A review of agricultural economics training at South African universities

by

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Dissertation submitted in partial fulfilment of the requirements for the degree
MCom (Agricultural Economics)

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Pretoria

May 2014

DECLARATION

I S.C. ka Makhaya declare that the dissertation, which I hereby submit for the degree MCom Agricultural Economics at the University of Pretoria, is my own work and has not been submitted for a degree at any other tertiary institution.

Signature…….. Date…….

DEDICATION

This study is dedicated to my father Earnest ka Makhaya who motivated me to study agriculture and for the unconditional love and support, he has given me. Thank you for raising me the way you did, I am the woman I am today because of your love and encouragement.

ACKNOWLEDGEMENT

I would like to extend a word of gratitude and appreciation to the following people who have been a great pillar of strength throughout this process.

- To my supervisor Prof Johann Kirsten, thank you for the guidance, support and dedication in supervising me. Thank you for all the opportunities afforded to me during this study and every opportunity to learn and improve myself.

- To my father, Earnest ka Makhaya thank you so much for all the support, advice and sometimes the much needed tough love. Thank you for teaching me the value of discipline and never to give up on my dreams. My brother Earnest Jr., ka Makhaya, thank you for your positive influence and unfailing support throughout my studies, my uncle for your support and providing an environment to work in.

- To all my colleagues, thank you for your guidance, and assistance and encouragement. Melissa van der Merwe, Timanyechi Munthali, Zuna Botha and Catherine Sephapo thank you so much for helping me with my data collection and advice on my work.

- I am grateful to all my friends' and family for believing in me and for keeping me grounded and focused through the difficult times. Thank you for all the great laughs, shoulders to cry on and your prayers.

Above all none of this would have been possible without my saviour Lord Jesus Christ, He has blessed me abundantly. To him be all the glory, honour and praise.

ABSTRACT

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The aim of the study was to determine whether the training provided by universities offering agricultural economics degree programmes, is in line with the skills set required by the employers of agricultural economics graduates. In order to achieve this objective, a survey was conducted among the eight universities in South Africa that offer agricultural economics related subjects for degree purposes namely, the University of Pretoria, Stellenbosch, KwaZulu-Natal, Limpopo, Free State, Fort Hare, North West and Venda. Out of the eight universities, responses were received from six with no response coming from North West and Venda. Furthermore, a tracer survey was conducted among the alumni who attended these universities. This was to determine a different perspective to the quality of training in various programmes as presented by the Heads of Departments. The study established the different skills considered important for the success of the agricultural economics graduates in the work place. These are computer skills, soft skills (commonly known as interpersonal skills), business and basic agricultural economics skills. In order to have an effective workforce and efficiency in the workplace, majority of these skills should be developed during the undergraduate study at university level.

The results obtained from the surveys amongst the universities indicated that the Heads of Departments were relatively satisfied with the basic skills their students had attained upon graduation. However, trading on South African Futures Exchange (SAFEX), tax planning and giving reliable advice to farmers, as well as applied welfare analysis are common areas that required attention and improvement throughout all the universities. The graduates were rated high in soft skills, computer and basic agricultural economics skills by the HOD's. However, remarks were made about the students' inability to communicate effectively in English especially, those whose home language is not English. The survey showed that 50% of the graduates' spoke Afrikaans as a home language while only 8% were native English speakers. This is in line with the research conducted by Gough (2009) showing that only 10% of South Africans speak English as a home language. This statistic suggests the need for students to develop strong communication skills in English.

Universities are perceived by the alumni to provide quality training and learning. However, the overall consensus is that universities focus their learning more on agricultural sciences rather than agricultural practice, a notion shared by Mafunzwaini, Thahane and Worth (2003). The universities offer various teaching methods, which include theoretical models and a few practical concepts. The alumni in the study revealed that more agricultural case studies should be incorporated into the study programmes. Case studies would offer future agricultural economists the knowledge and advantage of solving real-world problems. Some universities regularly invite industry professionals to give presentations to their students as a way of giving 'real world' experience of the industry. Mentorships and internships are value added programmes that require more attention and better coordination into the agricultural economics departments.

A large percentage of the alumni (43%) qualified with a Bachelor of Science in Agriculture (BSc Agric) degree, followed by 7% in Bachelor of Commerce (BCom) and 4% in Bachelor of Agriculture (BAgric) degrees. Although, the overall perception on the quality of teaching received by the alumni was positive, they still experienced gaps in the training they acquired from the universities. Time management, problem-solving, analytical, advanced statistical skills and practical experience, were expressed as concepts not efficiently developed within their training that would have increased their rate of success in the workplace.

The study also matched the skills set required by industry (acquired from the AGRIMASS survey, 2012) with the skills produced by universities established from the university survey. The skills match to a high degree. Although, the major concern for most employers was the lack of certain key personal and / or soft skills in the workplace. These skills according to the response of the alumni are unfortunately not extensively developed within the curricula offered by the university teaching programme.

Overall, the results show that graduates are relatively pleased with the teaching received at the various agricultural economics departments. However, some improvement needs to be done to include personal and communication skills which are extensively required by employers. Strong collaborations should be formed between the agricultural economics departments, employers and the Agricultural Economics Association of South Africa (AEASA) in terms of establishing the proper requirements for employable agricultural economists. Students should be allowed to take up a comprehensive role within this collaboration of the universities and workplace, so as to establish solid roles for the profession and produce qualified talents into the industry.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The Agricultural Economics Association of South Africa celebrated its 50th anniversary in 2012, and within these 50 years has advanced through at least four corresponding phases. It is now characterised by a much richer, diverse and broader content in relation to the early 1930's (Kirsten, 1997). This milestone in the life of the South African agricultural economics profession presents an ideal opportunity for reflection on the relevance and quality of the training, and also the career prospects for agricultural economists. The market for agricultural economists has up until now been vigorous, but the positions where agricultural economics graduates nowadays are employed have changed drastically (Shumway, 1998). A study conducted in the USA by Boland and Daniel (1999) asks whether universities that offer agricultural economics degrees, are producing, strong qualified and relevant agricultural economists for the industry? To some extent this question is also relevant for South African universities.

According to Karaan (2009), the agricultural economics profession is facing great challenges, which are unquestionably great ones, bringing an extensive the need for effective leaders in all sectors of society. Yizengaw, 2008 found that although all people possess some sort of leadership potential, these leadership skills need to be developed. According to Dugan and Komives (2007), higher education institutions have the responsibility to develop leadership capabilities in their students. Institutions that provide educational services to young students have unique opportunities to promote growth and leadership in young people. The creation of programmes that provide opportunities for leadership development and positive impact to the society is one way to initiate leadership qualities in young people. For several years the success of agriculture was by means of practical knowledge transfer from the older generation to the younger (Kalaitzandonakes, 1999). This transfer had a positive effect on the farms as they continued to harvest yearly with increased productivity. The role of providing this

knowledge has been transferred to the universities and various agricultural institutions, to ensure that their students graduate with sufficient skills to effectively fit into the broader agricultural economy. The continuation and success of this form of learning is based on how knowledge moves effectively through the value chain, from university educators to students.

Universities have a strong responsibility to produce sufficiently qualified and capable students, through the use of technology, and a willingness to adapt their teaching structures and style to meet the changing demands and needs of the students (Dugan *et al*., 2007; Yizengaw, 2008). They further have a responsibility to ensure that they provide their students with relevant skills required in commerce, industry and other sectors of the economy (Imenda, Kongolo and Grewal, 2004). An effective educational system is described as one with the ability to produce competent, dedicated and effective graduates. The relationship and responsibilities between universities and students should be clearly stated to both parties. It is very important that students know what is expected from them, and for university staff to uphold their responsibility to students.

South Africa currently has eight universities that offer agricultural economics as a major at undergraduate degree, Masters and PhD levels (Kirsten, 2011). These universities are: Pretoria (UP); Stellenbosch (US); KwaZulu-Natal (UKZN); Free State (UFS); North West (UNW); Fort Hare (UFH); Limpopo (UL) and Venda (UV). The universities have a variety of undergraduate programme offerings ranging from BSc Agric (Agricultural Economics), BCom Agribusiness Management to B Agric/B Admin degrees. Universities such as the US, UP, UFS and UKZN are referred to as previously 'white,' while the remainder UL, UFH, UV, and UNW are regarded as historically black institutions (Department of Agriculture, Forestry and Fisheries, 2010). Nevertheless, most of these universities have undergone transformation initiatives since the South African democracy in 1994. Transformation in this case is described by Mashele and Grobler (1999) as "the process through which everyone at a given institution collectively strives towards the improvement of the institution's services provided for the national, regional, local and institutional interests and benefits". Comprised in this definition is the inclusion and incorporation of previously disadvantaged persons to all universities. Therefore, within the current South African context, it is expected that students graduating from universities regardless of the previous status of the institution should have the

required skills and know-how relevant to the fields of study within which they have received training (Imenda *et al*., 2004).

The progression and transformation has improved the academic offerings in these institutions. The institutions still face challenges that continuously influence and affect the academic contribution of their modules (Kirsten, 1997). The challenges can be attributed to factors such as lack of sufficiently qualified educational staff, a decline in the number of students who enrol for post-graduate studies at Masters and PhD levels (Stewart and Landgraf, 2010). Structural and systematic challenges, inadequate funding and infrastructure and learning facilities are also contributing factors (Yizengaw, 2008). Such issues should be addressed in order to improve the quality of education provided by universities and increase the number of skilled agricultural economists and scientists operating in the sector (Department of Agriculture, Forestry and Fisheries, 2006).

1.2. Previous studies influencing this study

Previous studies evaluating the agricultural economics departments of various universities and the training of their graduates have been conducted in a number of countries. These studies influenced the direction and composition of this dissertation. The study by: Barkley (2001), "The Future of Teaching Undergraduate Agricultural Economics: Lifelong Learning in an Era of Rapid Technological Change," for example, analysed how well teaching programs in agricultural economics enhanced student learning. Beck, *et al*. (1977) in their study titled, "Undergraduate Programs in Agricultural Economics: Some Observations," conducted a periodic evaluation on various courses and programmes at the departmental level across universities in the USA. They established that there were still existing concerns about the quality of undergraduate education in agricultural economics and the ability to provide adequate evaluation/assessment (Barkley and Biere, 2001). This study was part of a "comprehensive review of undergraduate agricultural economics program at the University of Kentucky". Again some useful concepts and methods were extracted from this study and adapted to the South African context.

Luiz (2009) conducted a study evaluating the performance of South African economic departments. His study analysed staff profiles and qualifications, curricula, and research outputs of South African economic departments. This study relies heavily on some of the techniques used by Luiz (2009).

The research is also partly based on the AGRIMASS survey in South Africa conducted by Doyer, Van Rooyen and Dunne in (1999/2000) and again in (2011/12) by Van Rooyen and Greyling. The AGRIMASS methodology was first developed by Litzenburg and Schneider (1987) to determine the "competencies and qualities of agricultural economics graduates sought by agribusiness employers" in the United States of America. Due to its success and importance it was then implemented at the University of Guelph, Canada (1987), and the Muresk Institute of Agriculture in Australia (1988). The main focus was to identify what skills are required by agribusiness managers from their employees in order to meet the challenges of the new and competitive environments of the agricultural sector. The results and information gathered was used to advise universities about the characteristics that agricultural graduates should have in order to operate effectively in the agribusiness sector. The survey included questions concerning the number of agricultural economists they employ and whether soft skills play an important role in their hiring and selection process. This survey will aid in finding the solution for companies or individuals who use the services of agricultural economists. It will also investigate whether there is still a market for agricultural economists in the industry.

Other studies that reviewed the agricultural economics profession include Perry (2009) and also Mather, Davis, Brannon, Bordeaux Jr. and Beck (1977). Perry (2010) questioned the future of agricultural economics as a discipline and the future existence of the Agricultural and Applied Economics Association, while Mather *et al*. (1977) developed a "competency-based curriculum in Agricultural Economics". The University of Mauritius in collaboration with the University of Technology Mauritius conducted a graduate tracer study supported by the Tertiary Education Commission in 2008. The purpose of the study was to assist departments to bring necessary adjustments and changes to their educational programmes, in terms of content, delivery and relevance as well as further development of the institution in the context of quality assurance. The study further wanted to establish the perception of the university programmes from the student's point of view, to examine how well the facilities

and services offered at universities have assisted graduates, in attaining employment and contributing to the economy. The graduate tracer study used in this study was partly developed using some methods from the University of Mauritius (2008) tracer study, in order to be aligned with the changing needs of the economy.

1.3 PROBLEM STATEMENT AND RESEARCH QUESTION

The agricultural economics profession globally has been facing challenges regarding certain issues described by Adelaja (1997) as declining budgets, greater demands for relevance of university programmes and stronger relationships with the agricultural industry. There is a growing negative perception about the quality and level of skills of graduates produced from these agricultural economics departments (Dramé-Yayé, Chakeredza, and Temu, 2011). These challenges have developed a high level of concern about employment prospects of agricultural economics graduates.

At the same time there is increasing concern that the agricultural economics training at South African universities is not keeping up with the changes and innovations of the agricultural and food industry in South Africa and the sub-continent (Mogajane, 2006). It is often argued that the curriculum is out-dated and students trained in this discipline are eventually employed outside the agricultural food industry (Vandenbosch, 2006). According to Luiz (2009), “the gap between South African economics departments and their international counterparts remains large.” At the same time leading departments, such as the department at the University of California-Davis in the United States, have integrated their undergraduate programmes to include a combination of disciplinary training in economics and quantitative methods, together with applications to agriculture, business and resource issues. This has made their graduates valuable employees to both public and private sector enterprises (UC Davis education department, 2011).

Technical skills taught in universities are usually not at the top of the list of skills employers seek when searching for new recruits for their organisations (Schulz, 2008). According to Guenthner and Moore (2005), the majority of employers’ regard soft skill such as: leadership abilities, communication, positive work attitude and ethical standards more important than

theoretical and technical skills. The question therefore is whether agricultural economics training at South African universities do provide these skills? A related concern is whether the programmes offered are still relevant to meet the various changes experienced by the agricultural economics profession. In order to know whether degree programmes are in line with expectations of employers, it is necessary to establish the skill set required by employers of agricultural economics graduates.

Since agricultural economics is largely influenced by the economics discipline (Conner, 1985) it is therefore critical to assess what constitute 'true' agricultural economics training, and ultimately 'true' agricultural economists in terms of the job title. This will assist professionals both public and private sector to distinguish themselves from individuals who hold the privilege to be called 'agricultural economists' but do not possess the necessary background nor specialised training to be categorised and or recognised as an agricultural economist in the sector. According to a document written by agricultural employers and posted on the website gostudy.mobi/careers, an agricultural economist is someone who is (a) interested in the environment, particularly as it relates to agriculture; (b) interested in economics; (c) have a high mathematical and scientific aptitude; (d) be creative, thorough and analytical; with good communication, research and organisational skills. Students classified as agricultural economists are trained to be critical decision makers through years of course work and practical experience in agriculture, analytical and communication skills, team building, economic theory and agricultural policy (Van Rooyen, 1986).

1.4 RESEARCH OBJECTIVES

The study has the following objectives:

- To examine the skills produced by universities in comparison to the skills required by the industry through a university skills survey and the AGRIMASS survey. This will be done by looking at variables such as: current enrolment trends, graduate numbers of students at all departments of agricultural economics and the desired skills students should have acquired upon graduation.

- To analyse the experience of agricultural economics graduates in the work place. By recording their perceptions of the degree programmes they completed and how well it prepared them for their respective careers. This was done via a tracer study in the form of a survey on a small sample of students who completed their undergraduate degrees at South African universities.

1.5 RESEARCH METHODOLOGY

Two separate survey questionnaires were used to extract data from universities and alumni. The questionnaires were emailed to the respondents, and some distributed by hand at the Agricultural Economics Association of South Africa conference (AEASA) in Bloemfontein which in 2012. This conference was attended by industry professionals, academia and students.

The population studied was the eight universities that offer agricultural economics degrees with the Heads of Department (HOD) as the respondents. The HOD's of the eight agricultural economics departments in South Africa, were emailed and asked to complete the survey pertaining to the skills set and resources they offer to their students. The Heads of Departments are responsible for the curriculum and training programmes offered at their departments. Alumni who completed their undergraduate studies in the agricultural economics field from any of the eight mentioned universities were the respondents for the graduate tracer study. The graduates comprised of current and post-graduate students who attended and completed their undergraduate studies in various agricultural economics degrees.

1.5.1 Data collection and areas of study

The data for this study was collected in three parts including both primary and secondary data:

- Data acquired from a survey of university HOD's
- A tracer study completed by agricultural economics university graduates

- Secondary data was collected from the AGRIMASS survey which was used to match the skills offered at universities and the skills required by employers of agricultural economics graduates
- A review of websites and AEASA conference papers

The HOD's were requested to complete the university skills survey, in an effort to obtain the most accurate results. The survey questionnaire included open-ended and closed questions, including questions about the number of students enrolled for the 2012 academic year and those who completed their studies in 2011. The agricultural economic degrees offered at university level are:

- Bachelor of Science (BSc) Agric (Agricultural Economics) – four year degree – includes BSc Agribusiness Management.
- Bachelor of Commerce (BCom) Agricultural Economics – three year degree and or BCom Agribusiness Management.
- Bachelor of Arts/ Administration (B Agric/B Admin) – three year degree.

The majority of the agricultural economics departments offer similar degrees named differently. The focus of the study was however, on the BSc Agric (Agricultural Economics), BCom Agribusiness Management and B Agric degrees. The programmes are similar in terms of programme length and modules included with some variations in credit loads. The questionnaire focused only on undergraduate students, because the aim was to establish whether these students are well equipped and skilled enough to enter the job market successfully after completing the mandatory study modules specified within their degrees. The questionnaire included questions relating to the different skills that students should have acquired upon completion of their degrees. The skills were divided into (a) computer skills; (b) basic agricultural skills; (c) soft skills, and (d) business skills as well as questions relating to the length of time taken to complete a degree, and value added initiatives by the university to ensure successful completion of the degree.

A tracer study was used to track the whereabouts of university graduates from their time of graduation to their current status. The questionnaire was conducted amongst previous

university graduates that completed their undergraduate studies at any of the eight above mentioned universities in South Africa. The survey was adopted and influenced by the Graduate tracer study conducted by the Tertiary Education Commission in 2008. The questions included; (a) individuals' gender, (b) home language, (c) level of education (d) degree attained, and skills acquired upon graduation.

The purpose of the questionnaire was to establish a comparison between the programmes offered by the universities, and how the graduates perceive it. The survey established whether students graduating from these universities, were successful in the job market upon completion of their agricultural economics degree. It was also intended to help curriculum coordinators to determine whether the subjects offered at the universities are advantageous to graduates when searching for employment. The tracer study also aimed at determining the number of graduates who are currently employed in the agricultural sector and the companies that employ them.

The secondary data were collected from the AGRIMASS (Agribusiness Management Aptitude and Skills Survey) conducted by Van Rooyen and Greyling (2012). Results from this survey were matched and/ or paired with the curriculum outcomes provided by the universities. In order to determine accurately which skills are necessary in the workplace and missing at the universities. The secondary data used in this study was downloaded from (van Rooyen_levsa_Agrimass_ ifama, 2013). Notes were also taken from the presentation during the AEASA conference in Bloemfontein in 2011.

1.5.2 Data processing and analysis

The data were collected, edited and inputted into Microsoft (MS) Excel and SPSS. Data cleaning was conducted to sort out the responses that were not clear and those that failed to meet the criteria of the overall objectives. The data were analysed in Excel, the analysis was met with some challenges because some of the data were more qualitative rather than quantitative, therefore several efforts were made to improve the quality and level of analysis by seeking previously successful graduate tracer studies and following their example.

1.6 OUTLINE OF STUDY

The study consists of seven chapters. Following this chapter, chapter two is the literature review which includes the history of agricultural economics, in the USA and in South Africa. Chapter three analyses the importance of agricultural economists in the industry considering the various roles they play, and employers of agricultural economists. Chapter four provides the results of the university skills survey completed by the Heads of Department. Chapter five analyses the results obtained from the graduate tracer study. Chapter six provides a skills match of the secondary results from the AGRIMASS survey and the university survey completed by the HOD's as well as the tracer study completed by university alumni. Finally, chapter seven includes the summary, recommendations and conclusion of the study.

CHAPTER 2

A BRIEF HISTORICAL REVIEW OF THE AGRICULTURAL ECONOMICS DISCIPLINE

2.1 INTRODUCTION

The agricultural economics profession and its governing institutions have undoubtedly changed over time in response to the changes in social dynamics, political structures, climatic and economic environments. Agricultural economics too has transformed as a discipline (Karaan, 2009). It now includes applied economics and other name changes to reflect the advancement and relevance of the profession within the changing times (Biere, 1988). The purpose of this chapter is to introduce agricultural economics as a discipline and also discuss its origins in the United States and how it influenced the formation of agricultural economics in South Africa.

