FEEDBACK OF EMPLOYERS ON THE PERFORMANCE OF BS MATHEMATICS GRADUATES OF THE COLLEGE OF SCIENCE, UNIVERSITYOF EASTERN PHILIPPINES

ABSTRACT.
Employers' feedback on the performance of graduates is an essential piece of information that Universities and colleges must consider to determine the relevance and responsiveness of their curriculum, programs, and services. This study aimed to assess employers' satisfaction with the performance of BS Mathematics graduates at the University of Eastern Philippines. It employed a descriptive research design. Sixty-eight employers answered the survey form, mainly in the academe. The employers rated and gave feedback on the competency of their employed BS Mathematics graduates. The graduates were perceived to 'Sometimes exceed the employers' required standard' in 86% of the performance attributes. The results showed that the employers involved in this survey are delighted with the competency of the hired employee in the workplace. The performance rating of the nine essential skills and attributes is 3.71, implying that the graduates performed better than the required employer's standard. The University may consider programs to strengthen the students' soft skills through continued linkage and collaboration with partner industries to prepare the students for a more diverse and modern world of work. The University may create a Career and Development Office, Alumni, and Placement to promote an environment that encourages higher acquisition and development of student skills, knowledge, and attitude through a planned, deliberate, and systematic learning process to improve personal and professional effectiveness.

Keywords: feedback, attributes, performance, BS Mathematics graduates

Introduction

The current market trend is that companies look for graduates with diverse technical and soft skills. Due to employers' high demand for skilled graduates, educators are greatly concerned about the quality of graduates produced by the university.

In an ideal world, universities or colleges would be in regular contact with and coordinate closely with the potential employers of their graduates. There would be a great scope of linkages between industry and the academe.

Employers are considered essential stakeholders of higher education institutions, and they give more significant meaning and value to graduates' knowledge, skills, and attitudes (Encio *et al*., 2016).

The Philippines, just like the rest of the countries in the world, is beset by increasingly uncertain changes brought by globalization. The influence of technology will go beyond new equipment and faster communications as work and skills will be redefined and reorganized. The current age has created opportunities along with challenges and complexities that affect two of our country's sectors: education and employment. Lasan (2000) contended that both have much at stake in human resources that could compete successfully in a global economy. The human resources will be graduates of institutions of higher learning whose educational experience will harmonize with the requirements of the present and future labor market. Hence, these two sectors' interplay and cooperative endeavors become highly imperative. In line with this period of globalization, higher education has been concerned with the development of the whole person as well as knowledge, attributes, and skills, which any educated person should expect to have by graduation. It aims to inspire and enable individuals to develop their capabilities to the highest potential levels throughout life to grow intellectually, contribute effectively to society, achieve personal fulfillment, and be well-equipped for work (Abas &Imam, 2016).

Graduates need to be given opportunities to develop attributes besides disciplinary knowledge. This includes communication skills, problem–solving skills, computer literacy, information literacy, the ability and willingness to learn, and teamwork. Thus, graduates need to be skilled workers and not just knowledge, which is highly demanded for any job requirement(Maratas, 2020, cited by Unay *et al*., 2021).

Employers are seeking appropriate talents in this global era when thousands of graduates are entering to seek jobs. Only graduates with an edge in skills and competencies will be successful.

Having skills and not just knowledge is an essential qualification in any job description. There is a demand for higher levels of skills, frequent updating of skills, and excellent 'soft skills' as well as technical skills. Numerous surveys showed that over 90 percent of employers look for people who are flexible and adaptive, willing to learn on the job, team players, technically competent, and committed to excellence (Thompson et al., 2008, cited by Sannadan, 2016).

Knoblauch and German (1989) highlighted the attributes of technical skills, communication skills, teamwork, leadership skills, planning and organizing skills, and communication skills in one of their research studies on graduate attributes based on employer perspectives.

Therefore, graduates' employability has become an issue that is not easily ignored in the global economy" (Misra Khurana, 2017). Studies like this have become the main instruments to determine the areas of strength and weakness of an institution’s graduates. Also, various studies (Atian, 2020; Pontillas, 2018; Loquias, 2015; Balingbing, 2014; Gines, 2014) confirm that tracer studies are essential activities that determine the employment rate of graduates and assess

the satisfaction of graduates on services, learning environment, and facilities, program's contribution to the skills' development on communication, human relations, leadership, problem-solving and research, and assessment on effectiveness, adequacy, and relevance of the curricular programs (Deblois, 2021)

This study determined the performance of currently employed BS Mathematics graduates of the College of Science, University of Eastern Philippines. Moreover, the study identified the skills related to the graduates' job performance and their level of performance. This study also aimed to engage with possible employment linkages for the BS Math program.

Objectives

This study aimed to obtain employers' feedback on the performance of College of Science graduates from 2000 to 2018 and determine the attributes that are significantly valued by their employers.

