added that:

"*To convince parents and or guardian that you are going into such area might be difficult particularly if they are not educated or enlightened. Many parent want quick returns of their investment on their children they sponsor in school and that may not be forthcoming immediately entrepreneurship"*

Explicitly, another respondent added that: "**The challenges Livestock Start-ups may offer if one takes to it might include:** affordable technology for storage and supply of semen, improving heat detection, development of diagnostic aids, energy efficient and sustainable technology for preservation of milk and dairy products, improving selection methods for breeding, efficient quality control system, better methods for using Agripreneur by- products going by (Business Standard, 2021). There may also be the challenge of affordable animal feed.

Other general challenges and difficulties identified are procedural bottleneck regarding registering your entrepreneurship business, the start up capital, lack of support from bother the parents and governments, fear of uncertainties and the likes, location, etc.

The challenges envisaged by the respondents include lack of initial capital to setting up entrepreneurship business in Animal Breeding and Genetics, cooperation, understanding and support from parents and family members, government policy including registration of the business, among others.

Table 4. Challenges undergraduates might face in their entrepreneurial intention endeavour

There are challenges in setting up entrepreneurship business in animal breeding and genetics	The percentage
Agree	82%
Disagree	18%
Total	100%

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study examined entrepreneurial prospects of animal breeding and genetics: the perspectives of undergraduates in two Nigerian universities. The study drew on 30 undergraduate students from department of animal breeding and genetics in two deferral universities in Nigeria. The findings from the analysis of data collected demonstrated that Animal Breeding and Genetics undergraduate students perceive the potential for

Vol.2, No. 1, January 2023, Page 1-10
P-ISSN: 2985-4636
E-ISSN: 2985-4644
https://journal.unm.ac.id/index.php/IJOBER

entrepreneurship in animal breeding and genetics to be numerous including setting up animal clinic, animal breeding laboratory, establishing a poultry business, setting up a consultancy outlet on animal breeding and genetics, among others. Majority of the undergraduate students indicate their intention to pursue entrepreneurship in animal breeding and genetics instead of looking for the white collar jobs. Furthermore, the current curriculum in Animal Breeding and Genetics in the two universities are very relevant to the fields and the knowledge they have gathered so far is enough to succeed if taking into entrepreneurship after the completion of the Bachelor Degree programme. The challenges envisaged by the respondents include lack of initial capital to setting up entrepreneurship business in Animal Breeding and Genetics, cooperation, understanding and support from parents and family members, government policy including registration of the business, among others.

Recommendations

Based on the findings in this study, it is recommended that: Support should be provided for animal breeding and genetics graduates for taking up entrepreneurship business after graduation. This is because a considerable percentage (90%) of the respondents in this study indicated interest in going into entrepreneurship at the expense of white collar job after graduation. Supporting this set of graduates will create more jobs thereby reducing unemployment rate among the youth in the country. Not that alone, it will make more food available that will result to sustainable livelihood of the Nigerians.

The experiences of agripreneurs in animal breeding and genetics can be utilized by the ministry of agriculture in rural development strategies. The ministry may consider hiring services of these animal breeding and genetics agripreneurs as consultants so that they feel motivated to contribute in agricultural development process. The animal breeding and genetics Agripreneurs may be trained by the ministry of agriculture on communication and training skills so that they can effectively complement the efforts of the ministry in this area. The educational processes involved in entrepreneurial and organizational competency animal breeding and genetics graduates towards sustainable agricultural development may be studied by the students researching in agricultural social science disciplines like Extension Education and Agricultural economics.

Similarly, it is recommended that registration of entrepreneurial business especially for the graduates of animal breeding and genetics should be free. This will remove the fear getting funding for the registration and this might increase the number of graduates animal breeding and genetics agricpreneurship.

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Ethics statement

The current study was designed according to the rules and guidelines of the department of Animal Breeding and Genetics, Federal University of Agriculture, Abeokuta, Ogun State Nigeria, and Ladoke Akintola University of Technology, Ogbomosho, in Oyo State, Nigeria. The experiment on animals was approved by Livestock Research center, Ministry of Agriculture and Natural resources, Ibadan, Oyo state and Ministry of Agriculture and Natural resources, Ogun state.

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Conflict of interests

No conflict of interest.

Vol.2, No. 1, January 2023, Page 1-10
P-ISSN: 2985-4636
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https://journal.unm.ac.id/index.php/IJOBER

Authors' contributions

Adetunmbi Tella carried out the field work, the laboratory work and also statistical analysis. He also read and edited the manuscript.