The chapter is divided into four sections. Firstly, the description of the history of agricultural economics includes the origins of agricultural economics as a discipline and profession, as well as the development stages it undertook. Secondly, the development and origins of the Land Grant colleges is analysed with reference to the tripartite system of education. The third section introduces agricultural economics in South Africa. Lastly, the development and formation of agricultural economics departments at South African universities is discussed.

2.2 THE ORIGINS OF AGRICULTURAL ECONOMICS

What exactly is agricultural economics? Is agricultural economics an undecided educational programme for academics who want to experience the best of both worlds or is it a strong discipline founded on empirical frameworks and theoretical relevance for the development of the agricultural industry? Agricultural economics is defined by Martin (1978) “as the application of the social sciences of economics to the fields of agriculture.” Conner (1985) describes agricultural economics as an academic discipline that offers specialised fields of

knowledge in distinct areas of inquiry. It further combines technical and business aspects of agriculture to include marketing, management and finance, production, trade and development, making it difficult to define the discipline as a single component (Heiman, Miranowski, Zilberman and Alix, 2002).

The agricultural economics profession began in the early 19th century in the United States (Shumway, 1998). The main focus during that time was individual farm management and production technologies (Bowman and Zilberman 2013). The farm enterprise theory was supplemented by the theory of optimum utilisation of the factors of production, (land, labour, resources and capital) in the 20th century (Dimitri, Effland and Conklin, 2005). During this time most American economists had a belief that theory must have a good balance with a good understanding of how economic behaviours, law and institutions and economic history influences different environments. Most importantly, they believed the economics profession should have the ability to address issues that improve society's well-being (Perry, 1998). Agricultural economics deals with how resources are used and organised for farm production, fibre, bio-energy and other non-food products. As a discipline it mainly concentrated on combining the theory of the firm with marketing and organisation theory. In the 20th century it developed as an empirical branch of general economics (Runge, 2006).

The discipline was derived from two logical streams. The first being neoclassical political economy and the theory of the firm applied to production on the farm (Runge, 2006). The second is the economic crisis that American agriculture faced during the nineteenth century. This led the discipline to focus mainly on strategies for organised marketing of agricultural commodities by means of collective bargaining and cooperatives (Runge, 2006).

The discipline was closely linked to empirical applications of mathematical statistics and contributed significantly to econometric principles (Lichtenberg *et al.*, 2010). The contribution made by agricultural economists is widely recognised through the development of models such as the cobweb models, hedonic regression pricing models as well as productivity and efficiency theories and random coefficient regression. These contributions have put agricultural economists at an advantage to operate as both agricultural economists and general economists, because these concepts are still applied in agricultural economics subjects today (Bonnen, 1996).

The main subjects addressed in the agricultural economics educational institutions were based on technical and institutional issues that affected agricultural production during the early years of the 20th century. They included but are not limited to: technical change, and the returns to human capital investments, environmental and resources issues, trade and economic development, agricultural risk and uncertainty, price determination and income stabilisation. Research programmes later became an important part of the agricultural economics discipline, which led to the United States establishing research into management problems of the farm, due to the need to find unique solutions to problems affecting the discipline and conflicts that developed from political instability (Hussein, 2001). In the late 1960's agricultural sectors in the Organisation for Economic Co-operation and Development (OECD) countries became relatively smaller mostly due to industrialisation. Agricultural economists' focus then changed to address development issues in poor countries, as well as trade and macroeconomic policy implication of agriculture of the first world countries. Issues concerning production, consumption, environmental and resource economics became the main focus (Runge, 2006).

In the 1970's the field of agricultural economics was broadly divided into seven subcategories depicted in Table 2.1 below. The subjects below formed the basis of agricultural economics training at universities. The study of technical change, innovation and returns to investments of human capital in agriculture drew the attention of a few talented economists from the post-war generation.

Furthermore, the careers that agricultural economists undertook included various areas of interest and provided agricultural economics students with options to work as researchers, academia, and farmers. The options presented from this discipline spread across various industries to include careers in both private and public sectors within government services, economic development, the development and implementation of agricultural policies to better serve the industry and overall society (Conner, 1985).

Table 2.1: Seven sub-categories of the discipline of Agricultural Economics

Name	Description
Production Economics	This involves the relationship between the inputs, production and profit as well as labour utilisation.
Financial Management	This includes aspects such as the management process itself, agricultural planning and the principles of financing.
Agricultural Marketing	This involves all aspects of marketing such as the price system and market types.
Agricultural Policy	This involves the interaction between agriculture and other sectors, the trade policy, production policy, price and income policy and the government functions.
Agricultural Development	This is about the role which agriculture plays in the development of the economy as well as the role of the government and private initiative.
Operational Research	This is the application of economic simulation and optimisation techniques on agricultural problems.
Natural Resource and Environmental Economics	The economic evaluation of the interaction between agricultural production processes and the natural environment.

Source: World Scientific Book (2009).

Successful agricultural economists are well prepared for careers that offer a wide range of options in business, research, education, analytic and administrative careers (Conner, 1985). According to Lewis (1959), agricultural economists' careers may also include: marketing of agricultural commodities through the value chain, agricultural finance; and management of agribusinesses and farms.

2.3 ESTABLISHMENT OF LAND GRANT COLLEGES

The agricultural economics departments at Universities in the USA as we know them today were greatly influenced by the establishment of what was referred to then as the Land Grant colleges. This section provides an overview of how these Land Grant colleges were established and the influence they had in the formation of agricultural economics departments.

Land Grant colleges were established in the United States of America under the Morill Act of 1862, as a way to serve the public through a tripartite system of teaching, research and extension (Adelaja, 2003). These colleges were instrumental in the development of the current agricultural economics departments. The leading universities during that time were Cornell, Illinois, Iowa State and Minnesota. For over 100 years the Land Grant Universities (LGUs) have continued to push the boundaries of knowledge through the establishment of agricultural economics departments worldwide. These departments have successfully educated students for research and management positions both in the private and public sectors. More impressive has been their ability to transform theoretical knowledge into practice for the benefit of farmers, agribusiness and consumers. The LGUs have created opportunities for the next generation of entrepreneurs and agricultural scientists (Kalaitzandonakes, 1999).

Land Grant colleges were established in the nineteenth century not only for agriculture but also for professionals who feared the effects of the industrial revolution, on labour and mechanisation. Thus, the Land Grant system was meant to address the following objectives:

- Providing broad access to higher education, irrespective of wealth or social status
- Educating and training the professionals of an industrial, increasingly urban society
- Strengthening and defending the American democracy by improving, assuring the welfare and social status of the largest, most disadvantaged groups in society - which in the 19th century were farmers and industrial workers (Bonnen, 1996).

The Land Grant colleges were viewed as the engine for the economic growth, fuelled by government funding and support (Hussein, 2001). However, due to the decline in governmental funding and support, LGU had to adapt their teaching methods and practices to compensate for the reduced funds. One way to address this issue was to be more innovative in offering the product to clients and refocusing the attention to research projects, which led to a nationwide change in the agricultural economics departments (AED's) curricula. The focus was more on policy, multidisciplinary partnerships and the redirection of resources. The use of technology played an important role in assisting the universities to keep up with changes in society and maintain their stature. This innovation of using technology as a way of solving

world problems created a broad and specialist focus to the work done by agricultural economists (Kirsten, 1997).

The field of agricultural economics did not exist as a separate field of study before 1900 (Ruttan, 1968); it was only available either as part of general economics departments or in "pure" agricultural colleges. However, a few courses in agricultural economics and economics of agriculture were available at the University of Illinois prior to 1870. In the 1930's departments of agricultural economics were established in many universities of the United States and mainly focused their attention on technical and institutional issues affecting agricultural products. The first agricultural economics department was established in 1909 at the University of Wisconsin by Henry Taylor, who was a student of Richard Ely. Taylor introduced policy relevant research, and the need to understand law, history, and institutions within the agricultural economics profession (Perry, 1998).

According to Hudson (2000), the general perception of agricultural degrees during the 1950's was their intention to produce graduates who would further become research workers, farmers and agricultural advisors. The most popular modules were crop sciences, animal sciences and horticultural sciences. Reed (2010) made an assumption that most people would consider the ultimate success of a programme to be its placements of graduates into the industry.

2.3.1 The role of agricultural economics in Land Grant Universities

Agricultural economists played, and continue to play, a vital role in the growth of the LGU systems and the agricultural colleges by meeting the needs of the agricultural industry (Shumway, 1998). Expansions were added to this role in order to better cover more areas of agriculture such as food, natural resources and the environment. The developing environment of nonfarm agribusiness, domestic economic development, foreign trade and rural development became subjects of focus for agricultural economists. They also became experts in the study of public choice and conflict resolution (Shumway, 1998). The roles of agricultural economists further included policy, institutional and market innovations (Duncan, 2003). It is for this reason that great care should be taken when formulating the curricula for the agricultural economic departments. Having agricultural economics departments' that function effectively will result in improved production practices, marketing management and

environmental quality, as well as increased retention of students employed in the agricultural industry (Adelaja, 1997). However, by distancing itself from the Land Grant universities in the United States, the discipline has lowered its status as an undergraduate offering, but gained more value at graduate level (Van Zyl, 2008). The students with a post graduate qualification are considered more equipped to be an agribusiness manager than one who just qualifies with an undergraduate degree.

2.3.2 Challenges and decline of Land Grant colleges

The agricultural industry globally has experienced a decline in the number of active farmers and agricultural growth has been affected by political turmoil, climate changes, and the impact of agriculture on sustainability and the availability of resources (Turall *et al.*, 2011). In response to these challenges Land Grant colleges broadened their missions and mandates to include food, forestry, natural resources, and the environment. This development and change in the curriculum aimed to produce graduates who had a comprehensive approach to the issues affecting the agricultural industry, therefore, creating a significant role for the profession in the public and private sectors (Adelaja, 1997).

The formation of the Land Grant colleges continued to enforce and contribute to the growth and success of agriculture through the incorporation of name changes and advancement in the curricula offering (Adelaja, 1997). Table 2.2 below shows the list of agricultural economics departments in the USA who have amended their departmental names to include other factors of agriculture to their discipline. The main reason for this change was to show the development and continued relevance of the agricultural economics discipline, and advancement of the profession throughout various sectors of the changing economy.

Table 2.2: Agricultural Economics Department Name Changes in the USA

New Names of Agricultural Economics Departments: 2011 list	
Agricultural Economics	28
Any combination of Agriculture, Economics and Business or Management	11
Any combination of Agriculture, Economics and Extension	9
Any combination of Agriculture, Resource Economics and other	19
Agricultural Economics and any other suffix	7
Agricultural and Applied Economics	7
None	32
Total	**117**

Source: AEASA, (2011).

Table 2.2 shows that 28 universities have retained the original agricultural economics name, while 11 have combined it with business or management. Other combinations include agriculture, resource economics and other (19); agricultural economics and any other suffix (7). There are 32 agricultural economics departments that have not incorporated any changes to their departmental name.

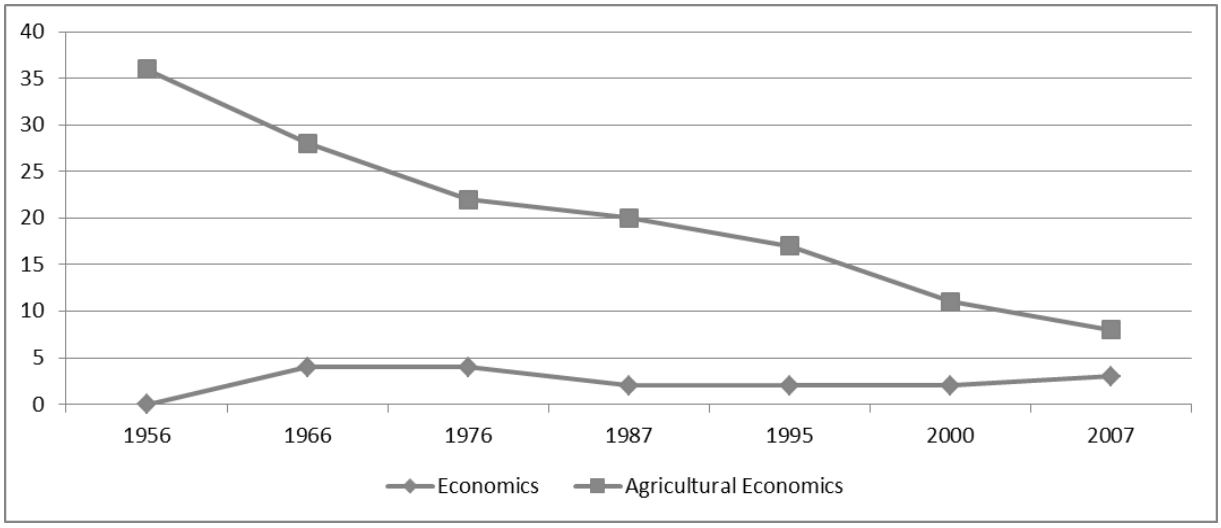

Figure 2.1: Departments named "agricultural economics", 1956-2007
Source: Perry, (2010)

In 1956 there were 37 agricultural economics departments in the United States as seen in Figure 2.1 above, but by 2007 there were only eight departments that kept the original name of agricultural economics. This change and development influenced other universities across the world to undergo similar processes within their departments. This adoption created an advantage for agricultural economics by placing it as a profession that can fit into different

sectors with the inclusion of applied economics and farm theory into the various universities study programmes. The figure also shows that economics departments have remained relatively stable from 1956 to 2007; there has been no name change or incorporation of other economic terms to the discipline.

2.4 AN OVERVIEW OF THE AGRICULTURAL ECONOMICS DISCIPLINE IN SOUTH AFRICA

2.4.1 Origins and growth

The origin of agricultural economics in South Africa was strongly influenced by the American Agricultural Economics Association, and several international universities namely; Cornell University, Purdue and Iowa State among others. The roots of the discipline in South Africa are traced to the division of the Economics and Markets in the Department of Agriculture in 1925 (Vink, Kirsten and Hendriks, 2011). Behrmann upon his analysis on the beginnings of agricultural economics in South Africa revealed that very little research was conducted at university level prior to 1940. The Department of Agriculture during that time focused a bulk of its agricultural research on the nature of farm accounting instead of economic research.

The research produced more questions about the direction of the South African agriculture industry. The growth and the realised need for the agricultural economics profession led to the formation of the Agricultural Economics Association of South Africa in 1961. The Association was formed with the purpose of providing a forum for the exchange of ideas between agricultural economists in South Africa and the Department of Agricultural Economics and Marketing (Hudson, 2000). The AEASA is currently one of 25 agricultural economics associations/societies still in existence today, of which the American Economics Association is considered the oldest association for the profession founded in 1885.

2.4.2 Universities offering agricultural economics degrees in South Africa

The first Agricultural Economics department to be established in South Africa was at the University of Stellenbosch in 1925. In 1926 the first student (Professor FR Tomlinson, who is

also regarded as the initial founder of the AEASA) in South Africa was awarded a BSc Agric (Agricultural Economics) degree. More first time students graduating with agricultural economics degrees from the University of Pretoria soon followed in 1933. The Faculty of Agriculture at the University of KwaZulu-Natal was established in 1947 and in 1951 graduated two students with a BSc Agric (Agricultural Economics) degree. The Department of Agricultural Economics at the University of the Free State was established in 1958 while the Department at Fort Hare was established in 1970. As a historically black university it initially graduated its first BSc Agric student in 1970. The University of Limpopo, previously known as the University of the North, established the Department of Agricultural Economics in 1975 under the School of Agricultural and Environmental Sciences in the Faculty of Health and Sciences. The first BSc graduate received his degree in 1975. The University of Venda was established in 1982, and the Department of Agricultural Economics formed in 1985. It graduated its first BSc Agric graduate in 1995. The Department of Agricultural Economics at the North West University was recognised in 1988. However, it only offered Agricultural Economics as a Postgraduate Diploma level. Only in 2001 was the BSc Agric Agricultural Economics undergraduate degree programme established.

2.4.3 Enrolment Trends and New Admissions

The evolution and growth of the agricultural economics profession can also be assessed through an analysis of student enrolment and completion trends at the different universities offering degree programmes in agricultural economics in South Africa. According to Perry (2010) “if students leave satisfied with their education and are able to secure good employment after graduation, they are likely to encourage others to pursue a degree in the same program.”

Figure 2.2 below shows the total number of students that were admitted to agricultural economics programmes in 2012 at the six universities surveyed. These numbers include only new students and not students who are repeating or in their second year. The subsequent figures show the breakdown of the admission numbers by degree and university.

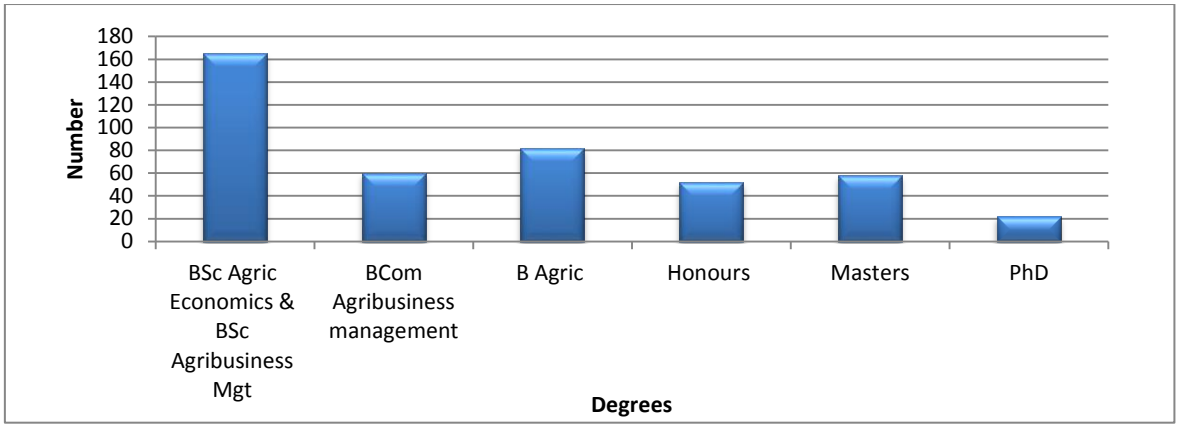

Figure 2.2: Total number of students admitted to agricultural economics degree programmes, 2012

Source: Survey data, 2012

A total of 172 students were admitted into the four year BSc Agric (Agricultural Economics) and/ or BSc Agric (Agribusiness Management) programmes at the six larger universities in 2012. BCom programmes had 60 students registered for 2012 at UP and US. Another 109 students were admitted to the three year Bachelor programme in Agricultural Economics which are offered at US, UFS, UFH and Limpopo.

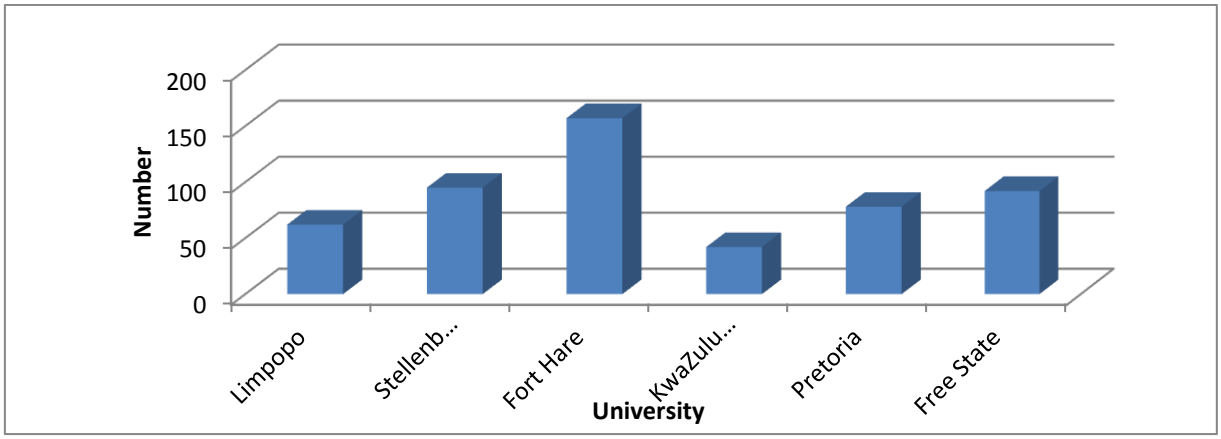

Figure 2.3: Total new undergraduate and postgraduate enrolments in agricultural economics departments, 2012

Source: Survey data, 2012

The University of Fort Hare enrolled the most new students in 2012 with a total of 157 students. Figure 2.3 above further shows that the University of Stellenbosch and Free State had 95 and 92 new enrolments respectively while Pretoria had 78. The University of Limpopo and KwaZulu-Natal admitted 62 and 42 new students respectively. The enrolment in post-

graduate programmes is influenced by the qualification of the staff members and by international collaborations and support from funding institutions. Enrolments are also influenced by the location of the university. Universities located in provinces where agriculture is a major economic activity are likely to attract many more agricultural students, than in other provinces, explaining to some degree the reason for the higher numbers of enrolments at the University of Fort Hare, Stellenbosch and Free State.

