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Employment, Job Satisfaction and Competencies of Agricultural Engineering Graduates in Romblon State University, Philippines

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Abstract

This paper focused on (1) Graduates' employment status considering application of knowledge from preparatory subjects, fundamental agriculture, basic engineering, and professional agricultural engineering; (2) Job satisfaction with work condition, salaries and benefits, career growth and job-course relevance; (3) Competencies in engineering management skills (4) Strengths and weaknesses of Bachelor of Science in Agricultural Engineering program and (5) Differences on feedbacks about graduates' management skills. Two sets of questionnaires were used in gathering the data. Using t-test, employers and graduates equally revealed that graduates' knowledge and skills in preparatory subjects were often applied whereas those in fundamental agriculture, basic and professional agricultural engineering were seldom applied. Major strengths of the program were about computer and info technology, project evaluation, and agricultural wastes management, however weaknesses were on fish nutrition, wood-metal works, machine elements, communication skills, professional agricultural engineering expertise and employment in non-agricultural sectors. Graduates were satisfied with work condition, career growth opportunities, salaries and benefits. They performed very satisfactorily engineering competencies in planning, organizing, leadership, and human relations but not in communication skills. Improvement in licensure examination, job placement services and curriculum revisit are recommended to make graduates more competitive.

Index Terms— employability, engineering competencies, job satisfaction, tracer study

Introduction

Amidst globalization phenomenon, learning institutions face the pressing demands of change; yet a functional society must sustain a responsive program of education.

According to [1], necessary human resource development is basic in the period of globalization. Most applicable knowledge and skills are needed by a competent graduate to manage the ever changing work standards. [2] in a tracer study of La Salle University Engineering Graduates, recommended that curricula be revisited and improved to meet the necessary skills and competencies expected of the graduates, mechanisms be also in place to improve formation program of the school. To ensure quality of higher education for economic recovery, policy makers should consider allowing higher education institutions to redesign their academic programs and curriculum based on shifts of demands in the job market, and to foster growth in practice opportunities for students [3]. Graduates and employers articulated

issues and concerns about relevance of engineering education in the workplace including graduates' competence, work condition and hiring practices of industries [4]. Studies about employee's satisfaction started with the industries' concern and productivity. Galanou, Georgakopoulos, Sotiropoulou, & Dimitris (as cited by [5]) discussed that rewards have been found to be a potential source that contributes to employees' motivation and job satisfaction (p. 400). Moreover, [6] concluded that although job satisfaction was reported relatively well in the nurse educators, this condition depends on several indices. The lack of positive steps toward job satisfaction in nurse educators leads to destructive behaviors and turnover intentions; meanwhile, it is satisfied educators who can train competent nurses. In Romblon State University, feedbacks from Bachelor of Science in Agricultural Engineering (BSAgEn) graduates and their employers through tracer studies are essential for program evaluation.

Ii. Objectives of the Study

The study focused on the following: 1) graduates' application of knowledge and skills derived from the curriculum in terms of preparatory subjects, fundamental agriculture, basic engineering, and professional agricultural engineering; 2) graduates' level of job satisfaction with the work environment in terms of work condition, salaries and benefits, career growth opportunities and relevance of the course to the job; 3) level of competency performance as regards engineering management skills in communication, human relations, leadership, and planning and organizing; 4) strengths and weaknesses of the BSAgEn program as regards application of graduates' knowledge and skills, job satisfaction and performance of engineering competencies performance; and 5) differences in perceptions of the graduates and the employers as regards application of knowledge and skills, job satisfaction and competency performance.

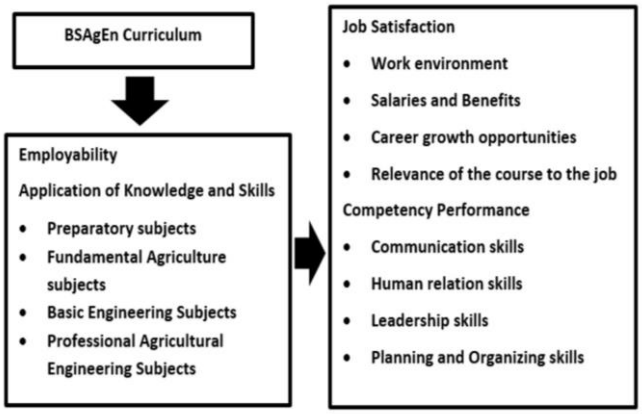

Fig.1. *Conceptual Framework*

Theoretical and Conceptual Framework

The motivational Herzberg's Two-Factor Theory provides that the more competent a person is, the easier he can be motivated to work and become job satisfied [7]. This theory was considered in this study to account on graduates' job satisfaction and competency performance as they apply the knowledge and skills to their work [8]. Edwin Locke's Range of Affect Theory also supports this study. It states that job satisfaction and competency performance are determined by a discrepancy between what a person wants in a job and what he has in a job [9]. This supports that in applying knowledge and skills, competency performance and satisfaction depend on whether or not expectations in the work are met. These relationships are illustrated in Fig. 1.