REFERENCES

Bergevoet, R.H.M., Ondersteijn, C.J.M., Saatkamp, H.W., van Woerkum, C.M.J., & R.B.M Huirne. 2004. Entrepreneurial behaviour of Dutch dairy farmers under a milk quota system: Goals, objectives and attitudes. Agricultural Systems, 80; 1-21.

Chandra Y, Jiang LC, Wang C-J. 2016. Mining Social Entrepreneurship Strategies Using Topic Modeling. PLoS ONE 11(3): e0151342. doi: 10.1371/journal.pone.0151342

Chandra Y, & Wong L. 2016a. Social entrepreneurship in the Greater China: policy and cases. London: Routledge.

Chandra Y. 2016b. The entrepreneurship process in high performing hybrid organizations: insights from Diamond Cab. In: Chandra Y, Wong L, editors. Social entrepreneurship in the Greater China: policy and cases. London: Routledge.

Díaz-Pichardo, R., Cantú-González, C., López-Hernández, P., & McElwee, G. 2012. From Farmers to Entrepreneurs: The Importance of Collaborative Behaviour. The Journal of Entrepreneurship, 21(1), 91–116. https://doi.org/10.1177/097135571102100104

Dias-Ricardo, C.S.L., Rodrigues, G., Ferreira, J.J. 2019. What's new in the research on agricultural entrepreneurship? Journal of Rural Studies, 65; 99-115 https://doi.org/10.1016/j.jrurstud.2018.11.003.

Getabalew, M., Alemneh, T. & and Zewdie, D. 2020. Genetic engineering and its application in animal breeding: A review. Archives in Biomedical Engineering & Biotechnology, 4(4), 1-5. DOI: 10.33552/ABEB.2020.04.000595.

Global Entrepreneurship Monitor 2013. Global Entrepreneurship Report. Publisher: GERA

Khan, D. 2012. Entrepreneurship in farming. A United Nation Project.

Lans, T., Verstegen, J. & Mulder, M. 2011. Analysing, pursuing and networking: Towards a validated three-factor framework for entrepreneurial competence from a small firm perspective. International Small Business Journal, 29(6) 695–713. DOI: 10.1177/0266242610369737

Lemma, H. 2014. Livestock entrepreneurship as an emerging self-employment option for university graduates in Ethiopia: Overview of concerns and potentials for growth. European Journal of Business and Management, 6(4), 95-105.

McElwee, G. & Bosworth, G. 2010. Exploring the strategic skills of farmers across a typology of farm diversification approaches. Journal of Farm Management, 13 (12), 819 – 838.

McElwee, G. 2008. A Taxonomy of Entrepreneurial Farmers. International Journal of Entrepreneurship and Small Business, 6 (3), 465-478

Pyysiäinen, J., Anderson, A., McElwee, G. and Vesala, K. 2006. Developing the Entrepreneurial Skills of Farmers: Some Myths Explored. International Journal of Entrepreneurial Behaviour & Research, 12 (1), 21-39.

Reynolds, P.D., M. Hay and S.M. Camp. 1999. Global Entrepreneurship Monitor: 1999 Executive Report, Babson College, London Business School and the Kauffman Center for entrepreneurial leadership.

Tyson, L. d' A., T. Petrin, & H. Rogers. 1994. Promoting entrepreneurship in Eastern Europe. Small Business Economics, 6(3),165-185.

Vol.2, No. 1, January 2023, Page 1-10
P-ISSN: 2985-4636
E-ISSN: 2985-4644
https://journal.unm.ac.id/index.php/IJOBER

Verhees, F.J.H.M., Kuipers, A., & Klopcic. 2011. Entrepreneurial proclivity and farm performance: the cases of Dutch and Slovenian farmers. International Journal of Entrepreneurship Innovation, 12(3), 169-77.

Wongtschowski, M., Belt, J., Heemskerk, W., & Kahan, D. 2013. The business of agricultural business services. Working with smallholders in Africa. KIT, AgriProFocus & FAO.

Yetisen, A. K., Volpatti, L. R., Coskun, A. F., Cho, S., Kamrani, E., Butt, H., Khademhos, A., & Yun, S. H. 2015. Entrepreneurship. Lab on a Chip. 15(18): 3638–3660. https://doi.org/10.1039/C5LC00577A