Table 2.3: Total Admission by Degree and University, 2012

University	BCom	BSc	B Agric	Honours	Masters	PhD	Total
Limpopo	0	52	0	1	7	2	62
Stellenbosch	35	25	8	15	8	4	95
Fort Hare	0	47	65	24	17	4	157
KwaZulu-Natal	0	26[1]	9	1	6	4	46
Pretoria	25	18	0	11	18	6	78
Free State	0	7	27	42	8	3	87
Total	**60**	**175**	**109**	**94**	**64**	**23**	**525**

[1]Included in the BSc Agri (Agricultural Economics) is 4 enrolments for BSc (Agribusiness) offered at the University of KwaZulu-Natal.

Source: Survey data, 2012

It is not surprising that the BSc Agric degree programme had the most admissions in all the universities. As the first programme to be introduced under the agricultural economics departments' umbrella in the early 1960's it retains its importance in the curricula. Table 2.3 shows that BSc Agric had the most admissions in all the universities with 172 new enrolments while B Agric was second with 109 students. The BCom degrees are currently available at UP (25) and US (35). It is interesting to note that in both these universities the BCom programme has a higher number of enrolments. This provides a unique forecast into the changing needs of the students and the agricultural economy. The combination of basic agricultural knowledge with business skills would place agricultural economics graduates at an advantage in various sectors of the agribusiness environment. The University of Limpopo and Fort Hare had 52 and 47 new students enrolled in BSc Agric (Agricultural Economics) respectively. The University of Fort Hare also had 65 new students enrolled in the B Agric degree; the highest number of enrolled students from this programme. It would appear that agriculture and agricultural related subjects are important study options within Eastern Cape and Limpopo provinces.

2.4.4 Graduation rates

Improving graduation rates throughout all university departments will influence and increase the ability of higher education systems to develop the number of successful graduates within the economy (Fisher and Scott, 2011). The number of students who completed their agricultural economics degrees in 2011 is depicted in Figure 2.4 below. It is a representation of the current state of the agricultural economics programmes offered throughout agricultural economics departments in South Africa.

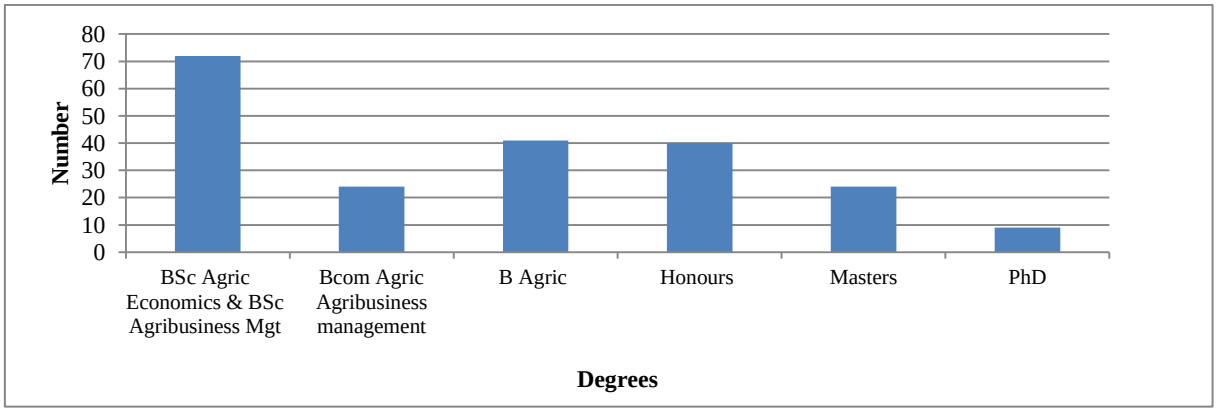

Figure 2.4: Number of students graduating in programmes completed in 2011
Source: Survey data, (2012)

A total of 72 students completed their BSc Agric (Agricultural Economics) and BSc Agric (Agribusiness Management) degrees in 2011. A total number of 24 students completed their BCom Agribusiness Management and 41 a B Agric at the undergraduate level. At the post graduate level 40 students completed honours degrees and 24 Masters followed by 9 PhD students across all six universities in 2011.

Table 2.4: Graduation numbers at selected universities from 1921- 2011

University	Starting from (Year)	BSc	B degrees	Honours	Masters	PhD	Total
Stellenbosch	1921	653	779	264	114	17	1827
Pretoria	1928	437	194	426	217	81	1355
KwaZulu-Natal	1951	402	643	96	122	24	1287
Free State	1955	457	241	410	133	39	1280
North West	1988	50	0	170	3	1	224

Source: AEASA (2011) and Survey data (2012)

Table 2.4 above shows that the University of Pretoria dominated the post graduate graduation rates. They recorded the highest number of PhDs and Master's degree over the years 1928-2011. Table 2.5 presents a complete picture of graduation trends in the year 2011 for the different degrees at all the universities included in this study.

Table 2.5: All agricultural economics degree programmes completed in 2011

University	BSc	BCom	B Agric	Honours	Masters	PhD	Total
Limpopo	24	0	0	5	1	0	30
Stellenbosch	6	10	10	12	3	0	41
Fort Hare	21	0	24	12	9	5	71
KwaZulu-Natal	18	0	7	2	3	1	31
Pretoria	3	14	0	9	8	3	37
Free State	5	0	15	-	-	3	23
Total	**77**	**24**	**56**	**40**	**24**	**12**	**233**

Source: Survey data (2012)

The data presented in Table 2.5 shows that the departments with the smallest staff complements graduated the most students, and even the most PhD students in that specific year. This is worrying from a content and quality point of view. There is however no data to test this assertion at this point.

2.5 Conclusion

This Chapter focused on the development and origin of the agricultural economics profession in the United States and its influence on the discipline in South Africa. The study of agricultural economics is important for the development of any economy as agriculture represents the core of human existence. Agricultural economics as a scientific discipline can only prevail if the students receive appropriate education, that involves reference to history of both economic theory and methodology, which still remains a competitive advantage over other disciplines. A clear and forward-thinking strategy is needed to preserve agricultural economics as a strong stand- alone discipline using advanced principles of applied economic theories. People involved in this profession need to constantly search for new themes which justify the preservation of separate courses at all levels of higher education, as well as the relevant system of scientific institutions. This, however, has not been a major problem for

universities as yet, since they have specialised modules or subjects that distinguish them from the general economics discipline. The focus has changed to include more food, natural resources and implementation of applied economics to the agricultural economics departments. It is important for current Heads of Departments in agricultural economics to continuously manage and represent their discipline within the universities, as well as the communities at large. They should have a positive attitude among other heads at their respective universities which will assist them in securing the status of the profession and forming collaborations with other institutions to continue the role of research, teaching and extension.

CHAPTER 3

THE IMPORTANCE AND ROLE OF AGRICULTURAL ECONOMISTS

3.1 INTRODUCTION

Agricultural economists have an important role to play (Van Rooyen, 1986), in all spheres of society, especially in shaping and guiding policy decisions concerning agriculture and food systems. Thornton (1978) expressed the need for more active agricultural economists in the industry. He further remarked that at present the demand for specialists' skills of agricultural economists is increasing but the supply is currently not meeting this demand. This chapter seeks to determine the current role of agricultural economists, and the challenges they face regarding changes in the environment. Considering the role of agricultural economists in different spheres of the agricultural and food system, the chapter will also review the requirements to be a qualified agricultural economist as presented by different employers of agricultural economists.

3.2 THE ROLE OF AGRICULTURAL ECONOMISTS

Agricultural economists study aspects of agricultural productivity, distribution of agricultural products and other factors related to economic activities in the agricultural and food industry (Ruttan, 1968). One of the tasks of agricultural economists is to increase profitability in agricultural activities and agribusinesses and to improve the welfare of rural communities and farmers (Adelaja, 2003). Their work focuses on the instability of market structures, changes in the environment and in the agricultural industry. Agricultural economists are in general considered to be lateral thinkers with a multi-disciplinary background which allows them understand other disciplines relevant to agriculture. The skills (both technical and theoretical) acquired by agricultural economists during their university qualifications are extremely important for the success of the industry (McGraw *et al*., 2011). They also enable agricultural economist to be versatile and employable in any part of the value chain – from the machinery manufacturer to the retail store, as agricultural economists can take up the role of consultants and experts among others.

Generally speaking, agricultural economists operate in five broad spheres: Agribusiness management, agricultural finance; marketing; resource and environmental economics, agriculture and rural development (Adelaja, 1997). According to the Future Farmers of America (FFA), a large part of being an effective agricultural economist is having exceptional understanding of production and marketing principles. One of the important roles that agricultural economists perform is the understanding and predictions about future events in agriculture. The predictions made are based on market theories, historical and current events, national and global situations (Thornton, 1978). Agricultural economists' have the ability to apply concepts of supply and demand and microeconomic theories to various economic conditions (Karaan, 2009).

Agricultural economists also offer advice on economic trends that directly and indirectly affect agricultural initiatives and development, including both in rural and urban economic contexts. A broad line of work involves analysing the activities that influence the agricultural economy and the distribution of resources, such as land, raw materials, labour and machinery. Agriculture has transformed from being mainly production oriented (i.e. dealing with farm management and farm production) to being more focused on business. Biere (1988) also emphasised how the role of agricultural economists has not only increased in importance, but has shifted focus to include the financial side of farm management. This change has given agricultural economists the responsibility to advise farmers on how to improve their farming activities and make them successful agribusinesses (Hudson, 2000). Therefore, agricultural economists in possession of business training are better able to solve management-related problems and operate in a multidisciplinary team.

As a result well-equipped and experienced agricultural economists should be able to work in areas such as marketing, price analysis, agricultural finance, and farm management. Knowledge of marketing and price analysis is required to understand the economic environment within which organisations operate. Finance subjects are important as they determine the ultimate function of agribusinesses. Farm management and production economics form the basis for the study of agricultural economics (Robbins, 1988). These two subjects are traditionally recognised as the bread and butter dimensions of agricultural economics education and should continuously be developed throughout the changing curricula within agricultural economics departments.

An important dimension of the work of agricultural economists is economic analysis and research. Agricultural economists continuously monitor the agricultural sector in terms of changing factors that can affect production levels. They also use empirical methods, forecasting and scenario analysis to gather important data, which is implemented in a manner that gives effective and relevant results to market situations. Agricultural economics students are expected to work, teach, research, and expand at the applied level "beyond the farm gate." Their specialisation in various agricultural economics is fast becoming a prerequisite. However, Robbins (1988) proposed that “agribusiness students should become generalists, not specialists”. Their curricula should include the study and knowledge of traditional agricultural economics subjects, such as marketing, commodity price analysis, agricultural finance (cost and benefit analysis, and income statements and cash flow) and farm management, which includes understanding the basics of the farm operation, production and the value chain system.

Agricultural economists have taken up various roles that include being university researchers, instructors, private sector planners and strategic analysts, government researchers, analysts and advisors among others (Kirsten, 1994). Students hoping to graduate in agribusiness related fields require a strong foundation in economic theory and quantitative methods. They should learn problem-solving skills and include business courses to fully understand the different environments in which they will apply their theory. They should reflect the need for an ability to apply their economic education and knowledge to practical firm-level problems, and to solve more traditional industry related problems (Robbins, 1988).

3.3 EMPLOYERS OF AGRICULTURAL ECONOMISTS

Successful and well trained agricultural economists can be employed by different institutions across various sectors because of their dynamic capabilities to work both in the agricultural and economic disciplines. They are able to effectively apply economic theory and practical analysis of economic factors affecting production, marketing, and investment and policy decisions, to make well informed contributions to various institutions (Martin, 1978). Agricultural economists can be employed in, but not limited to, the following sectors:

- Parastatals such as marketing boards and development co operations
- Consultants and development organisations

- Financial houses and commercial banks
- Insurance companies
- Commercial and manufacturing companies concerned with agricultural products, such as the fertilizer; chemical; machinery; forage; meat processing, fruit trade and processing and food preservation and canning industries
- Various government departments
- Self-employment - many agricultural economists set up their own consultancies
- Universities, as research assistants and lecturers
- Commodity traders
- Agribusinesses and co-operatives.

The majority of employers require agricultural economists to be able to fit in the organisation and be dynamic in their thinking and possess problem-solving skills. Graduates should be able to meet the needs of the organisation which should be developed and progress through the changing agricultural needs influenced by macro-economic factors. The universities have the responsibility to ensure that graduates can easily fit into these sectors and are well suited for these positions (Badat, 2009). It is worth noting that even though universities play a profound part in developing students' skills. It is a difficult task for them to take on the full responsibility of producing effective agricultural economists. Collaboration between employers, universities and students is required to create a solid building block and beneficial relationships for involved parties.

A study conducted by Nowers (2012) recorded an increase in the number of agricultural economists operating in the public sector in South Africa between 1990 and 2010. The positions available to agricultural economists increased from 53 in 1990 to 282 in 2010 with 224 positions filled, as shown in Figure 3.1. Agricultural economists were employed predominately in the following positions: statistics, macro policy, production, farm management, agribusiness and marketing, resource economics, rural development and institutional studies. The increase in the number of active agricultural economists in the industry can be used to conclude that the profession is still relevant for the current challenges facing society and that the work performed by agricultural economists is in great demand (Polopolus, 1969).

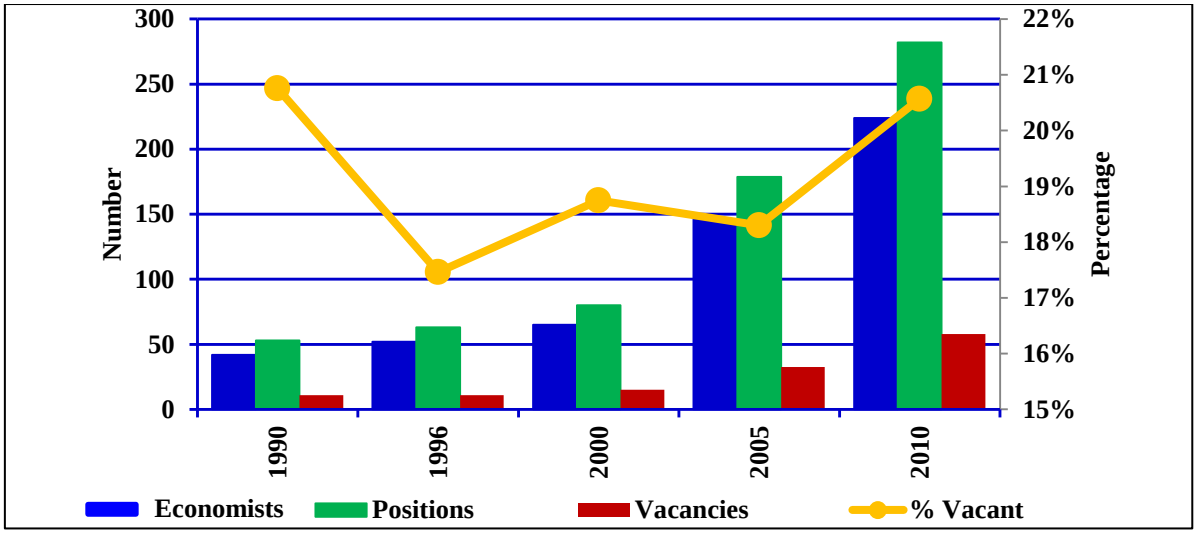

Figure 3.1: Number of agricultural economist positions in the public sector in South Africa, 1990-2010
Source: Nowers (2012)

Agricultural economists often have to compete with economic graduates for employment opportunities within the sector. The inability for the public sector to recruit agricultural economists can be ascribed to a number of factors such as lack of sufficient personal and technical skills as well as a practical and realistic understanding of the industry. Hyde and Lovejoy (1997) further expressed the concern that the agricultural economics profession may be absorbed into its parent discipline as more employers are looking for a combination of technical and business skills. A study by Artz *et al.*, (2011) indicated that agribusiness firms are increasingly hiring non-agricultural college graduates. They estimated that the number of agricultural graduates who are qualified for management or business positions in agricultural companies represent only 60% of the job offerings. Agribusiness companies turn to graduates from other related fields such as business management to fill the remainder of job openings (Artz *et al.*, 2011). Although, these findings are based on a survey of the United States agricultural industry, there is great similarity with the South African agricultural sector. It is, however, not clear whether the demand for non-agricultural graduates is based on an undersupply of agriculture graduates or if non-agricultural graduates have skills that are more in demand by the agribusiness firms and are not included in traditional educational aspects of agricultural economics.

The evidence presented here suggests that career paths of agriculture and other non-agriculture university graduates in the industry could guide changes in curricula and course content to improve the competences of agricultural economics graduates. Another reason shown by Artz *et al.*, (2011), is that agricultural economists have unique skills that are valued by non-agricultural companies. Although no prior evidence of this is proven yet, it is noteworthy to assist in finding a solution for the problem affecting employment issues in agricultural economics, by incorporating business skills and training within the curricula.

We could deduce that agricultural companies that hire non-agricultural graduate do so due to the notion that agricultural graduates are being attracted to other sectors for higher wages, better benefits and working conditions. Job responsibility, positive work environment and good salary are some of the attributes that influenced agricultural graduates' job options (McGraw *et al.*, 2011).

The differences in placements by sector may be used as a measure of strength of the curriculum and not a weakness. The strength stems from the evidence that suggest that agricultural companies want non-agricultural graduates because they wish for a different mix of skills. Universities can use this as opportunity to solidify the agricultural economics graduates position in the work place by introducing more management training into their curricula (Drame-Yaye *et al.*, 2011). Substantial evidence is found in recent surveys from Schulz, 2008; McGraw *et al.*, 2011 on agricultural university graduates that emphasised the importance of general qualifications such as verbal communication skills, and the ability to work well in a team since most work requires consulting and engaging with other people (Van Rooyen *et al.*, 2012).

Personality skills are more valued over technical or specialised knowledge of agriculture. Companies are increasingly looking to recruit employees who are flexible and have innovative ideas for the development and growth of the organisation than standardised technical skills (Litzenburg and Vernon, 1987).

This shows evidence that soft skills such as communication, teamwork, reliability, problem solving, positive attitudes are very important in the agricultural industry. From the above statement one can deduce that non-agricultural degree holders can compete effectively for

agricultural industry jobs, in turn causing further challenges for the agricultural economics university graduate (Goecker *et al.*, 2008).

Another reason is the possibility that some agricultural economics degrees provide more sector specific training than others. An example of this is universities that include a practical year in their curricula to train students in specific areas of the sector such as extension work and econometric modelling. This ultimately suggests that the skills of some agricultural economics graduates will be highly valued in the agricultural industry than in other sectors. The agricultural graduate would have received specific training related to that area and may not be able to use the skills effectively in broader agricultural sectors. Therefore, it is advisable for graduates to be trained in multiple disciplines relating to agriculture in order to take advantage of the diverse nature of the agricultural sector.

Erickson (1975) recommends that institutions should review their academic programmes to ensure that there are options to prepare graduates for an industry position after completion of their studies are available. This is based on the notion that students study a specific field to gain knowledge and in due time find a good job in that field.

New and advanced agricultural firms are using more descriptive and subjective analytical approaches as opposed to the traditional quantitative analysis (Bitsch, 2005). Graduates holding just a BSc are believed to become a minority in the job market in the future, paving a way for new entrants who hold a minimum of an MSc and many more holding a PhD. BSc programmes generally fail to provide the specialisation in courses that is necessary to allow identification with analysis as an occupation (Erickson, 1975). BSc students are in competition with BCom students as they are able to perform business related tasks which is becoming a basic requirement in organisations.

Robbins (1988) also notes the importance of communication courses, reviewing that they should not just form part of the elective categories but rather should be a compulsory subject. This is because at any level of specialisation if one does not have the ability to communicate effectively “a large percentage of technical talent goes unused” (Erickson, 1975). This proves that soft skills contribute a large portion to the success of agricultural economists in the agricultural industry and broader economy. The growing shift from BSc to advanced degrees

for new recruits of analytical positions in the agricultural sector reflects a greater awareness of the value of both maturity and additional training for the post-graduate degree holder (Erickson, 1975).

Research on the income realisation of agriculture graduates has been focused primarily on the factors affecting the starting and current salaries of graduates. The research has been limited to the US and has proved the importance of advanced degrees such as post-doctoral and work experience as ways to get higher salaries (Goecker *et al.*, 2008). There has been mixed evidence regarding relative pay in the agricultural industry in comparison to jobs outside the industry. Several studies conducted by Tarr and Strauss in (1982) show that there is an income penalty faced by agricultural economists in the industry. One of the determinants of agricultural economics salary is based on, professional experience; the more experienced the employer the higher is the salary. Publications of articles, journals scholarships, and employment flexibility, the more tasks the employer can perform within the organisation the higher the salary (Broder and Ziemer, 1982).