Hypotheses formulated for the Study

1 There is no significant difference in perceptions of the graduates and the employers as regards application of knowledge and skills to the job,
2 There is no significant difference in perceptions of the graduates and the employers as regards graduates' level of job satisfaction with the work environment, and
3 There is no significant difference in perceptions of the graduates and the employers as regards graduates' competencies in management skills.

Materials and Methods

The descriptive research design was used in this study which involves observing and describing the behavior of a subject without influencing it in any way [10] that is**,** to determine the employment status of the graduates as regards application to the job of their knowledge and skills derived from the curriculum; as well as their job satisfaction and competency performance. The graduates' level of job satisfaction on work place condition, salaries and benefits, career growth opportunities and job-course relevance was determined using 5-point continuum similar to the study of [11]. A total of 216 BSAgEn graduates were the population of the study from which one hundred twenty-four (124) were traced as respondents. One hundred nineteen (119) employer-participants were contacted to provide the needed information by giving feedbacks about the graduates. Two sets of validated instruments were used to gather the data; one for the graduates and another for the employers. These were given to the participants through online and offline modalities which had retrieval rate of 86.7 percent. Validation of results were done through interview technique. The data were analyzed using Statistical Package for Social Sciences (SPSS). Average mean was used to determine the graduates' level of job satisfaction and competency performances in the work field; whereas t-test was employed to determine if differences exist in the feedbacks of participants. It allows comparing of the average values of the two data sets and determine if they came from the same population [12]. Differences in the feedbacks of graduates and employers in terms of level of job satisfaction and competency performance were determined.

Results and Discussion

Level of Application to the Job of the Graduates' Knowledge and Skills

Data (Table 1) revealed that preparatory subjects were often applied to the job while subjects in Fundamental agriculture, basic engineering and professional engineering were seldom applied. The graduates assessed that knowledge and skills in Preparatory Subjects were often applied to the job, but those in Fundamental Agriculture, Basic Engineering and Professional Agricultural Engineering were seldom applied to their present job. Such result means that most graduates' knowledge and skills were not very relevant to their job. CHED Memorandum Order 14, Series 2001 provides that BSAgEn graduates are expected to understand and apply engineering principles particularly in the solutions of problems concerning irrigation and drainage of agricultural land, soil erosion control, planning of agricultural buildings, agricultural waste management and the development of labor and energy-saving agricultural equipment and systems. According to [1], necessary human resource development is basic in the period of globalization. Most applicable knowledge and skills are needed by a competent graduate to manage the ever changing work standards. It can be inferred that since most of the graduates were not working in the field of agriculture, most knowledge and skills haven't helped them much in the performance of their job. Job mismatch can create job dissatisfaction among the graduate-employees. This implies that the university may give priority attention to enhance students' performance in the licensure exam which will

qualify them for agricultural engineering jobs. A dialogue with the industry and the academe through linkages, on-the-job training and practicum program included in the curriculum may be considered to better prepare the graduates in their entry into the world of work as part of total quality standards in offering the program.

Table 1. *Summary of the Level of Application to the Job of Graduates' Knowledge and skills*

	Subject Areas	Employer		Graduate		Ave.		Rank
		Mn	VI	Mn	VI	Mn	VI	
1	Preparatory Subjects	2.6	OA	2.7	OA	2.6	OA	1
2	Fundamental Agriculture	2.1	SA	2.2	SA	2.1	SA	3
3	Basic Engineering	2.3	SA	2.3	SA	2.3	SA	2
4	Professional Agricultural Engineering	2.0	SA	2.2	SA	2.1	SA	4
	Total	2.2	SA	2.3	SA	2.3	SA	

Legend: Mean (Mn) Verbal Interpretation (VI)
3.51-4.00 Very often applied (VOA)
2.51-3.50 Often applied (OA)
1.51-2.50 Seldom applied (SA)
0.51-1.50 Never applied (NA)

Strengths and Weaknesses of the BSAgEN Program in terms of Application of Knowledge and Skills

The strengths of the program were on graduates' skills in the application of computers and information technology, management of agricultural projects, project valuation report, use of electrical equipment and management of agricultural wastes. The weaknesses were on classification of chemical elements, principles of fish nutrition, wood-metal works and development of agricultural machine elements. From the total mean of 2.29, there was a gap of 1.71 towards total quality standards in terms of application to the job of the knowledge and skills. In the interviews conducted, the researcher noted that several graduates were employed in non-agricultural sectors; reason why most of the knowledge and skills were seldom applied. The implication was that graduates should effort to improve their qualifications in terms of licensure exam for finding relevant jobs. According to [3], education institutions should encourage coordinated efforts between university and industries, and to foster a growth in practice opportunities for students.