The issue concerning the future of the agricultural economics profession has been raised by a number of industry professionals and university professors. Individual members of associations are concerned about encouraging students to obtain graduate degrees in agricultural economics when the chance of employment may not exist after graduation (Marchant and Zepeda, 1995). It is important for the agricultural industry to retain a strong presence within the society and more importantly as a global discipline.

3.4 REQUIREMENTS TO BE AN AGRICULTURAL ECONOMIST

Although South Africa has eight formal universities that offer agricultural economics subjects for degree purposes there are other institutions such as University of South Africa (UNISA) and universities of technology that offer modules relating to farm management and introduction to agricultural economics (Kirsten, 2010). Many graduates with general agricultural degrees who have completed agricultural economics modules now masquerade as agricultural economists. This has caused major problems and much confusion for those involved in the profession regarding the real constitutes of a true and comprehensive agricultural economist.

There has been a misperception about the true requirement of an agricultural economist because people who are trained in agricultural colleges for courses lasting a few weeks or short courses less than a year without any advanced knowledge in agricultural sciences, economics or statistics are also referred to as agricultural economists (Kirsten, 2010). They, however, do not hold the same educational background or exposure to the different aspects of agriculture as those individuals who attended universities. The need to formalise the description of what qualifications agricultural economists, ought to be done by members of the professional association and agribusinesses who hire agricultural economists.

3.5 What is expected from agricultural economists?

Generally, to be considered an agricultural economist one needs to have taken at least one major in agricultural economics such as introduction to agricultural economics or agricultural economics related subjects during their university studies. The Agriculture Economics Association of South Africa should play a greater role in governing the agriculture economics profession and in determining the key requirements for degree programmes in agricultural economics.

There are strong arguments presented by members of the agricultural economics profession that the association Agricultural Economics Association of South Africa (AEASA) should take responsibility and set out the rules and regulations for current agricultural economics professionals and academia. One of the ways this can be achieved is by addressing and formulating the roles of agricultural economists and register agricultural economists under the South African Council for Natural Scientific Professions (SACNASP). The Council requires that in order for professionals to be recognised and registered as agricultural scientists, they should have completed a BSc Agricultural Sciences or BTech Agriculture degree from a recognised institution. The registered persons should also have at least three years' work experience after completing their highest qualification, two years' experience for those holding an MSc degree and one for those with a PhD. The Council also requires that the register should provide evidence for articles published or work done in order to check whether they qualify to be represented under the Council's umbrella. The scope of work is also stipulated for the various roles that agricultural extension officers or scientists can undertake.

AEASA can learn a lot from SACNASP as the Council is well respected and the professionals represented under it are considered as highly qualified and capable employees (Yizengaw, 2008). AEASA can be an important player in the industry, governing the profession and leading the way forward for agricultural economists in the industry. It is therefore, recommended that university departments, students, industry professionals and the association itself should constantly engage in discussions that will aid in the growth of the association and ultimately the industry.

The basic educational requirement for an agricultural economist is a degree in the field. Some authors in the Western Agricultural Economics Association say that a person can be an agricultural economist if he or she has a special interest in the agricultural discipline. This means that a degree in agricultural economics or just mere exposure to the industry from past experience is sufficient (Golden, Tsoodle, Odeh and Featherstone, 2006).

Stewart and Landgraf (2010) suggest that to become an agricultural economist one needs a university degree, either a bachelor's degree in agricultural economics or a post-graduate master's degree and substantial experience in the agricultural field. The experience required is dependent on what the employers prefer. A person wanting to be involved in the agricultural career sector usually has to have a strong interest in the field, in order to deal with the challenges that are involved in this job market. Interest in the business of agriculture and economic development pose as strengths to anyone entering the agricultural career.

The composition of agricultural economics degree programmes differ across the universities offering the programme. A few common subjects like agricultural economics, general economics, (micro- and macro-economic), farm management and computer subjects form key subjects to obtaining a degree in agriculture and being qualified as an agricultural economist.

Kirsten (1997) stresses the importance of current agricultural economists being concerned with the broader efficiency and expansion of agriculture economics to involve more than just agriculture but rather environmental issues, macro-economic factors and applied economics. The American Association of Agricultural Economists also realised the importance of such initiatives as they extended their focus of agricultural economics from the initial focus of the

1930s to now include environmental economics and natural resources, agriculture and rural development (Runge, 2006).

Kirsten (1997) further argues it is critical that "agricultural economists should have a thorough understanding of the agricultural disciplines". He continues to explain that an agricultural economist with "mud-between-the-toes experience together with a solid understanding of statistics, economics and the macro-economic could be invaluable to the agricultural sector".

3.6 CHALLENGES FACED BY AGRICULTURAL ECONOMISTS

Myers (2010) confirmed that current problems related to agricultural economics are not new to the profession but rather date back decades ago, when the profession was regarded as less favourable than its theoretical counterparts. To date the profession is still facing challenges trying to establish itself as an independent discipline and gain intellectual independence from its economics parent discipline (Harl, 1983).

From the earliest days the agricultural economics profession has endured a duality that is uncommon to the discipline. The first part of the duality is the need by agricultural economists to partake in recovering forces of the parent discipline. The second is the desire to develop increasingly refined analytical and methodological approaches to problem solving techniques (Harl, 1983). The pace and direction of change that has already developed for agriculture and other world economies demonstrates the importance for the agricultural economics discipline to remain intellectually close to its parent discipline (Harl, 1983; Conner, 1985). Therefore, it is recommended that although agricultural economics should establish itself as a capable and relevant discipline that is governed by its own associations and methods, it is important to retain the theories and techniques that influenced the development of this discipline.

The early agricultural economists placed their focus on agricultural production, accounting and business, classical, neoclassical, and institutional economics (Just and Rausser, 1989). Should the agricultural economics profession continue to rely and take guidance from its parent discipline? The studies by Leontief (1970) argue that it would be beneficial for the

discipline to engage in unique ways to establish a balance between theory and empirical analysis. This balance will assist agricultural economists to be experts both in the parent discipline and be able to apply micro and macro-economic concepts to real world issues. One way to establish this healthy balance is by incorporating and working together with experts from other disciplines such as economics, biotechnology and social scientists among others, to establish solid agricultural economics areas of specialisation.

Subsequently, numerous researchers have expressed their rather personal views as to what they consider is the main challenge with the profession. Ruttan (1970) argued that the restriction and division of agricultural economics from economics has formed the basis for its many important contributions it has made to the industry. He further went on to discuss that the excessive division along geographic and sub-disciplinary lines was the cause for the limited effectiveness of agricultural economics spread into other economies and fields of work. Other economists reason that a major historical strength of agricultural economics is its ability to remain relevant and stable through changes in methodological approaches in different research situations.

Research and academic industries are great contributors to the economic institutions. There is a need for them to make and implement policy decisions based on the research conducted by agricultural economists which continuously puts pressure on the researchers. The pressure often results in agricultural economists using and relying on research methodologies that are frequently considered as unacceptable for journal publications (Just and Rausser, 1989). This, in turn, has a consequence on the credibility of the author and value of the research and institution. Publishing in journals is highly important to any individuals' academic career as well as the greater community by serving them with particular information of importance that is both approved and relevant (Golden *et al.*, 2006)

The establishment and growth phases of the profession were met with disapproval and resistance from many economic imperialists. However, Groenewald (1990) in Vink (2012) identified several systems that challenged the ability for agricultural economists to be efficient instead of just effective within their discipline. He differentiates efficiency and effective as "doing the right thing" and "doing the thing right." The difference here is that, in order for the agricultural economics profession to be effective it will require the parties involved to know

what areas to work in and what issues to find solutions for. Areas of specialisation such as environment, agriculture and rural development will assist the profession to differentiate itself from pure economics, and establish itself as a profession that has great impact and influence on global issues. "Doing the right thing" consists of methodologies, theories and governing institutions that support the profession to remain relevant and ensure good practice measures are maintained.

In his presidential address to the American Agricultural Economics Association in 1986, Havlicek identified five trends which he believed to have significant impact on the agricultural economics profession (Havlick, 1986 in Myers 2003). The trends included: *changes in household food consumption* due to the increasing population, *internationalism and microeconomic forces*; all countries are faced with political issues that potentially have an impact on the agricultural sector. Issues such as change in political structures, trade, technological innovations and environmentalism present both threats and opportunities for the agricultural industry and the people involved in it (Myers, 2003).

There are several issues and challenges related to the training at agricultural universities. According to the Department of Agriculture, Forestry and Fisheries (2010) lack of coordination and coherence presents a challenge for providing solid training to students. A subject as extension and food security topics are not given a platform in universities and which Mafunzwaini, Thahane and Worth (2003) consider requires more attention. The issues with insufficient funding and lack of internship opportunities leaves the students insufficiently qualified lacking in practical experience.

Schulz (2008) also raises the issue that employers are relatively dissatisfied with recent university graduates lacking in soft skills. Primarily the skills they most require include communication skills, knowledge of business and project management skills, which the universities do not offer extensively at undergraduate levels.

There is also an increasing challenge of retaining talent in the agricultural sector. Agriculture is not considered to be the most popular options when it comes to a career path (Drame-Yaye *et al*, 2011). A positive perception of agriculture still needs to be developed among young people for it to be considered a potential lucrative career choice. A 2012 survey conducted in

the USA by Brienza, ranked the different occupations available and determined which ones were popular. Some factors included in the survey were physical demands, work environment, income, stress and hiring outlook. A total of 200 professions were analysed, through a random sample of graduates who voted for the career options they preferred most. Table 3.1 below is a representation of the top ten and only those related to the agriculture discipline.

Table 3.1: Most Popular Occupations in the USA- 2011

Occupation	Ranking
Software engineer	1
Actuary	2
Human Resource Manager	3
Dental Hygienist	4
Financial Planner	5
Audiologist	6
Occupational Therapist	7
Online advertising Manager	8
Computer Systems Analyst	9
Mathematician	10
Economist	48
Agricultural Scientist	132
Farmer	179

Source: Careercast.com (2012)

According to Table 3.1 above the top ten preferred occupations are those that are in the science and technology fields, with the highest being a software engineer. This could be related to supply and demand of such occupations as well as attractiveness of the industries and salaries. Agricultural scientist is rated 132 out of 200 which is relatively low, while being a farmer was rated at 179. This table can be useful in making some predictions about the direction the agricultural economics profession should be taking in the future in terms of creating a favourable perception about the career choices available for students intending on studying this programme.

Technology plays a very important role in the way people live and will continue to advance and develop the way of learning and conducting business. The top rated occupation is involved in use of technology and this suggests the route to take in order to make agricultural economics relevant in the future. The table also reveals that the perception of the agricultural occupation and industry as a whole may still not be understood or given enough value it

deserves. It would be noteworthy for the industry to be more visible in schools and other places of interest, instead of only being a present feature within the association and to its members. Innovations in products and processes, as well as changes in institutions have advanced rapidly during the previous centuries and continue to transform today. According to Renne (1977), there could be an increase in business developments and employment opportunities and increased demand for specialist skills. Agricultural economists who are situated within the correct organisational structures and governing bodies are in a good position to take advantage of all these economic developments and become all-rounder experts with experience and educational advancements.

Van Zyl, (2008) identified the shortage of skilled agricultural economists as a major contributor to the challenges of this profession. The market forces have an impact on the demand for education at the tertiary level. There have been misguided attempts to transform underprepared undergraduates in a short space in time into 'ready-made' professionals who will immediately be of value to the private and public sectors.

The increased requirements from industry for graduates to be in position of practical experience before being considered for employment has led to a decrease in the number of students getting employment within the first year of them completing their degrees. This lack of experience has a negative impact on the sector, due to agricultural economics students finding jobs elsewhere to gain experience and the agricultural economics talent is lost and not utilised effectively within the agricultural industry.

The following questions could be asked concerning the training and experience of graduates. Should universities provide more industry and applied modules to their already integrated and advanced curricula? Should the industry continue to provide specialised training for agricultural economists in areas such as agricultural engineering? Or should AEASA play a more innovative and dominant role in ensuring that young people are properly trained and remain in this industry, by means of assisting in employment through mentorships, and constant engaging with industry professionals.

3.7 DISCUSSION

The increased requirement aimed at preparing students for successful careers in agribusiness upon graduation has seen universities revise their curriculum and training programmes. Other issues posing a threat to the successful training of agricultural economists is the realisation that most professional companies do not operate entirely on agricultural economics related businesses. They provide a wide variety of divisions mainly concentrated on business management, financial management and human resources. Strong emphasis is put on soft skills. Throughout this section of the study various concepts and questions were posed but we remain with the question: Is the university doing enough to ensure the success of its graduates at industry level? This question will be answered in the following chapters of this study. Students who successfully complete their MSc degree are identified as candidates who are capable of independent research as well as those who are likely to find challenge and satisfaction in research. Universities should continue to encourage graduates to further their studies into post-graduate level but more importantly they should consider having improved programmes that will aid in the employability of their graduates.

CHAPTER 4

THE CURRENT SKILLS SET PROVIDED BY AGRICULTURAL ECONOMICS DEGREE PROGRAMMES

4.1 INTRODUCTION

This chapter examines the current skills set offered to undergraduate students in agricultural economics departments in South Africa. The analysis uses a simple survey completed by the HODs of agricultural economics departments, at various universities to establish their views on the skills mastered by the students after completing their degrees. This will then be matched with the views by the alumni and the employers to establish whether or not the training and skills attained by the graduates is enough for success in the workplace.

Eight survey questionnaires were emailed to HOD's of the agricultural economics departments at South African universities that offer agricultural economics courses for degree purposes. Only six completed and usable surveys were received from the universities of: Pretoria; Free State; KwaZulu-Natal; Limpopo; Fort Hare; and Stellenbosch. No results were recorded from the University of North-West and Venda. The figures and tables represented below show the results obtained from the survey, which was furthermore enforced by an AEASA workshop held in Bloemfontein, Free State in September 2012.

The first section of the survey included questions about the resources that universities offer to students to enhance their professional career such as CV writing skills and interview skills. The second section focuses on the skills that graduates should have attained upon completion of their degrees. The skills examined are: computer skills, basic agricultural economics skills, business skills and soft skills. All these are believed to have great impact on the success of graduates in agricultural economics careers.

The degree programmes available in the agricultural economics, extension and rural development departments include: BSc Agric (Agricultural Economics), BSc (Agribusiness Management), BCom (Agribusiness Management) and B Agric degrees. The degree most

common throughout all the universities is BSc Agric (Agricultural Economics) as previously stated, and will therefore be the focus of the results and discussions below.

4.2 STUDENT RESOURCES

The student resource section is included to determine what facilities the universities offer to students to assist them in completing their degrees successfully in the specified time allocated. The resources available to students will differ with regards to different universities and the needs of the students as per Table 4.1. However, these resources refer to the programs that will assist their students to graduate quickly and get jobs within the industry. Career development programmes have not only become a value added incentive but a necessity to assist graduates in finding employment.

Table 4.1: Resources to aid student development at South African universities

Resources available to students	Yes	No
Professional development: The program offers a wide range of professional-development opportunities and technical skills. (Such as CV writing and interview skills).	2	4
Annual student review: The department conducts an annual review of all enrolled undergraduate students, to determine how many remained in the course or dropped out.	2	4
Interpersonal skills: The program or institution provides organised training to help students improve interpersonal skills, (group work, and presentations).	5	1
Proposal writing: The institution provides assistance or training in how to prepare proposals and research opportunities during their undergraduate programmes.	4	2
Instruction in writing: The program or institution provides writing-skills instruction to undergraduate students.	6	0
Instruction in communication: The program or institution provides instruction in effective communication skills to undergraduate students.	6	0
Access to facilities: Students have access to library facilities that are well-equipped with internet, journals and other sources that provide information to assist them in research and projects.	6	0

Source: Survey (2012)

Professional development – refers to the ability of students to be successful in interview skills and preparing curriculum vitae. Although, some would argue that such skills should be developed from high schools, it would however be beneficial for university programs to include modules or subjects that offer such developmental skills. The survey results show that

only two of the respondents said their students attained such skills and the remaining four universities do not offer the option to students. Some remarks were made that such professional development is not necessarily the responsibility of the departments, but forms part of the overall university projects.

Annual student review - is the processes universities and departments use to measure the number of students who enrol and graduate from the department annually. This would be beneficial for both the funding institutions and programmes to conduct annual student reviews on all the students who are enrolled for undergraduate studies at the agricultural economics departments. This will ensure that teaching expectations are communicated clearly among students, faculty advisors and programme co-ordinators. Four respondents do not initiate such reviews, and nor do they take annual account of the students enrolment and de-registration during the year at departmental level. Some departments however remarked that the reviews were conducted at the university level and not at departmental level. An annual review administered at the departmental level will assist the departments to determine which courses are successful and which require further development and refocus.

Interpersonal skills – includes working as a group, networking and social skills. The ability to work in groups is one of the important requirements raised by employers. This skill can be developed at universities by encouraging the students to prepare presentations, share and divide the workload among their peers. It is therefore not a surprise that five out of six departments said they offer such activities as development opportunities.

Proposal writing – consists of the ability of students to think creatively and propose ideas that are translatable to real world actions. In the industry it will be required that individuals are able to prepare well-structured and well written proposals, be it for businesses or for scholarships. Students in their undergraduate studies should have these skills before they graduate. The survey shows that four out of six universities have programmes within their curriculum that help students to extensively develop these skills.

Instruction in writing – differs from proposal writing in that it refers to the overall writing ability of the students such as the structure and technical language of papers written by the

students. All six respondents said that their departments offer extensive opportunities for students to improve their writing skills through assignments and reports.

Instruction in communication– is the ability for students to communicate effectively and express their views critically and clearly, to fellow peers and educators. All the respondents said their undergraduate students are given adequate opportunities to increase and improve their communication skills both in an academic and social arena.

Access to facilities – includes upmarket learning and technological amenities. In this technology age it is imperative that students be exposed to the use of various technologies as an added advantage for their careers after graduation. Universities are in a constant phase of innovation and improve their facilities to include advanced technologies. For this reason it is not a surprise that all six respondents said they offer students access to well-equipped resources in terms of fully equipped library facilities, opportunities for students to use the internet for research purposes and preparation of presentations.

The results summarised in Table 4.1 present a positive perspective about the state of the current agricultural economics departments and the access to resources. Students are therefore in good positions to take advantage of the facilities and improve their employability. The following section discusses the skills students should have attained upon graduation.

4.3 Computer Skills

Computer skills are essential for success in an agricultural career, because of the tasks that agricultural economists should be able to perform such as data capturing, business plans, market analysis, and commodity trading. All these skills require extensive knowledge and development in computer skills. Table 4.2 below shows the skills that students would have developed upon completion of their BSc Agric (Agricultural Economics) degree.

Table 4.2: Computer skills attained by undergraduate students in Agricultural economics at South African universities

Desirable computer skills set	Yes	No
Prepare a whole farm budget on Excel.	5	1
Prepare an enterprise budget on Excel.	6	0
Do simple regression and forecasting.	6	0
Prepare a good project report.	6	0
Prepare a good PowerPoint presentation.	6	0
Prepare a sound and precise word document with correct technical guidelines e.g. (Font, structure and formatting).	6	0
Conduct research using internet, books and other information sources.	6	0

Source: Survey (2012)

Prepare a whole farm budget on Excel – A farm budget consists of using systems such as solver, linear programming and advanced functions that require time and expertise. Five out of six departments said that their students were able to complete farm budgets on Excel. This is an important skill for any trained agricultural economist and generally forms part of the job requirements and specifications in many agricultural economics careers.

The overall knowledge of computer skills are adequate as the results of the survey show that all the respondents said their undergraduate students are able to: *prepare enterprise budgets; do simple regression and forecasting on Excel, as well as prepare good project reports and good PowerPoint presentations*. Departments measure the ability of these students by having them conduct, submit and present proposals and final reports of a mini-research project.

Presentation skills are also very important and they differ from PowerPoint presentations in that they showcase the ability for students to present and report projects using various mediums such as videos, charts and graphs. Presentation skills encompass communication and creative skills in order to give a well-structured, sensible presentation.

Computer skills are a basic requirement that employers look for in recent university graduates. Therefore, it is essential for universities to provide these skills, which according to the survey results agricultural economics departments have successfully incorporated into their curriculum.

4.4 Soft Skills

Soft skills are defined as personal attributes that enhance individuals' interactions, job performance and career prospects. Soft skills are often described by using terms frequently associated with personality traits, such as, optimism, working independently, responsibility, and a sense of humour, integrity, communication skills and the ability to work in a group (*www.searchio.com*).

The soft skills are considered the most desirable skills for graduates to have in order to be successfully employed in the industry (Schulz, 2008). Soft skills have an important role because students should not only be in possession of theoretical concepts but personal characteristics too. Table 4.3 below shows the soft skills that graduates should have obtained upon completion of their four year degree programme.