Graduates' Level of Job Satisfaction with the Work Environment

The graduates described themselves (Table 2) as "satisfied" with the work environment as regards Work Condition, Career Growth Opportunities, Salaries and Benefits and Course Relevance to the Job. Based on Herzberg's theory, this implies that both hygiene and motivation factors were observed in the work environment of the graduates. This also means that the graduates got what they expected from the work as provided in Locke's Range of Affect theory.

Strengths and Weaknesses in terms of Graduates' Job Satisfaction

The program strengths were about work condition and career growth opportunities of the graduates; whereas weaknesses were relating to salaries and benefits and course relevance to the job; this implies that the graduates were not highly motivated in their job. In his article,

[5] discussed that rewards have been found to be a potential source that contributes to employees' motivation and job satisfaction.

Table 2. *Graduates' Job Satisfaction with Work Environment*

	Indicators	Employer		Graduate		Average		Rank
		Mn	VI	Mn	VI	Mn	VI	
1	Work Condition	3.2	S	3.2	S	3.2	S	1
2	Salaries and Benefits	3.2	S	3.1	S	3.1	S	3
3	Career Growth Opportunities	3.2	S	3.1	S	3.2	S	2
4	Course-Job Relevance	2.7	S	2.7	S	2.8	S	4
	Total	**3.1**	**S**	**3.0**	**S**	**3.0**	**S**	

Legend: Mean (Mn) Verbal Interpretation (VI)
3.51-4.00 Highly satisfied (HS)
2.51-3.50 Satisfied (S)
1.51-2.50 Fairly satisfied (FS)
0.51-1.50 Not satisfied (NS)

Graduates' Competencies in Engineering Management Skills

The graduates' competency performance (Table 3) was very satisfactory in the four engineering management components like planning and organizing, leadership, human Table 3. Engineering Management Competency Performance of the Graduates

	Management Skills	Employer		Graduate		Average		Rank
		Mn	VI	Mn	VI	Mn	VI	
1	Communication	3.7	VS	3.7	VS	3.7	VS	4
2	Human Relation	4.0	VS	4.0	VS	3.8	VS	2.5
3	Leadership	3.9	VS	3.7	VS	3.8	VS	2.5
4	Planning and Organizing	3.9	VS	3.8	VS	3.8	VS	1
	Total	3.9	VS	3.8	VS	3.8	VS	

Legend: Mean (Mn) Verbal Interpretation (VI)
4.51-5.00 Outstanding (O)
3.51-4.50 Very satisfactory (VS)
2.51-3.50 Satisfactory (S)
1.51-2.50 Unsatisfactory (UnS)
1.00-1.50 Poor (P)

Relations and communication. Relatively, the strengths of the program were on planning and organizing skills, human relations skills and leadership skills whereas the weakness was on communication skills. This implies that curriculum and instruction elements of the program could make intervention to address the graduates' issues in communication skills and the use of newest technology package in agriculture.

Strengths and Weaknesses in terms of Graduates' Engineering Management Competencies

When ranked accordingly from highest to lowest, the strengths of the graduates was on Planning and Organizing Skills. Weakness was on Communication Skills. With the total mean of 3.82 a gap of 1.18 towards total quality standards was noted. This means that the graduates performed very well in management skills most especially in "Planning and Organizing", "Human Relations" and "Leadership" although not equally well in terms of "Communication".

Differences in Perceptions of Graduates and Employers as regards application of knowledge, job satisfaction and competencies in engineering management skills.

There was no significant difference in perceptions among respondents about application of knowledge and skills, job satisfaction with work condition and engineering management competency performance thus, the three null hypotheses of the study were accepted. This means that both the graduates and employers agreed that the knowledge and skills in Preparatory Subjects were often applied whereas Fundamental Agriculture, Basic Engineering and Professional subjects were seldom applied. They both affirmed that the graduates were satisfied with the work environment and performed very satisfactorily the competencies in engineering management skills.

Conclusions and Recommendations

1. Most of the graduates were employed in non-agricultural engineering sectors; their knowledge and skills were seldom applied. It is suggested that the graduates seek employment in agricultural engineering sectors or allied fields to allow application of their skills.
2. The graduates were not very satisfied with their job in terms of salaries and benefits and course-relevance. Performance in licensure examinations should be enhanced to qualify graduates for course-related tasks that will fortify professional expertise towards better remunerations.

The school's curriculum planners and job placement unit can enhance linkages with industries to address course-job mismatch among the graduates.

3. Graduates performed very satisfactorily the management competencies in planning and organizing, human relations and leadership with relatively weakness in communication skills. More strategic instruction procedures in written and oral communication arts are important to consider to strengthen students' communication skills.

Acknowledgement

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