Table 4.3: Soft skills acquired by students in agricultural economics at their undergraduate level

Soft skills	Yes	No
Student is able to work independently without supervision.	4	2
Be able to perform well in a group.	5	1
Communicate effectively.	6	0
Be confident in asking and answering questions.	6	0
Has the ability to apply critical thinking into problem solving.	5	0
Listen to and carry out instructions.	5	0
Listen to and summarise lengthy oral presentations.	4	1
Ability to work under varied conditions.	4	1
Willingness to be mentored.	4	1
Students have a practical concept of what farming is really about.	6	0

Source: Survey (2012)

According to the results obtained from the survey, four out of six departments responded that their students are able to work independently without supervision. Team work is an important skill to have when entering the job market and students are given adequate opportunities to improve on this skill within the study program. It is not a surprise that five departments responded positively to this trait within their students.

Five HODs agreed that the students are able to apply critical thinking in solving problems and can confidently ask and answer questions. A side remark by one of the respondents suggests that most students still have difficulty showing confidence during presentations and group work. This issue can be regarded as a personal characteristic of the individual and does not reflect negatively on the university programme.

The results further reveal that majority of the HODs were satisfied with their students' ability to listen to and summarise lengthy oral presentations. Although, all the respondents may have expressed that their students are able to communicate effectively to a certain degree, there remains the problem of students being unable to express ideas and show confidence in using English. The barrier is prevalent in students whose second language is English, as shall be seen in the following chapter. An important trait that will help students in the work place is the practical concept of what farming is really about. All six departments agreed that their students have the practical concepts of what farming is really about. Despite this statement the reality is that many students do not have practical farm backgrounds or the 'mud-between-the-toe' experience and we could therefore argue that the HODs could have been too shy to admit that many students enrolled for agricultural economics degrees have limited understanding of practical concepts of agriculture and also lack a comprehensive understanding of farming and agribusinesses per sé. This is an important trait, because graduates entering the job market should be knowledgeable of both theory and practice.

4.5 Business Skills

It is important for graduates to have some business skills when they graduate. The agribusinesses that employ these students require, among other skills, the knowledge of how business works, and profit making skills. Table 4.4 below shows the desired business skills students should have attained at university.

Table 4.4: Business skills obtained during undergraduate degrees

Desirable business skills	Yes	No
Prepare a solid business plan.	6	0
Be able to do a transaction on SAFEX.	2	4
Be able to pass the SAFEX commodity trading exam.	2	3
Prepare a marketing plan for an agricultural commodity or food product.	5	0
Prepare financial statements and do a financial analysis of a farm and/ or agribusiness.	6	0
Be able to do cash flow statement for farming enterprise.	6	0
Is able to do a feasibility study.	5	0
Can do tax planning and give realistic and reliable advice to farmers.	2	4

Source: Survey (2012)

The results show that all six respondents were of the opinion that their graduates are able to prepare solid business plans to a certain extent which are taught within the agricultural economics subjects. One respondent added that the course has advanced to include drawing up a full farm business plan as part of the 2nd year of agricultural economics module. It is generally argued that all students from the surveyed universities are able to perform cash flow statements for farming enterprises.

Training in the agricultural futures market (SAFEX), which is critical in the post-deregulation period of South African agriculture, is not offered in most of the degree programmes – the exception is University of Pretoria and Free State. Nevertheless, it is very important that subjects that incorporate SAFEX concepts and models should gain more precedence within the curriculum for agricultural economics students.

4.6 Basic Agricultural Economics Skills

In order to be successfully employed in the agricultural sector it is important for the student to know the basic concepts of agricultural economics, especially policy dimensions and the basic analytical skills. These skills are among the basics that students should be able to identify with upon completion. Table 4.5 below represents the desired basic agricultural economics skills that students should be able to perform.

Table 4.5: Basic Agricultural Economics Skills

Basic Agricultural Economic Skills	Yes	No
Estimate a supply and demand function.	6	0
Estimate elasticities.	6	0
Be able to manage a data set.	5	0
Do a welfare analysis of policy interventions.	5	0
Be able to estimate a production and cost function.	6	0
Know the main elements of the South African agricultural policy.	6	0
Understand the techniques involved in analysing agricultural value chains. (Such as the production process, from farm to market and input and output flows of produce and impacts of global markets).	6	0

Source: Survey (2012)

The results related to basic agricultural economic skills show a very positive perspective from the HOD's, as all six departments said their graduates have the ability to estimate supply and demand functions, estimate elasticities, production and cost functions as well as understand the techniques in agricultural value chains. It is a desirable trait for graduates to have basic knowledge of the SA agricultural policy and respondents were relatively satisfied with this trait in their students. Being able to manage a data set is closely linked to research capabilities and five departments said their students possess that skill as well as performing welfare analysis of policy interventions.

4.7 Value Added Programmes at Universities

It should always be kept in mind that although universities across South Africa may offer similar program choices, they are governed by different institutions and funding for the departments is not the same. Universities should attempt to ensure that their students receive the best experience during their respective number of years of study. It is uncommon for employers to request that new employees should have a certain level of practical experience in their fields. Table 4.6 below reviews certain programmes beyond the required skills universities have incorporated in their study programmes to add value to the student's professional and personal development.

Table 4.6: Additional resources to add value to teaching programme

Advanced programmes to enhance teaching	Yes	No
Orientation: The program or institution provides an orientation program for new students.	6	0
Visiting lecturers: The programme invites industry experts to present lectures.	5	1
Travel support: The program or institution provides funds that enable students to attend professional meetings, conferences and other agricultural shows.	4	2
Academic ethics: The program or institution offers formal training in academic integrity and ethics.	4	2
Extra curricula activities: The program encourages students to take part in University activities, social clubs and functions.	4	1
Undergraduate student association: The program or institution has an active undergraduate student association.	6	0
Mentorship: The institution offers a mentorship programme for aspirant undergraduate students.	6	0
Internships: The programme offers students internship opportunities to link with companies, farms and government institutions.	3	2
Practical work module: Does the programme offer students with practical experience within the degree.	4	2

Source: Survey (2012)

Programmes that are arguably of value to students such as orientation, mentorship and undergraduate student association are well represented throughout the universities.

Travel support - is the ability for the university to provide funds that enable their undergraduate students to attend professional meetings, conferences and other agricultural shows. This serves as a learning opportunity and the chance for students to meet professionals and form pre-career relationships and broaden their knowledge on the agricultural industry. Agricultural economics departments should play an important part in introducing future agricultural economists to agricultural employers, in this way reducing the number of unemployed agricultural economists post-graduation. Majority of the departments remarked that the option is available to students but more extensively to post-graduate students who embark on research and conference travelling.

Academic ethics – consists of the ability for students to deliver well-written and anti-plagiarised academic papers. The program or institution offers formal training in academic integrity and ethics. Ethical behaviour and integrity are very important characteristics for students to have which can be developed from the university level. Four out of six

departments said they offer such a service and two departments said although ethics in academics is required the university does not offer extensive formal training.

Extra curricula activities - students are encouraged to take part in extra curricula activities which can assist them in compiling their curriculum vitae and teach them skills outside their theoretical knowledge. Four departments indicated that they offer and encourage students to be involved in activities other than their educational responsibilities. However, a remark was made that it is not the departments' responsibility to manage these activities but rather the responsibility and initiative lies with the student.

Undergraduate student association – does not only refer to overall university projects and associations, but rather to an active undergraduate student association within the department that handles specific agricultural economics issues and projects. All departments said their universities have undergraduate student associations. These associations are governed by students and assist in student problems and concerns about a particular course or programme. However, it is very important that departmental heads and student association leaders have regular interaction and sharing of ideas to better improve the quality of learning and teaching offered to students.

Mentorship – mentorships serve an important component for students, as it gives them the opportunity to learn and develop skills from working with industry experts. All the respondents said their universities offer mentorship programmes for aspirant students. However, they remarked that mentorships are widely available for students in their final year of studies. This is an acceptable notion because students in their final year of study should have attained the basic skills and knowledge of the agricultural industry, including a basic understanding of what is expected of them in the workplace.

Internships - Internships play an important role in assisting students with work place skills. Yet, it is of concern that only 50% of departments have facilities or programmes that offer internship opportunities to students. The respondents further stated that the available internships are funded by the NRF (National Research Foundation) and other external institutions. However, the university does not facilitate them. An inclusion of several months internship period within the training programme can be advantageous to the student.

Practical work module - experience is currently the greatest challenge concerning the unemployed youths. Employers need students who have some level of practical knowledge in their fields, and agricultural economics is no different. It has been recommended that universities include a year of practical work or experience within the three and four year degrees. Practical experience will be very helpful in securing jobs post-graduation. Although four departments say they offer students practical experience, a remark was made that the programme is not extensive and requires better implementation and structure to better serve the needs of the students.

Visiting lecturers - can add valuable insight and expertise to the student's knowledge and five out of six respondents said they make provision for such lecturers, some only at undergraduate level during the practical vacation programme. Visiting lecturers can assist undergraduate students in developing a deeper understanding and knowledge of the agricultural economics industry while gaining valuable networking opportunities and international exposure.

4.8 CONCLUSION

This chapter analysed the skills set provided by the different universities as interpreted by six Heads of agricultural economics departments across South Africa. The results suggest that there is broad similarity among the various universities and all said their students are employable upon completion of their degree programmes. Most of the results may have shown a positive perception of the quality of education provided by departments as well as the university. They do however indicate that there are certain areas that require development. Some sense of biases may have occurred as every university would like to consider their programme and curricula worthy of first class status, and they would equally like to consider that they produce well qualified graduates for the very competitive job market. Some recommendations from this chapter include:

- Agricultural economics departments should incorporate SAFEX into the undergraduate curriculum. An argument could be made that the SAFEX exam is not really university material and therefore not compulsory for students to learn during their undergraduate

level. However, upon the successful completion of the trading examination students can be given certificates which will work positively for their employment opportunities.

- It is recommended that agricultural economics departments in South Africa should formulate a baseline for all their curricula. The baseline should include the basic necessary modules that will ensure that all students graduating from them are not in any way inadequately qualified. It is important for universities to establish some form of uniqueness and competitiveness, but not at the expense of the students' education.

CHAPTER 5

GRADUATE TRACER STUDY RESULTS

5.1 INTRODUCTION

It is important for agricultural economics departments to know the success of their graduates in industry. The higher the number of successful graduates the more students will want to study the degree, and the agricultural industry can grow and effectively contribute to the economy by absorbing a high number of agricultural graduates. It is also very important for the relevance of the profession, growth of the industry and further university funding and collaborations.

This chapter reveals the students' perception of their study programmes and universities. This will enable the curricula designers and the HODs to assess whether change should be implemented to the programme, and if so what type of change. The chapter reviews the skills graduates use most in their work place, and those rarely used. It also considers how many respondents are employed in the agricultural sector, the companies that employ them and the kind of tasks they perform in their jobs.

The main objective of the study is to trace the destination of the university graduates since they left university. The study intends to establish the current activity, utilisation of skills and level of employment or unemployment of the graduates. The survey also aims to establish the contribution of the university training provided to the graduates on their personal and professional development. The quality of the study programmes was analysed by means of content, delivery and relevance to the work place.

The survey was initially implemented randomly through emails sent to various graduates from different universities. However, the response was very low, but with the assistance of the AEASA more surveys were handed out at the AEASA conference held in Bloemfontein on 1-3 October 2012. The conference is an annual event and consists of members who are in various fields of the agricultural industry, professionals, academia and students. A total of 40

questionnaires were distributed randomly among the delegates, regardless of age, gender and ethnicity. The only requirement was that the respondent should have studied or studying a degree in agricultural economics and at any of the eight universities that provide such programmes. The response was 35 completed questionnaires; upon analysis and cleaning only 28 workable questionnaires were used.

The study used a survey questionnaire consisting of 20 questions which provided information of graduates by degrees studied, year completed as well as skills that they should have upon completion of their undergraduate degrees. The skills questions are similar to those completed by the HOD's as discussed in chapter 4. These are a) computer skills; b) soft skills; c) basic agricultural economics skills and d) business skills.

The survey was designed using previous graduate tracer studies conducted as a frame of reference. Similar studies used were that of the Tertiary Education Commission (TEC), in collaboration with the University of Mauritius (UoM) and the University of Technology, Mauritius (UTM), conducted in 2008. Further reference was taken from the university of Malawi graduate tracer study conducted by Zembere and Chinyama, in 1996. The survey, however, used relevant topics to meet the objectives set out and to make the questionnaire simple to administer.

5.2 CHARACTERISTICS OF THE RESPONDENTS

This section provides the characteristics of the respondents. The respondents were asked to give their age, province, gender, occupation and home language. This analysis was included in the questionnaire to determine the distribution of current agricultural economists in the industry.

As shown in Table 5.1 below, 61% of the respondents were male while 39% were female. Although this number is a reflection of the people who answered the questionnaire, it can also be used to determine the gender distribution in the current agricultural economics industry. The industry has been dominated by men for the past years. According to Figure 5.1 below, from a survey conducted by Nowers (2012) males have been the dominant players in the industry from 2004, 2007 and 2010, with females contributing a steady 30%. It is quite

interesting that the questionnaire conducted also reflects similar statistics of the gender distribution.

Table 5.1: Characteristics of the Respondents (n=28)

Gender	%	Home language distribution	%	Province distribution	%	Socio economic status	%
Male	61	Afrikaans	50	Free State	17.9	Employed	57.1
Female	39	English	7.1	Gauteng	35.6	Unemployed	7.2
		Sesotho	3.6	Western Cape	25	Full-time student	32.1
		Sepedi	3.6	KwaZulu-Natal	7.1	Not working- none of the above	3.6
		IsiXhosa	7.1	Limpopo	3.6		
		IsiZulu	3.6	North West	3.6		
		SiSwati	7.1	Eastern Cape	3.6		
		Setswana	3.6	No responses	6.3		
		non-responses	14.3				

Source: Survey data (2012)

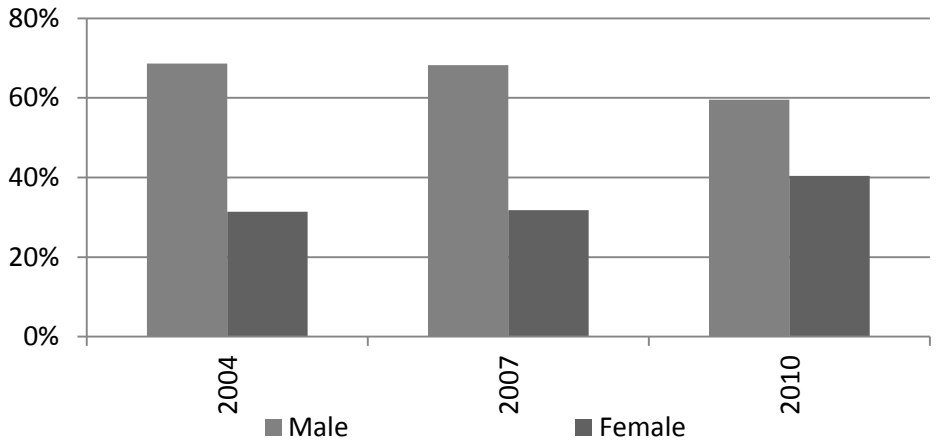

Figure 5.1: Gender distribution of agricultural economists from 2004-2010 (n=28)
Source: Nowers (2012)

5.2.1 Home language distribution

Language plays an important role in the curricula of the agricultural economics departments as well as the graduate employment prospects. Table 5.1 shows the home language spoken by the respondents. Afrikaans is greatly spoken in the agricultural industry and minimum knowledge of the language will be essential to the success of the graduates. Results show that 50% of the respondents speak Afrikaans as a home language. IsiXhosa and SiSwati speaking respondents made up 7.1%, while IsiZulu, Setswana, Sesotho and Sepedi speaking made up 3.6%. It is interesting that English was also 7.1% although it is the medium of teaching in

most agricultural universities. Afrikaans is normally conducted as a second language in the universities of Stellenbosch, Pretoria, and Free State. The HOD's expressed in chapter 4 that some students had difficulty communicating effectively because of the limited knowledge they have in English. These results confirm that statement.

5.2.2 Socio-economic status

The socio economic status of the respondents is mostly divided into employed and full-time students. The number of employed graduates made up 57%. According to Figure 3.1, Nowers (2012) showed that over 20% of agricultural economists were employed in the public sector in 2010. Although 7% said they were unemployed and looking for a job, Nowers results show that in 2010 there were over 16% open vacancies for agricultural economists. This gives an indication that employment is available for new graduates in the sector and that a large number of graduates are being employed. Nowers' (2012) study is included in this section to show the current nature and state of the agricultural economics environment in South Africa. The need for students to continue into further studies such as Masters, Honours or PhD is increasing as shown by the high number of full-time students (32%) still enrolled at agricultural economics universities. However, in the literature the Department of Agriculture, Forestry and Fisheries commented that there were not enough students enrolling for post graduate degrees. Those that are not working, for reasons not stated above, make up 3.6% of the respondents.

5.2.3 Employers of agricultural economists

Chapter 3 briefly discussed the employers of agricultural economists. In this section graduates were asked where they are currently employed and by which companies or organisations. The results are shown in Table 5.2 below, also including the job title and job description as well as the time taken to get the job. This segment is very important as it gives a view of the employment environment of graduates. This table will be important to link the training and skills obtained from the university to what industry requires from the graduates.

Table 5.2: Employers of agricultural economics graduates (n=28)

Employer	Job Title	Time Taken To Get A Job	Job Description
SA Cane Growers Association	Research economist	Less than 6 months	Research; analysis; report writing; presentation; negotiation
Western Cape Department of Agriculture	Agricultural economist	3 years internship	Farmer advice
NAMC	Senior economist	0	Research on trade issues and markets; liaison with agricultural industry and analysis of competitiveness of Agric sectors
Farmwise	Junior trader	0	Grain trading
University of the Free State	Researcher	0	Research
Western Cape Department of Agriculture	YPP- young professional programme	0	Research, data capturing
GWK BPK	Agricultural economist	0	Business plan and cash flow analysis
University of the Free State	Lecturer	0	Lecturer; compile and grade papers; write academic papers, collect data and present marks
University of Pretoria	Market analyst	14 months	Analyse grain and oilseed markets
University of Pretoria	Lecturer and researcher	0	Lecturer; research assistant
University of the Free State	Research assistant	0	Research, assistant lecturer
DAFF	Intern	1	Liaising with stakeholders, provinces & private companies
Grootfontein College of Agriculture	Intern	11 months	Lecturing students; participating on study tours around the country Training small scale holder and communal farmers
DAFF	Senior economist	0	Business plan development; industry analysis, advisory services
University of Pretoria	Post-doctoral fellow	0	
GT Grain Management	Director	0	Grain trading; market research

Source: Survey (2012)

It seems as if most respondents had little difficulty in finding employment with 12 respondents that found employment within less than 1 month of graduation. The results provide a very positive picture on the employment opportunities of agricultural economics graduates based on a small sample.

5.3 EDUCATIONAL BACKGROUND

The educational background of the respondents represents the degrees studied, universities attended as well as year completed.

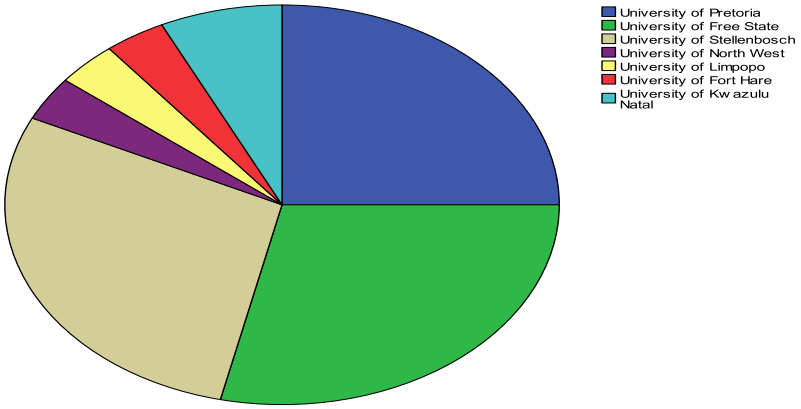

Figure 5.2: University attended and highest qualifications obtained (n=28)
Source: Survey (2012)

Figure 5.2 above is a representation of the universities attended by the respondents, 29% of the respondents attended the universities of Stellenbosch and Free State respectively, while 25% studied at UP. The remainder of the respondents were distributed evenly among the Universities of NW, FH, and Limpopo with 4% of the respondents, and UKZN had 7%. A noticeable trend has developed among some of these universities. A survey conducted by Kirsten (2010) ranking the agricultural economics departments in South Africa showed that the top ranked university departments in agricultural economics were: UP, US, UKZN, and UFS. All these universities are traditionally 'white' universities and were at the forefront of introducing agricultural economics as a discipline to South African universities, which could explain the high number of students enrolled.

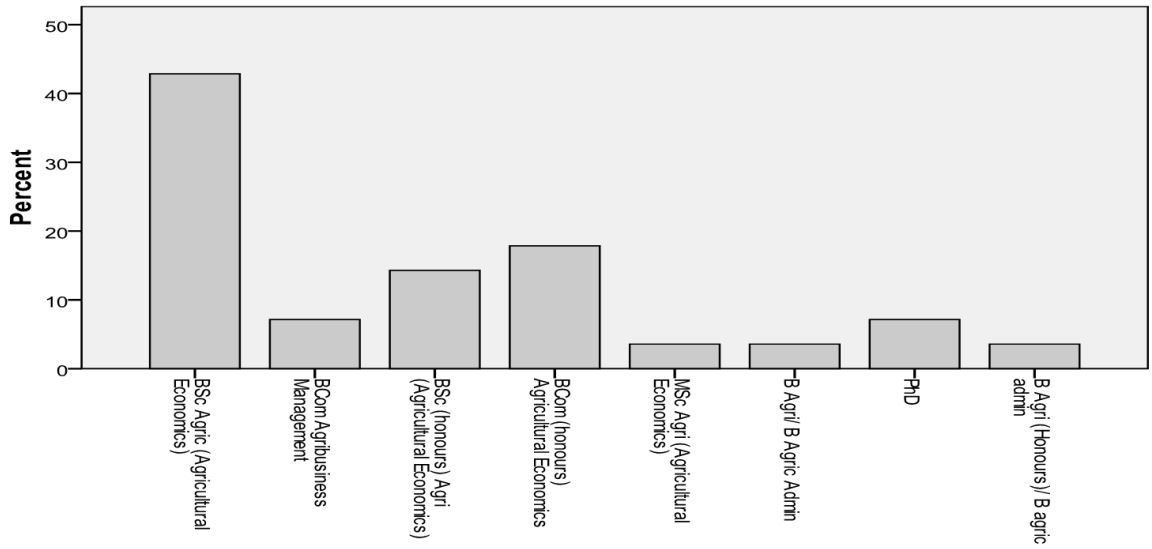

Figure 5.3: Highest qualification of respondents (n=28)
Source: Survey (2012)

As previously shown in the literature, BSc Agric (Agricultural Economics) is the most popular degree programme for most students. Figure 5.3 reveals that 43% of the respondents completed BSc Agric degrees, 7% BCom Agribusiness Management and 4% B Agric/B Admin degrees.

5.3.1 Length of study programmes

The respondents were asked whether the time allocated by the university to complete their degrees is enough. The BCom and B Agric degrees are to be completed in a minimum of three years, while BSc Agric is allocated four years. It is important for universities to include resources that will assist their students to complete their degrees on time such as tutors, extra classes and access to library facilities. The HOD's in chapter 4 said their universities have such facilities. Ensuring that graduates complete their degrees on time will reduce the cost of tuition fees and minimises delays before starting a career. Majority of the respondents (99%) approved of the allocated time while only one respondent said no; giving the reason that it was too long. A suggestion was made that the BSc Agric (Agricultural Economics) should be reduced to a three year degree, and the extra year should be used for practical 'on-the-job' training. This view is shared among some of the respondents as will be displayed further in the results.

5.3.2 Factors that influence choice of university

Figure 5.4 below shows the factors that influenced respondent's choice when deciding on which university to attend. This information is useful because it can assist universities to understand the reasons for high or low enrolment and which factors to improve on in order to attract future students to their departments.

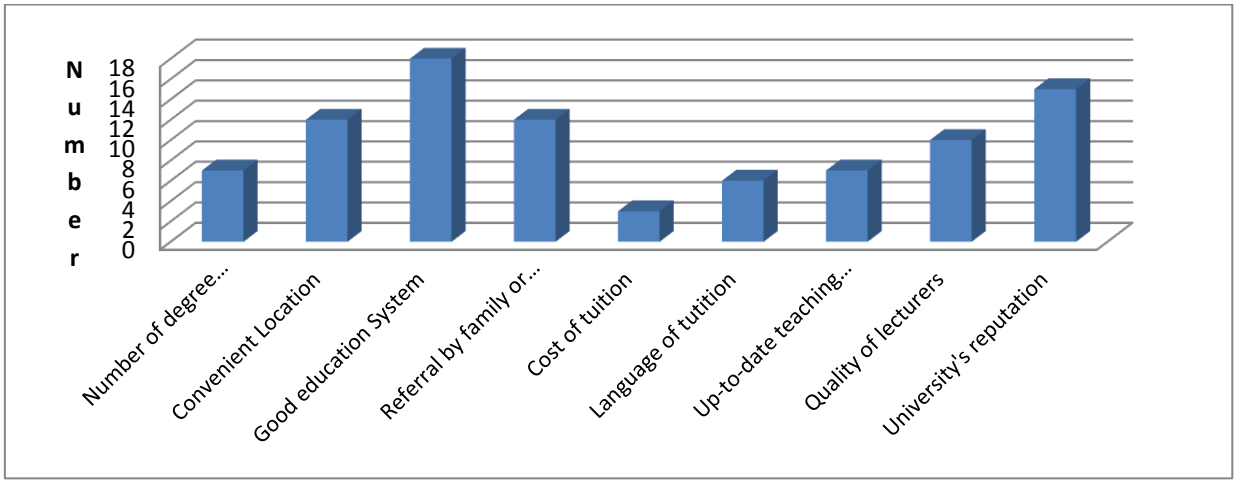

Figure 5.4: Factors that influence the respondents' choice of attending a university (n=28)
Source: Survey (2012)

Choosing a university can be a complex process that requires students to assess a number of factors. A good education system was the most important factor when students consider applying to a university. This is followed by the university's reputation, convenient location, referral by family and friends and quality of lecturers, information which can be obtained from the number of articles or papers written by the lectures. A good education system encompasses the use of well-known books and authors, the use of technologies to present classes. The overall package that the university presents to their students, in terms of learning environment, opportunities offered within the university that will assist in the students' development are also included. Some of the respondents were referred to the university by family or friends and others choose the university because of its convenient location. The quality of lecturers also ranked high; this refers to the experience of the lecturers within the department, published articles and recognition and standing of the lecturers within the agricultural industry. It is very interesting to note that cost was not a highly considered factor

when students choose the university to attend, due to increasing funding opportunities such as bursaries and financial assistance provided by universities.

5.3.3 Overall perception of quality of teaching

The respondents were asked to give their overall perception of the quality of teaching they received from the university they attended. The perception is based on the lecturers, courses offered, the university culture and facilities available, see Figure 5.5.

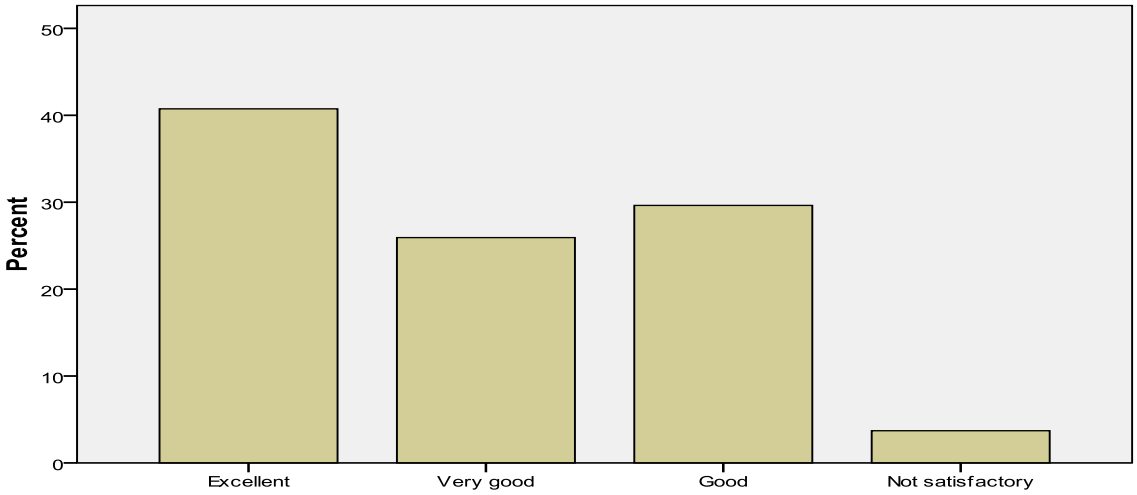

Figure 5.5: Overall perception of quality of teaching in agricultural economics at South Africa universities (n=28)
Source: Survey (2012)

The results showed that 40% of the respondents were highly impressed by the quality of the departments rating it as excellent, while 25% said very well and 30% good. Only 5% said their overall perception was not satisfactory, remarking that it was because they had difficulty finding a job with their degrees. This negative remark could be used as a starting point to incorporate the student resources programmes discussed in chapter 4, whereby universities offer CV writing; mentorship and interview skills to better assist students in finding jobs upon completion of their degrees. This will also ensure that talent is retained in the agricultural industry. In order to unpack the perception of the quality of learning according to the universities that offer agricultural economics degrees, the respondents were asked to give their perception of the usefulness of their degrees according to the university attended. Table 5.3 below shows those results.

Table 5.3: Overall usefulness of degrees by university according to alumni (n=28)

University attended by respondents	Usefulness of degree		
	Very useful	Little to no use	Don't know
University of Pretoria	5	0	1
University of Stellenbosch	6	0	2
University of KwaZulu-Natal	2	0	0
University of Free State	9	0	0
University of Fort Hare	1	0	0
University of Limpopo	0	1	0
University of North West	0	1	0
Total	**23**	**2**	**3**

Source: Survey (2012)

The main reasons given by these respondents for the rating of their alma mater were:

- the degree provided important skills for their career
- Ability to find employment and/or continue with further studies.

The respondents who indicated that their undergraduate degree has been of little use to them, argued that the main reason is that they had experienced difficulties in finding employment in the agricultural sector after graduation. They further remarked that they have not had the opportunity to put the skills attained at university to use. A large part of the missing skills is the practical application of agricultural concepts in order to aid in job development.

5.4 CURRICULUM ANALYSIS

This section reviews the skills that the respondent would or should have acquired upon completion of their undergraduate programmes at the various universities. This provides an opportunity for HODs to assess how graduates perceive the training provided by the universities and the level of skills their graduates have before they enter the job market. It also opens itself up to a discussion whether the curriculum within the departments needs to be adapted or changed to meet the changing needs of the students and the demand of the industry.

5.4.1 Most useful and least modules offered in the agricultural economics programs

The respondents were asked to give modules presented in their curricula that they found most useful to them, in terms of applying the concepts learned during their studies to their workplace and post-graduation careers. Several modules were mentioned which can be categorised into three sections, being: agricultural sciences, agricultural economics, and business skills as represented in Table 5.4 below.

Table 5.4: Most useful modules by programme choice and percentage (n=28)

Programme choice	Modules	% of usefulness
Agricultural Sciences	Agronomy	**15%**
	Biochemistry	
	Farm management	
	Animal nutrition	
Agricultural Economics	Agricultural policy	**59%**
	Commodity price analysis	
	Agricultural finance	
	Agribusiness management	
	Agricultural marketing	
	Agricultural economics	
	Production economics	
	International trade	
	Environmental economics	
	Agricultural production	
Business Skills and Economics	Statistics	**26%**
	Seminar subjects	
	Pure economics	
	Financial management	
	Macro and production economics	
	Financial accounting	

Source: Survey (2012)

The most useful modules are divided into three clusters. The agricultural economics modules consisting of agricultural policy, finance, agribusiness management, international trade and introduction to agricultural economics were considered by the respondents as the most useful modules for their current career. The lowest was agricultural sciences which consist of agronomy, biochemistry, and farm management and animal nutrition. The respondents remarked that because these modules are presented only in the first and second year of the BSc Agric (Agricultural Economics) degree, the concepts could not be applied further in their studies and were not extensively applied in their workplace as well.

Table 5.5: Least useful degrees presented at the university (n=28)

Programme choice	Modules
Agricultural Sciences	Crop production Animal production Chemistry Biochemistry Biology Biotechnology Physics Wine marketing Industrial psychology

Source: Survey (2012)

The respondents said the skills displayed on Table 5.5 above were not very useful or the concepts learned from the modules are not applied competently in the workplace. Agricultural sciences modules are usually taught in the first year of a BSc Agric degree, 16% of the respondents found that crop production, biology and physics were not useful in the workplace. Going back to the job descriptions of agricultural economics, it also shows that these modules are not readily applied in the tasks that agricultural economists are taking up within agribusinesses. Industrial psychology, animal production and wine marketing made up 5%. Chemistry includes pure chemistry and biochemistry was least useful to 11% of the graduates. These results are consistent with the changes experienced by the profession as more graduates and agribusinesses are gravitating towards more business oriented and less technical science skills.

5.4.2 Skills used most by graduates in the workplace that were not presented at the undergraduate level

This section analyses the specific skills that are used extensively by graduates in their various careers. Column 1 of Table 5.6 below refers to the skills that the respondents did not learn within their degrees that would have contributed to their career success. Column 2 of Table 5.6 represents the skills that the respondents obtained from their undergraduate programs that they are applying most in the workplace. The skills are once again divided into soft, computer, business and basic agricultural economics skills.

Table 5.6: Modules not in the programme and skills most applied in the workplace

Modules not present within the teaching programme	Skills most applicable in the workplace
Soft Skills	
Leadership development Communication	Teamwork Communication Problem solving skills Time management People skills Analytical and critical thinking Presentation skills
Computer Skills	
Advanced statistics SAFEX trading and exam	Microsoft Excel Statistics
Business Skills	
Investment management Supply chain Management Taxation Report writing Business writing GIS (Geo-informatics system) modules Accounting Economic modelling	Understanding economic and business language Market analysis Financial Report writing
Basic Agricultural Economics Skills	
Agribusiness concepts Impact of different soil types to production and cost analysis Agricultural trade	Technical applications of farming concepts Research skills International trade- Information Technology and Communication (ITC) mapping

Source: Survey (2012)

Table 5.6 reveals that the skills most applied in the workplace are research, presentation, communication and computer skills. The skills the respondents found to be useful but not presented in the course were Geo-informatics modules, business writing skills, taxation and leadership development.

The soft skills most used in the workplace included: teamwork, communication, problem-solving, time management, people skills and analytical and presentation skills. The respondents argued that soft skills would have assisted greatly in successfully completing their work tasks include: leadership development and extensive modules to further improve their communication skills. Respondents further remarked that they would have liked to

develop their computer skills by taking SAFEX trading exams and advanced courses in statistics. The skills they use mostly in the workplace to perform technical computer tasks are Microsoft Excel and statistics.

The respondents were asked to reveal the gaps they had experienced after graduation. The shortfalls are related to the modules that they had not received at the undergraduate level in their universities. Table 5.7 represents those gaps.

Table 5.7: Gaps observed by respondents within their agricultural economics training

Computer skills
Econometrics
Economic modelling
Soft skills
Leadership skills
Preparation for general employment
Lack of BSc Agricultural background for BCom students
Insufficient presentations
Practical training
Visit to companies and other agricultural organisations
Business skills
Market know-how
Research skills
Basic Agricultural Economics skills
International & practical experience
Mathematical analytical concepts in agriculture
Practical exposure at farm level
Practical skills
Application of agricultural case studies
Practical application of statistics in agricultural examples

Source: Survey (2012)

The respondents noted that there was insufficient opportunity within the undergraduate programs for them to give presentations. They also remarked that there should be more practical application of agricultural concepts, through the use of case studies, and field visits to agribusinesses. This will also assist with the international exposure that the respondents felt they are missing, upon completion of their degrees. The BCom graduates expressed a feeling of being under skilled and that the lack of agricultural science background put them at a disadvantage compared to the BSc Agric graduates. This remark is also consistent with the literature, as previously shown, that graduates holding a BSc Agric degree are considered

better qualified. The respondents further expressed that they require extensive research skills, practical training and leadership skills. One of the gaps experienced by the respondents was the lack of econometric and mathematical concepts at undergraduate level. Majority of these concepts are introduced and only presented at the post graduate level in most universities. BSc Agric (Agricultural Economics) students have previously expressed difficulties experienced when undertaking economics, and using statistical software at post-graduate level. Graduates would benefit from the introduction of these concepts from the undergraduate level, for both BCom and BSc Agric students.

5.4.3 Areas in agricultural economics departments that require improvement

Table 5.8 below shows the skills that respondent's feel will require improvement at the different universities. The skills are specifically related to the agricultural and food sciences industry.

Table 5.8: Skills that require improvement at universities over the next decade

Computer skills	Business skills
• Teaching with technology- encouraging the use of iPad and more exposure to computers and online information technology • Linear programming • Statistical software • Mathematics	• Entrepreneurship skills • Strategic management • Economic modelling • Supply chain management • Finance and accounting skills • Applied economics
Basic Agricultural Economics skills	**Soft skills**
• African market development • Econometrics • Production economics • Technical skills • Natural resource sciences • Rural development • Marketing agricultural products more efficiently	• Analytical skills • Problem-solving skills • Communication • People skills

Source: Survey (2012)

The skills are divided into the four categories that were used in the university skills survey and graduate tracer study, to better assist in determining which skill is most lacking for the

graduates. Under the computer skills the graduates said teaching with technology will require improvement by implementing advanced ICT (information in communication technologies) within the education system. These improvements give students the opportunity to conduct research and/or presentation on video and improve their use of technology making them attractive candidates for employment. These technological advances should include linear programming software and statistical software such as Excel and SPSS among others.

Respondents felt that the insufficient knowledge in mathematics will require the departments to include more mathematical subjects during the undergraduate studies. As agriculture is developing from just farming to business it is imperative that students graduating from agricultural economics departments fully understand the structure of agribusinesses and their functions. The respondents said that universities should include entrepreneurial skills, strategic management and supply chain management skills to help them better understand the business environment upon graduation, and make them more advantageous in the business sector. The concept of entrepreneurs is becoming very popular in the sector. Some respondents felt they should be made aware of various opportunities available for them to contribute to the industry by means of starting their own farming businesses. This skill too should be developed at university level.

The basic agricultural economics skills which they argue are currently missing in the curricula are knowledge about African markets, agricultural development, econometrics at the undergraduate level, technical, production economics and agricultural economics skills. Marketing of agricultural products and natural resources are modules that most departments currently offer. The respondents remarked that they need to implement more practical use of agricultural case studies. Rural development is important to graduates, because one of the roles of an agricultural economist is to address issues related with food security, and production levels which in most cases have greater effects on the rural communities. Soft skills include analytical, communication, problem-solving and people skills.

5.5 REVIEW OF GRADUATE SKILLS SET

The following tables are similar to those shown in Chapter 4 completed by the university HODs. The purpose of this is to establish whether there is correlation between what the HODs perceive as the skills the graduates should have attained upon graduation, and the actual skills graduates feel they acquired upon graduation. This will assist the departments to see which skills will require further development or change in the curriculum for future students.

This portion of the study gives a brief overview of the comparison between the responses from the HOD's and alumni. The skills considered were yet again computer, soft skills, business skills, and basic agricultural economics skills.

Table 5.9: Computer skills obtained by agricultural economics undergraduate students (n=28)

Computer skills for agricultural economics graduates	Yes	No
Prepare a whole farm budget on Excel?	20	7
Prepare an enterprise budget on Excel?	20	7
Do simple regression and forecasting?	20	8
Prepare a good project report?	21	6
Prepare a good PowerPoint presentation?	24	2
Prepare a sound and precise word document with correct technical guidelines (e.g. Font, structure and formatting).	25	2
Conduct research using internet, books and other information sources.	25	0

Source: Survey (2012)

Table 5.9 above shows that 71% of respondents said they are able to prepare whole farm budgets on Excel, enterprise budgets and simple regression and forecasting. However, 25% and 28% of the respondents said they were not well-equipped with these skills. The ability to prepare a good project report and good PowerPoint presentations as well as technically correct word documents is very important for success in the work environment; it is not a surprise that 75%, 85% and 89% of the respondents respectively said they possess such skills. Only a relatively small percentage 21%, and 7% of respondents said they had not yet mastered these skills. A high percentage of respondents (89%), said they were able to conduct research using internet and other sources. The HOD's responses from Chapter 4 were relatively optimistic about their students' abilities to prepare good PowerPoint presentations.

Table 5.10: Business skills obtained by undergraduate students (n=28)

Business skills obtained upon graduation	Yes	No
Prepare a solid business plan?	21	5
Be able to do a transaction on SAFEX?	4	22
Be able to pass the SAFEX commodity trading exam?	3	23
Prepare a marketing plan for an agricultural commodity or food product?	21	4
Prepare financial statements and do a financial analysis of a farm and/ or agribusiness?	23	3

Source: Survey (2012)

Business skills are very important in the agribusiness world. Agricultural Economists should have basic business skills upon completion of their degrees: A majority of respondents (75%) of the respondents said they were able to prepare solid business plans and 18% of the respondents said they were unable to prepare business plans yet. SAFEX is a strongly debated subject among industry professionals and university programme co-ordinators. Table 5.10 above shows that 79% of respondents felt they were unable to do a transaction on SAFEX and consequently 82% said they are unable to pass the commodity trading exam. During the workshop held at the 2012 AEASA conference, industry professionals expressed the importance for this skill among new graduates because it encompasses the growing trends that agribusinesses are moving towards in the future development of the industry.

It is interesting to note that 14% of the respondents said that they were able to do a SAFEX transaction, and only 11% could pass the test. The respondents who answered yes to this question were over the age of 25. As previously observed from Chapter 4 a course in commodity market instruments is not offered at all the universities and in addition there are some graduates that will do the JSE/SAFEX examination after completing their degree programme. The HODs were also in agreement with the students' inability to make transactions on SAFEX.

Table 5.11: Soft skills undergraduate students should have obtained upon completion of studies (n=28)

Soft skills obtained	Yes	No
Independent. You were able to work without supervision	24	4
Able to perform well in a group?	28	0
Communicate effectively?	28	0
Be confident in asking and answering questions?	27	1
Critical thinking	25	3
Listen to and carry out instructions	27	0
Listen to and summaries lengthy oral presentations	25	4
Ability to work under varied conditions	26	2
Willingness to be mentored	28	0

Source: Survey (2012)

As previously discussed in the literature, it is important for graduates to have soft skills when entering the job market. About 86% of the respondents said they were able to work independently, while 100% said they were able to work well in a group and communicate effectively, and have a willingness to be mentored. However, comparing Table 5.11 to the remarks made by HODs in Chapter 4, the HOD's said some of their students had difficulty communicating effectively in English. This could the shyness of the alumni to admit their shortfall in communication using English. The respondents answered positively to being able to ask and answer questions confidently (96%) and listen to and carry out instructions (96%). Overall, respondents were assured in their soft skills. These skills will be compared to the AGRIMASS survey to observe how employers rate them.

Table 5.12: Basic Undergraduate students' abilities in agricultural economics skills (n=28)

Basic agricultural economic skills	Yes	No
Estimate a supply and demand function.	25	3
Be able to manage a data set.	21	7
Do a welfare analysis of policy interventions?	11	17
Be able to estimate a production and cost function.	26	2
Understand the techniques involved in analysing agricultural value chains. (Such as the production process from farm to market and input and output flow of produce and global outputs).	26	2
Know main elements of the South African agricultural policy.	21	6

Source: Survey (2012)

The respondents were confident in their abilities to estimate supply and demand functions (89%), estimate elasticities (79%), estimate production and cost functions as well as understand techniques involved in analysing agricultural value chains (79%). Table 5.12 reflects that 75% of the respondents said they were able to manage data sets and knew the main elements of the South African agricultural policy. It is interesting to note that 60% of the respondents said they were unable to do welfare policy interventions. Given that policy analysis is such an important role of agricultural economists this is a worrying statistic. This response matches the HOD's response that their students were not knowledgeable with the concept of welfare policy interventions; this presents an opportunity to develop a sound module focusing on welfare topics for policy analysis.

5.6 DISCUSSION

The surveys show relatively similar results and the skills that student's feel they attained at university is the same as the skills that HOD's feel students should have obtained. However, it is important to establish constant communication between students and departmental staff in order to evaluate development and trends of students after graduation.

The following recommendations were made by the respondents regarding the curricula design and teaching at the agricultural economics departments:

- More emphasis should be put on using technical tools to analyse agricultural policies.

- The majority of respondents strongly suggest incorporating practical knowledge within the three year and four degrees of agricultural economics. The practical experience can be in the form of going to visit agribusinesses, using relevant farm examples and applied case studies within the curriculum.

- More focus should be given to the use of Microsoft Excel. The respondents expressed the importance of having extensive knowledge of Excel in the workplace, and they felt that it has not been given enough attention at university level.

- The respondents further recommended that within the BCom Agricultural degrees, the program directors should consider adding more agricultural economics subjects within the first year of study. This can be in the form of introduction to agricultural economics or a basic concept of agriculture economics. This will give students the opportunity to know what will be expected from them as they continue with their degree.

- The respondents recommend that there be an advanced statistics or compulsory econometric subject within the degree years. This will assist them with further studies as statistics is greatly used in research and data capturing. Exposing graduates to this

course at an early stage will be valuable to them completing their postgraduate studies more effectively, and be qualified to perform analytical tasks in the workplace.

- Respondents feel there is an insufficient computer skills development course within the universities. Most agricultural economics departments do not have a separate computer course, as the university offers these skills to the students. However, it would be beneficial to the students for agricultural economics department to include a standard of requirements for students wishing to undertake advanced computer skills development that encompass statistical tools related to agricultural economics.

- The respondents strongly suggested that SAFEX training and the trading exam should be incorporated in the syllabus, there are currently only a few universities that offer this course to students.

- The suggestion of having the BSc Agric four year degree shortened to three years was expressed by numerous respondents. They suggest that some of the first year modules which they found least useful should not be included in the program. They would prefer to have a practical year of on-the-job training included.

CHAPTER 6

MATCHING GRADUATE, HOD SKILLS SET AND EMPLOYER SKILLS REQUIREMENTS

6.1 INTRODUCTION

The changing environment of the agricultural sector requires employees to be flexible within their skills in order to address challenges faced by the industry and the economy as a whole (Hall, 2003). The curricula presented to potential agricultural employees at universities need to convey and respond to the employer's needs, and be constructed within a sound learning model (McGraw *et al.*, 2011) It is therefore important that the curricula should exhibit a strong business skills orientation, while equipping students to communicate these skills to their fellow employees (Doyer, Dunne, Van Rooyen, 2009).

Employers were surveyed regarding job titles, descriptions, duties, and overall training needs of agricultural economics graduates who they hire. Guidance was specifically sought in identifying those areas of training in which graduates are typically adequately prepared and those usually found to be lacking.

6.2 THE AGRIMASS SURVEY

The two AGRIMASS surveys conducted in 1999/2000 and in 2011/2012 both reflected the skills most important to employers from entry, middle and management levels when hiring employees. The results of the AGRIMASS survey are used in this chapter only as secondary data to assist in formulating a better understanding of the needs of the employers, with those produced by universities. The secondary data was taken from (van Rooyen_levsa_Agrimass_ ifama, 2013). Notes were also taken from the presentation during the AEASA conference in Bloemfontein in 2011.

The employers ranked the skills in order of importance. The results showed the most important skills were personal qualities which included personality and attitudes of the

employees. The second was communication skills followed by business and economics skills. Computer, quantitative and information skills were ranked fourth while technical skills that are applicable to the specific job description were ranked fifth. Surprisingly, the employment, work and general experience was ranked sixth. There has been a misconception that graduates who possess extensive amount of experience get employed based on that, but the survey reveals that experience is a consideration during employment but not necessarily the main determinant for graduates getting employed in the agricultural sector.

The surveys conducted by AGRIMASS addressed the issues regarding the curricula presented at the university level and the skills employers required from their students. It further aimed to achieve the following objectives:

- Determine the forces that are currently shaping the agribusiness environment
- Determine the expected drivers of change within the next 10 years
- Determine what skills the agribusiness industry requires their management to possess
- To shape the direction of agricultural economics programs in the future.

The sample size consisted of 23 HR respondents and 50 CEO's coming from the following professional categories, shown in Table 6.1 below.

Table 6.1: Distribution of the AGRIMASS survey, 2012

Firm category distribution		Agricultural product focus		Distribution of processing industries among respondents	
Name	%	Name	%	Name	%
Agricultural services	46	Fruit and tree nuts	43	Grain milling	45
Cooperatives	31	Grain field crops	36	Beverages (alcoholic & non-alcoholic)	22
Financial institutions	23	Horticultural specialities	21	Meat	22
				Dairy	11

Source: Compiled from AGRIMASS (2012)

6.3 ANALYSING THE SKILLS SET

This section represents the skills that universities produced matched with the skills that employer's require from their employees according to the AGRIMASS survey. The skills are divided into personal and communication skills, business skills, and computer skills. In order

to establish whether the skills provided by universities and skills attained by students match, a correlation study was conducted between HOD's and graduate responses from the above surveys which was then matched with the skills required by the employers from the AGRIMASS survey.

6.3.1 Personal attributes and communication skills matched with soft skills

Graduates who possess extensive communication and personal attributes are in a better position to achieve high employability, greater performance in the workplace and accuracy in the quality of work produced (Schulz, 2008). As previously stated from the AGRIMASS survey the employers said soft skills are the most important and considered the most desirable skills in new employees. The soft or personal skills that are highly sought after by employers according to the AGRIMASS survey results, but are not adequately developed during the undergraduate level, are:

- Positive work attitude
- Loyalty to the organisation
- High moral/ ethical standards
- Self-motivation
- Work without supervision
- Professional telephone skills and etiquette

Attributes such as a positive work attitude, loyalty to the organisation, high moral and / or ethical standards, and self-motivation might be difficult to instil and develop within the students at the university level. These skills require a personal preference and attitude that should be developed during early childhood stages of the students and at high schools. However, certain programmes can be established such as ethical conduct in presenting of work and on-going group work activities. Figure 6.1 below is a representative of the HOD's responses and those of the graduates.

In order to get a better understanding of whether universities have successfully developed these skills within their graduates, we matched the HOD's responses regarding the skills acquired by the graduates with the responses from the alumni.

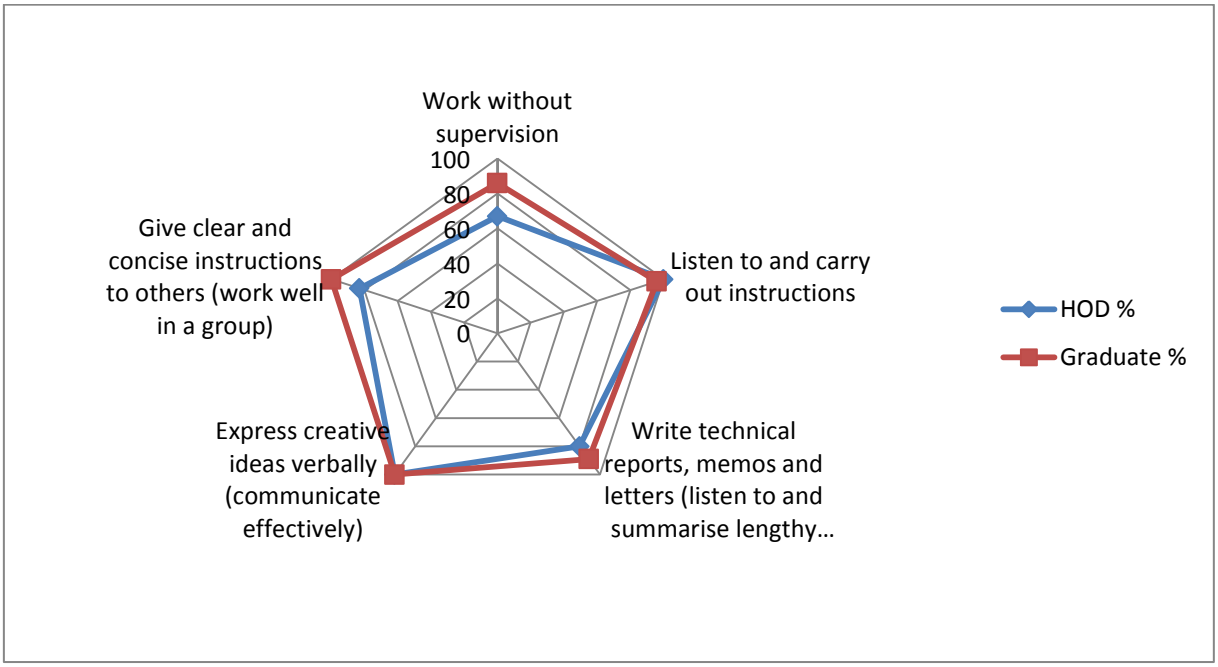

Figure 6.1: Personal attributes and communications
Source: Survey (2012)

Figure 6.1 shows the communication and personal skills that employers require from their employees. The skills showed some consistency in that both graduates and HOD's said they are capable of expressing creative ideas verbally and communicating effectively. However, the concern regarding effective communication in English is still a problem for both groups of respondents. Employees should have a sense of independence and be able to work without supervision. There was a difference with 67% of the HOD's saying their students possess this trait, while 86% of the graduates responded positively to this question.

It would appear that HOD's are more realistic with their perception of the skills graduates have. The ability to work in a group is an important aspect for any employee to have, and 83% of the HOD's said their students are able to work in a group, while all the graduates (100%) said they possess such abilities. The HOD's (80%) said their graduates are able to write technical reports, memos and summarise lengthy presentations, while 89% of the graduates responded positively to this trait. Listening to and carrying out the desired

instructions are very important for an organisation to function well, 96% of the graduates said they are able to listen to and carry out instructions. All six HOD's agreed that their graduates are able to follow instructions. The results have shown a strong correlation between the skills offered at universities and the skills attained by graduates.

It is realistic to acknowledge that although universities should have an active role in the development of their students through their studies, they, however, cannot be all rounded as students should have acquired some of these skills prior to university study. The departments cannot teach students to have great work ethic or have a positive attitude. The responsibility lies with the students to take advantage of opportunities presented to him/her for personal development.

6.3.2 Business skills

Business skills comprise of the ability of employees to address and conduct themselves in a professional manner within the professional environment. The important skills under business as per AGRIMASS survey are the ability for employees to read and understand the use of financial statements, coordinate human and physical resources, identify and manage risk and uncertainty, identify realistic objectives and goals. Making the transition from university to the workplace can be a daunting task for graduates if they do not have any prior experience of the functions of the business environment. The skills require the collaboration of both personal qualities and business skills which can be developed through the incorporation of real life business case studies and exposing students to the business environment.

The skills set required by the employers include: the ability of their employees to identify, monitor and evaluate key performance areas within their departments and /or sections, as well as read, understand and use financial statements. All the agricultural economics departments surveyed said their students are able to prepare financial statements and do a financial analysis of farm and / or agribusiness. The alumni were also relatively positive about this trait.

The ability to identify and manage risk and uncertainty in the business environment is important for agribusinesses to grow and enter new markets. Employees should be able to manage risk/ threats posed by macroeconomic trends. As seen in Chapter 4, the HOD's said

students graduating from their universities are able to manage risk through various programmes offered during the studies. The employers require their employees to be able to coordinate human and physical resources, within the business environment.

6.3.2 Computer skills

Computer skills most desired by employers as identified in the AGRIMASS survey include the knowledge of computerised accounting systems such as Pastel and financial statements, general business computer software and the use of computers for managerial decision-making and interpretation of mathematical and statistical models. The employers seek graduates who are able to use quantitative techniques for managerial decision-making. Computer skills are very important in all business areas, especially for the technical and agribusiness environment such as SAFEX trading, commodity price analysis, research techniques and scenario planning.

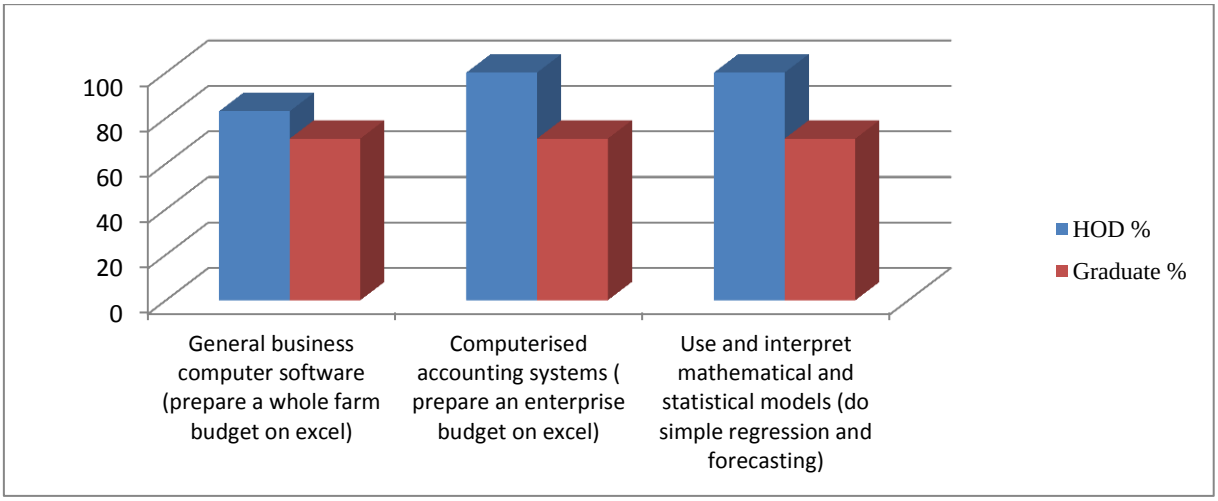

Figure 6.2: Matching of perceptions on computer skills
Source: Survey (2012)

Figure 6.2 shows the survey completed by the graduates and the HOD's. General business computer software is referred to as the ability of the employees to prepare whole farm budgets on Excel, as Excel is general computer software that agricultural economics graduates should be able to use to perform general business tasks. The HOD's and graduates responded 83%, and 71%, respectively. The HOD's said that majority of their students are able to prepare enterprise budgets on Excel, which is translated as computerised accounting systems.

However, only 70% of the graduates said they are able to perform this task. This gap shows that an improvement can be made within the departments to increase this skill among graduates. The same applies for simple regression and forecasting, which can be translated as the ability to use and interpret mathematical and statistical models. This could also apply to the use quantitative techniques for managerial decision-making. The overall computer skills show that graduates are still reserved about the skills they have attained during their undergraduate studies. This is consistent with the gaps already expressed by graduates in the previous chapter that they require more mathematical skills and use of statistical software.

6.4 CONCLUSIONS

This Chapter compared the results from the recent 2012 AGRIMASS survey with the perceptions and views from the HODs and the graduates from the different universities. There was some differences between the HODs view and that of the graduates. The skills most used by graduates in the workplace are teamwork, communication skills, problem- solving, presentation, and statistics, understanding economic and business language, market analysis and financial skills. This is consistent with the skills required by the employers as reflected in AGRIMASS. It would therefore be beneficial for the agricultural economics departments to engage more with current graduates in the industry to constantly determine and re-invent the skills obtained by graduates to meet the changing demands of the employers. Such an exercise will create a platform from which departments can shape the curricula for future graduates and maintain the talent in the industry.

Agricultural economics university curriculum developers should pay attention to the demands of the employers so that their students can have a better chance of getting employed within the sector and retain talent in the industry. Some other recommendations include: the knowledge of technical skills, specialisation in certain topics and subjects. The curricula subjects should include more knowledge of business techniques and fewer models, and include linkages with boardroom skills. Agriculture is a wide scope subject and is different from region to region; therefore, it would be advantageous for university curriculum developers to include specific specialised knowledge and information about the particular region that students are operating in, over and above the general specialisations. Students are

encouraged to travel and explore different environments and sectors of agriculture to increase their knowledge of the working environment beyond the classroom walls.

The university staff members are encouraged to teach by example, and should engage on a new teaching paradigm, which involves a healthy balance between theory and practical knowledge. Initiating the changes and broadening the scope of the study, increases the quality of students being produced by universities. Therefore, the job market will enjoy a more qualified and capable workforce. Consequently agricultural economics will be viewed as a profession relevant for both industry and society. In turn we could reduce the number of unskilled young people in the industry and make the quality of work more relevant with the ability to overcome the challenges faced by the profession through various transitional phases.

CHAPTER 7

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary

The study has discussed several issues relating to the teaching at agricultural economics departments in South African universities. The study provoked different topics and reviewed the agricultural economics as a profession and a discipline. The agricultural economics profession faces unavoidable challenges relating to its relevance and the teaching disciplines it is involved in, which were stated in the study. The formation of the discipline and its history were presented. The South African agricultural economics discipline and its entire governing bodies all had strong influences from the United State. The discipline has, however, continued to develop and change from its initial development years through the incorporation of name changes.

The study introduced the eight universities in South Africa that offer agricultural economics courses for degree purposes and surveyed the Heads of Department, graduates from these departments and also the employers of the graduates. The university skills survey was completed by HOD's, the graduate tracer study completed by graduate students from different universities across South Africa and secondary data from the AGRIMASS survey by employers. The HOD's survey was used to review the perceptions of the relevant skills the graduates should have obtained upon graduation from the HOD's point of view. The graduate tracer study on the other hand was used to analyse the real perceptions of the skills the alumni received from their respective universities. The AGRIMASS survey was then used to analyse the skills required by employers upon the skills produced by universities and attained by the graduate students. The universities offer various agricultural economics related degree offerings mentioned in the study. The survey questionnaire focused on the BSc Agric (Agricultural Economics) degree, the most common degree within all universities. The study revealed some interesting concepts which are summarised below.

7.2 Main findings, limitations and conclusions

The study made the following main findings:

- There was a difference between the skills that should have been attained by students and those taught by the agricultural economics universities. Further attention should be given to improving soft skills such as communication in English and learning more about SAFEX transactions and concepts, in order for the students to meet the demands from the employers.

- The results showed that the alumni considered BSc Agric degree holders to be more skilled than BCom or BA degree holders. The need to incorporate some technical courses for BCom degree holders during their first year would have greatly assisted them to successfully use their degrees upon completion and finding employment in the industry a manageable task.

- The employers revealed that soft and personal skills are appreciated more than technical skills. This suggests a need of universities to include an additional year for students to obtain practical experience from agribusinesses and or farming institutions, to aid in producing qualified and experienced graduates.

- The level of difficulty in obtaining some data from the universities, more specifically "previously disadvantaged" universities, suggests that proper data collection, tracking and annual review of students should be employed within the agricultural economics departments to better serve the needs of future students and improvements of the departments.

7.3 Recommendations

In order for the universities to be effective and produce successful candidates for the agribusiness sector, considerable work and discussions among programme directors and agricultural economist employers will be required. They will need to determine the basic

skills necessary for agricultural economics graduates to attain in order to be considered for employment.

The university departments are encouraged to engage regularly with industry professionals and work closely with them to establish strong relationships. This type of relationship will deem advantageous for all parties involved. The university can recommend outstanding students for employment in these agribusinesses; which in turn can help universities to develop a strong reputation of producing employable graduates and present opportunities for funding of projects. The agribusinesses can benefit from having adequately qualified students from a reputable institution.

Several studies have broken down components of the curriculum and analysed each module individually. Tracking the development of the agricultural economics profession is a lengthy and complicated task, because of its constant change and transition through decades. It would be beneficial to do an annual analysis of trends, and forecast of the profession using the international arena to benchmark how the South African industry is meeting the changing demands of the sector.

The limitation experienced in this study was the small sample size of the graduates in the tracer study. The sample size could have been expanded by distributing surveys through email, and making use of the universities alumni directory, in order to get a wide representation of active agricultural economists in the industry. A large sample size could have included a better understanding of the talent in the agricultural industry. Future studies can conduct a backward tracer study focusing on the different industries that employ agricultural economists and trace back to which universities they studied and their level of satisfaction of their degrees.

7.4 Role of Employers

This part looks at the different roles that employers and industry should play in making sure that the agricultural economics profession maintains its relevance, while ensuring that agricultural economists are successful and retained within the agricultural sector. Agricultural economist employers include both private industries and public sector parastatals.

The employers should not isolate themselves from the agricultural economics departments. There needs to be constant communication and liaison between the expectations of the industry and what the university is teaching. The ultimate goal for all parties involved in agricultural economics is to produce students who will be satisfied with their university experience and get good jobs upon completion. The employers want students who are loyal to the organisation, graduates who possess high moral and ethical standards, over and above well-equipped students to avoid further training in the organisation. The engagement of employers and universities will help shape the curricula and development of the graduates and close the gap of unemployment and skills shortages in the industry. It is recommended that employers and universities should conduct a bi-annual analysis of the students who graduated and those who were employed in the industry. The lack of communication will result in good capable talent being lost from the industry.

Aspirant students with good academic potential should be given internship opportunities at university level. The university staff can be essential in identifying such individuals to recommend to employers. This can help employers save on recruitment costs as the student will be employed full-time upon completion of their degree. This will also benefit the student as they will gain experience in the field at an early stage of their careers.

Employers are of critical importance in the curriculum development stage because they can input what skills they require from their employees such as soft skills, integrity, communication and farm experiential knowledge. Therefore, communication between agricultural economics departments and agricultural employers is very important.

7.5 Role of the Agricultural Economics Association of South Africa

The AEASA should increase the role it plays in the design of curricula at universities. The members in the Association are both academia and industry professionals who have considerable experience and knowledge. It would be advantageous for graduates to learn from them, network and be exposed to the broad nature of the industry. The Association has the ability to influence the greater industry, by means of hosting conferences and the publications of the Agrekon journal which can motivate students to undertake further studies and research projects. The Association should be the driving force to set minimum guidelines, standards,

and baseline for the direction the curricula should take. It should also provide means to attain those teaching standards.

The Association should use their influence with other international agricultural economics associations, to provide collaborative measures between universities, students and industry. This will assist students in gaining international agricultural exposure and to keep up with the global development trends of the agricultural sector.

7.6 Role of Agricultural Economics Departments

The university departments are encouraged to create an environment that embodies all aspects of the agriculture industry, and to make certain that the students graduating from them are well equipped and effective in the agricultural sector. The university departments should engage with their students on a frequent basis. They should form strong relationships with students by creating a student body that handles issues related to students needs within the department. This will make it easier for students and department to work together. Although the different economic departments have different teaching systems and instructions, it would be beneficial for the agricultural industry for the agricultural economics departments in various universities in South Africa to extensively engage with each other and share ideas on the implementation of better teaching and training ideas. They should aim to have closely related objectives of meeting the needs of both the students and the industry. It would be a difficult task to ask the departments to analyse their curricula together and engage each other on the challenges experienced by their students. This, however, will be a necessary undertaking in future to maintain the continuous success of the discipline.

A potential tripartite relationship can be formed between the Department of Agricultural Economics educators, employers of agricultural economists and the students who take part in these studies. It is important for a strong bond and relationship to develop between these parties and to initiate constant communication and liaison. The success of the profession is dependent on the strength of this relationship, and how well they operate to address the challenges that agriculture sector faces on a constant basis. The agricultural economics industry is in a state of constant transition, and it is important for the systems not to work in isolation, but rather to engage with one another and to meet the demands of the sector.

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APPENDIX A

Resp. no. | | | |

Dear Professor

Thank you for your willingness to complete this survey of agricultural economics departments following the request by AEASA AGM (2011). The purpose of the survey is to determine the current training offered by Agricultural Economics Departments in South Africa. The survey should not take more than **30 minutes** to complete.

This survey forms part of an initiative by the Agricultural Economics Association of South Africa to assess the nature and quality of Agricultural Economics training in South African universities.

The outcome of the survey will be available to you as well as the AEASA membership.

Please answer <u>all</u> the questions in the survey.

Questionnaire Outline

The focus of the questionnaire is only on undergraduate students in agricultural economics degrees.

The survey consists of 16 pages and is divided into three sections; it has yes, no and remarks columns. You are encouraged to use the remarks column to add any comments or substantiate your answer if required.

Section 1: Student Outcomes

Section 2A: Student Resources

Section 2B: Skills and Abilities

Section 3: Value Added Programmes

Section 1: Student Outcomes

This section of the questionnaire is aimed particularly at determining how many students enrol for the various degrees in the agricultural economics departments and the outcomes of those enrolments. *(Please answer as accurately as possible).*

1.1 How many students completed their degrees at the end of 2011 in the following programmes?

BSc Agric Economics	
BCom Agricultural Economics	
B Agric/ B Agric Admin	
Honours	
Masters	
PhD	

1.2 How many new students were admitted in 2012, in the following programmes?

BSc Agricultural Economics	
BCom Agricultural Economics	
B Agric/ B Agric Admin	
Honours	
Masters	
PhD	

[1]*Please note that the Masters and PhD students should include those graduating at the end of 2012.*

Overall support and outcomes: All universities set a minimum time period in which students should be able to complete their degree. The following questions determine whether students complete their degrees in the appropriate time.

		% of Students enrolled
1.3	**Graduating within 3 years**: All B Agric (including BCom) students complete their degree within 3 years.	
1.4	**Graduating within 4 years**: All BSc Agric students complete their degree with 4 years.	
1.5	**Time to Degree**: The length of time required to earn a degree and be considered as a qualified agricultural economist is reasonable.	

Section 2A: Student Resources

This section analyses the resources that departments have put in place to ensure the success of their students. (*Please use the 3rd column to add any remarks to explain your answer if needed).*

		Yes	No	Remarks
		1	2	
2.1	**Professional development**: The program offers a wide range of professional-development opportunities and technical skills. (Such as CV writing and interview skills).			
2.2	**Annual student review**: The department conducts an annual review of all enrolled undergraduate students, to determine how many remained in the course or dropped out.			
2.3	**Interpersonal skills**: The program or institution provides organised training to help students improve interpersonal skills, (group work, and presentations).			
2.4	**Proposal writing**: The institution provides assistance or training in how to prepare proposals and research opportunities during their undergraduate programmes.			
2.5	**Instruction in writing**: The program or institution provides writing-skills instruction to undergraduate students.			
2.6	**Instruction in communication**: The program or institution provides instruction in effective communication skills to undergraduate students.			
2.7	**Access to facilities:** Students have access to library facilities that are well-equipped with internet, journals and other sources that provide information to assist them in research and projects.			

Section 2B: Student Skills

This section is **only applicable to undergraduate students** in their final year of studies. Different universities will use different assessments to measure whether their students are well-equipped with the basic skills to be competitive in the work place. This question is based on average students graduating from your programme. (*Please tick the appropriate box and use the 3rd column for any remarks you may have*).

2.8 (a) Computer skills: When students complete their B Agric degree they are able to do the following:

	Yes	No	Remarks
	1	2	
Prepare a whole farm budget on Excel.			
Prepare an enterprise budget on Excel.			
Do simple regression and forecasting.			
Prepare a good project report.			
Prepare a good PowerPoint presentation.			
Prepare a sound and precise word document with correct technical guidelines (e.g. Font, structure and formatting).			
Conduct research using internet, books and other information sources.			

2.8 (b) Computer skills: When students complete their BSc Agric degree they are able to do the following:

	Yes	No	Remarks
	1	2	
Prepare a whole farm budget on Excel.			
Prepare an enterprise budget on Excel.			
Do simple regression and forecasting.			
Prepare a good project report.			
Prepare a good PowerPoint presentation.			
Prepare a sound and precise word document with correct technical guidelines (e.g. Font, structure and formatting).			
Conduct research using internet, books and other information sources.			

2.8 (c) Computer skills: When students complete their BCom degree they are able to do the following:

	Yes	No	Remarks
	1	2	
Prepare a whole farm budget on Excel.			
Prepare an enterprise budget on Excel.			
Do simple regression and forecasting.			
Prepare a good project report.			
Prepare a good PowerPoint presentation.			
Prepare a sound and precise word document with correct technical guidelines (e.g. Font, structure and formatting).			
Conduct research using internet, books and other information sources.			

2.9 (a) Soft skills: When students complete their B Agric degree they will have developed the following abilities and skills:

	Yes	No	Remarks
	1	2	
Student is able to work independently without supervision.			
Be able to perform well in a group.			
Communicate effectively.			
Be confident in asking and answering questions.			
Has the ability to apply critical thinking into problem solving.			
Listen to and carry out instructions.			
Listen to and summaries lengthy oral presentations.			
Ability to work under varied conditions.			
Willingness to be mentored.			
Students have a practical concept of what farming is really about.			

2.9 (b) Soft skills: When students complete their BSc Agric degree they will have developed the following abilities and skills:

	Yes	No	Remarks
	1	2	
Student is able to work independently without supervision.			
Be able to perform well in a group.			
Communicate effectively.			
Be confident in asking and answering questions.			
Has the ability to apply critical thinking into problem solving.			
Listen to and carry out instructions.			
Listen to and summaries lengthy oral presentations.			
Ability to work under varied conditions.			
Willingness to be mentored.			
Students have a practical concept of what farming is really about.			

2.9 (c) Soft skills: When students complete their BCom Agric degree they will have developed the following abilities and skills:

	Yes	No	Remarks
	1	2	
Student is able to work independently without supervision.			
Be able to perform well in a group.			
Communicate effectively.			
Be confident in asking and answering questions.			
Has the ability to apply critical thinking into problem solving.			
Listen to and carry out instructions.			
Listen to and summaries lengthy oral presentations.			
Ability to work under varied conditions.			
Willingness to be mentored.			
Students have a practical concept of what farming is really about.			

2.10 (a) Business skills: When students complete their B Agric degree they are able to:

	Yes	No	Remarks
	1	2	
Prepare a solid business plan.			
Be able to do a transaction on SAFEX.			
Be able to pass the SAFEX commodity trading exam.			
Prepare a marketing plan for an agricultural commodity or food product.			
Prepare financial statements and do a financial analysis of a farm and/ or agribusiness.			
Be able to do cash flow statement for farming enterprise.			
Is able to do a feasibility study.			
Can do tax planning and give realistic and reliable advice to farmers.			

2.10 (b) Business skills: When students complete their BSc Agric degree they are able to:

	Yes	No	Remarks
	1	2	
Prepare a solid business plan.			
Be able to do a transaction on SAFEX.			
Be able to pass the SAFEX commodity trading exam.			
Prepare a marketing plan for an agricultural commodity or food product.			
Prepare financial statements and do a financial analysis of a farm and/ or agribusiness.			
Be able to do cash flow statement for farming enterprise.			
Is able to do a feasibility study.			
Can do tax planning and give realistic and reliable advice to farmers.			

2.10 (c) Business skills: When students complete their BCom Agric degree they are able to:

	Yes	No	Remarks
	1	2	
Prepare a solid business plan.			
Be able to do a transaction on SAFEX.			
Be able to pass the SAFEX commodity trading exam.			
Prepare a marketing plan for an agricultural commodity or food product.			
Prepare financial statements and do a financial analysis of a farm and/ or agribusiness.			
Be able to do cash flow statement for farming enterprise.			
Is able to do a feasibility study.			
Can do tax planning and give realistic and reliable advice to farmers.			

2.11 (a) Basic agricultural economics skills: When students complete their B Agric degree they are able to:

	Yes	No	Remarks
	1	2	
Estimate a supply and demand function.			
Estimate elasticities.			
Be able to manage a data set.			
Do a welfare analysis of policy interventions.			
Be able to estimate a production and cost function.			
Know the main elements of the South African agricultural policy.			
Understand the techniques involved in analysing agricultural value chains. (Such as the production process, from farm to market and input and output flow of produce, and impacts of the global markets).			

2.11 (b) Basic agricultural economics skills: When students complete their BSc Agric degree they are able to:

	Yes	No	Remarks
	1	2	
Estimate a supply and demand function.			
Estimate elasticities.			
Be able to manage a data set.			
Do a welfare analysis of policy interventions.			
Be able to estimate a production and cost function.			
Know the main elements of the South African agricultural policy.			
Understand the techniques involved in analysing agricultural value chains. (Such as the production process, from farm to market and input and output flow of produce, and impacts of the global markets).			

2.11 (c) Basic agricultural economics skills: When students complete their BCom Agric degree they are able to:

	Yes	No	Remarks
	1	2	
Estimate a supply and demand function.			
Estimate elasticities.			
Be able to manage a data set.			
Do a welfare analysis of policy interventions.			
Be able to estimate a production and cost function.			
Know the main elements of the South African agricultural policy.			
Understand the techniques involved in analysing agricultural value chains. (Such as the production process, from farm to market and input and output flow of produce, and impacts of the global markets).			

Section 3: Value Added Programme

Questions in this section are designed to assess whether departments and universities provide students with extra activities to help improve their opportunities at finding jobs after graduation. *(Please use the 3rd column to add any remarks to explain your answer if necessary).*

		Yes	No	Remarks
		1	2	
3.1	**Orientation**: The program or institution provides an orientation program for new students.			
3.2	**Visiting lecturers**: The programme invites industry experts to present lectures.			
3.3	**Travel support**: The program or institution provides funds that enable students to attend professional meetings, conferences and other agricultural shows.			
3.4	**Academic ethics**: The program or institution offers formal training in academic integrity and ethics.			
3.5	**Extra curricula activities**: The program encourages students to take part in University activities, social clubs and functions.			
3.6	**Undergraduate student association**: The program or institution has an active undergraduate student association.			
3.7	**Mentorship:** The institution offers a mentorship programme for aspirant undergraduate students.			
3.8	**Internships**: The programme offers students internship opportunities to link with companies, farms and government institutions.			
3.9	**Practical work module**: Does the programme offer students with practical experience within the degree.			

Question 3.10:

In your opinion, what is the single most important skill or learning outcome obtained by graduates from your undergraduate programme, that employers in the industry would consider most valuable?

Thank you for your valuable time.

Respondents number				

Date	2	0	1	2					

APPENDIX B

SURVEY – University graduate skills assessment

Dear Respondent

Thank you for your willingness to complete the university graduate survey. The purpose of the survey is to determine your perceptions about the training that was provided to you by Agricultural Economics departments during your undergraduate studies. The survey should not take more than **30 minutes** to complete. This is a confidential survey. You cannot be identified and the answers you provide will be used for research purposes only.

Please answer <u>all</u> the questions in the questionnaire, according to your <u>undergraduate</u> degree.
The survey divided into two sections: Educational background and Skills information.

RESPONDENT INFORMATION	
Age	
Province Currently Residing	
Gender	F☐nale M☐le
Nationality	S☐th African O☐er (please specify)
Home language	
Socio-economic status	☐ Employed ☐ Unemployed / looking for work ☐ Not working – not looking for work ☐ Not working – scholar / full-time student ☐ Not working – not wishing to work ☐ Not working – none of the above

Section 1: Educational background

Q1. Which university did you attend during your undergraduate studies? (Please tick the appropriate.)

University of Pretoria		University of Limpopo	
University or Free State		University of Venda	
University of North West		University of Fort Hare	
University of Stellenbosch		University of KwaZulu-Natal	

Q2. Highest qualification obtained?

Q3. Year completed? (*Note: not the graduation year*)

Q4. Do you possess any other tertiary qualification from any other tertiary education institution? (If yes please state full qualification name and institution).

Q5. Are you currently undertaking further studies? (If yes please state full name of programme and number of years enrolled).

Q6. Is the time allocated by your university to complete the degree satisfactory? (Please tick the correct box).

Yes	
No	
If answered no please give a reason	

Q7. Name <u>three</u> modules/ subjects that you found most useful and why?

<u>1.</u>
<u>2.</u>
<u>3.</u>

Q8. Name three modules/subjects your found the least useful and why?

1.
2.
3.

Q9. What specific skills obtained from your university education are you applying most to your job? (Skills can be anything from technical, computer or communication skills).

Q10. In your opinion which module/ subject/ topic not presented in the course would have contributed to your career success?

Q11. What gaps, if any, have you observed in your academic training?

Q12. How useful has your degree been to you after graduation? (Please give reasons for your answer). This refers to further studies, job opportunities etc.

Options	**Reasons**
Very useful	
Little to no use	
Don't know	

Q13. What attracted to you to this university? (*Tick* all the relevant boxes.)

Number of degree choices available	
Convenient location	
Good education system	
Referral by family or friends	
Cost of tuition	
Language of tuition	
Up-to-date teaching facilities	
Quality of lecturers	
University's reputation	
Other (please specify)	

Q14. Rate your university in terms of overall perception of the quality of the teaching. (Tick appropriate box).

Excellent	
Very good	
Good	
Average	
Not satisfactory	

Q15. What specific skill areas within the agricultural and food sciences do you believe will require the most significant manpower training over the next decades?

Q16. What suggestions or recommendations would you make to the university course offering? (Regarding the teaching methods and modules offered).

Q17. If employed please complete the following questions. (If not please go to section 2).

Employer	
Location of Company	
Job title	
Start date of employment	
How long did it take you to find a job since completing your degree?	……..months

Q18. Give a brief description of the main tasks performed at your job.

Q19. What competencies learned at university did you find very useful in your first job? You may check more than one answer.

Communication skills	
Human relation skills	
Entrepreneurial skills	
Information technology skills	

Problem-solving skills	
Critical thinking skills	
Other (please specify)	

Section 2: Skills Assessment

The following section aims to determine whether the training that you received at the university was effective for your career path. Please answer as truthfully as possible. You are encouraged to make use of remarks column to further explain your answer.(Please tick the appropriate)

Q20. Computer skills: When you completed your degree you were able to do the following?

	Yes	No	Remarks
Prepare a whole farm budget on Excel?			
Prepare an enterprise budget on Excel?			
Do simple regression and forecasting?			
Prepare a good project report?			
Prepare a good PowerPoint presentation?			
Prepare a sound and precise word document with correct technical guidelines (e.g. Font, structure and formatting).			
Conduct research using internet, books and other information sources.			

Q21. Business skills: upon completion of your degree you were able to do the following?

	Yes	No	Remarks
Prepare a solid business plan?			
Be able to do a transaction on SAFEX?			
Be able to pass the SAFEX commodity trading exam?			
Prepare a marketing plan for an agricultural commodity or food product?			
Prepare financial statements and do a financial analysis of a farm and/ or agribusiness?			

Q22. Soft skills: Upon completion of your degree you had developed the following abilities and skills?

	Yes	No	Remarks
Independent. You were able to work without supervision			
Able to perform well in a group?			
Communicate effectively?			
Be confident in asking and answering questions?			
Critical thinking			
Listen to and carry out instructions			
Listen to and summaries lengthy oral presentations			
Ability to work under varied conditions			
Willingness to be mentored			

Q23. Basic agricultural economics skills: upon completion of your degree you are able to?

	Yes	No	Remarks
Estimate a supply and demand function?			
Estimate elasticities.			
Be able to manage a data set.			
Do a welfare analysis of policy interventions?			
Be able to estimate a production and cost function.			
Understand the techniques involved in analysing agricultural value chains. (Such as the production process, from farm to market and input and output flow of produce, and impacts of the global markets).			
Know the main elements of the South African agricultural policy.			

*****Thank you for your participation*****