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Methodology

The College of Science is preparing the data to supply the requirements for a level IV accreditation. This project utilized a descriptive study to look into employers' feedback on the performance of our graduates to come up with recommendations on how to improve the curriculum. The respondents of the survey were the immediate supervisors of the graduates. The employer-respondents will also answer the importance of the attributes the graduates need in their work. The researchers will personally contact local agencies following the minimum standard health protocols. The researchers approached agencies outside the area through calls and emails. The questionnaire was a self-made questionnaire guided by research by Sannadan*et al*. (2016).

For each attribute, respondents wererequested to give their assessment of the performance of the graduates and their views on the importance of the attributes for the post held by the graduates. Their assessments will be indicated by a score on a 5-point scale (Sannadan *et al*., 2016)as follows:

Table 1. Assessment of the performance of the graduates and their views

Value	Limits	Description	Importance
5	4.21-5.00	Always exceeds the employer’s required standards	Highly Important
4	3.41-4.20	Sometimes, it exceeds the employer's required standards	Much Important
3	2.61-3.40	Generally, meets the employer’s required standards	Moderately Important
2	1.81-2.60	Sometimes fails to meet the employer's required standards	Less Important

1	1.00-1.80	Always fails to meet employer's required standards	Not Important

Where appropriate, the researchers personally administered the questionnaire. In cases where the graduates are employed elsewhere in the country or abroad, the questionnaire was sent through emails or Facebook Messenger.

The data was tabulated, and statistical tools such as frequency counts, percentages, and weighted mean were used to determine the degree of competencies or attributes learned.

Ethical Consideration

The researchers considered ethical factors when the study was conducted. It includes informed consent and disclosure of information. To disclose the discussion, name or personal identification was intended to be blank, and there was no video or audio to maintain the confidentiality of the respondents who answered the questionnaire.

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Review of Literature

Employer feedback provides solid data for schools and institutions regarding the readiness and performance of their graduates. Also, several studies showed the different facets related to employability and employer satisfaction. In this article, the following related to employability and employer satisfaction concepts are discussed—preferred attributes by employers, models of employability, school-industry-government thrust on employability, and employer's satisfaction as feedback to schools (Tudy, 2017).

In today's economy, HEIs must produce quality graduates in order to meet the needs of national development and companies. Government agencies, companies, and graduates themselves are concerned about work-readiness. According to Bilsland et al. (2014), higher education administrators are under pressure to offer degree programs that are closely matched with graduate employers and industry needs regarding employability skills. The working environment also establishes a solid learning climate by allowing students to gain hands-on preparation experience and more freedom to develop delicate and complex skills.

Results and Discussion

An employability performance cannot be concluded simply from the employment rates of a certain institution's graduates. Employability is closely

linked to the rapport between higher education institutions and the employers' perspective. It connotes further that employability is the tendency of graduates to exhibit attributes or characteristics that employers foresee as necessary for the effective functioning of their organization in the future (Harvey, 1999, as cited by UNESCO, 2012 and Maratas, 2012).

Tracer Study of BS Mathematics

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The tracer study by Unay *et al*. (2021) showed that 91 out of 119 BS Mathematics graduates are employed. The majority (43.00%) of the respondents work on a contractual basis while 35.00% are on permanent status, and 5.00%are self-employed. The majority (43.00%) of the respondents work on a contractual basis, 35.00% are in permanent positions, and 5.00% are self-employed. Most of them are professional teachers. Most (36 or 40.00%) of our respondents are professionals, followed by clerks. The present minor occupation of the respondents is that of a trade or related worker involved in selling glass supplies. The demand for teachers today because of the K to 12 implementation means more opportunities for BS Math graduates to land a job as teachers. Fifty-five (55) employers, mainly from the academe, have given their feedback on the performance of our graduates.

The majority of mathematics graduates landed jobs serving the academe. Clerical or office workers, as manifested in the table, were second with 15 (27%). At the same time, only a few are call center agents or lending institutions, with only 9 (16%) employees. Meanwhile, some graduates work in other establishments, such as center malls and some food chain establishments.

Employers Perspective

Table 2. Employer's Perspective

	Employers			
Graduates (2000-2018)	Academe	Call Center/ Lending Institutions	Office/Clerical workers	Other Establishments
	31	12	21	4
Total	68			

Sixty-eight employers answered the survey form, mainly in the academe.

Employer's Rating of Employee to Various Attributes

Table 3. Employers rating the BS MATHGraduates

ATTRIBUTES	Performance Rating	Importance Rating
COMMUNICATION SKILLS	**3.44**	**3.90**
Able to write communication effectively	3.17	3.67
Ability to express ideas clearly	3.51	3.93
Ability to comprehend written instructions	3.79	4.01
Ability to comprehend verbal instructions	3.29	3.98
NUMERICAL COMPETENCY	**4.20**	**4.43**
Comprehension of data	4.19	4.57
Application of data	4.21	4.29
INFORMATION TECHNOLOGY LITERACY	**3.36**	**3.76**
Use of standard computer software	3.51	3.71
Adaptability to new software	3.27	3.73
Ability to make use of the Internet & Intranet to facilitate work & business	3.35	3.69
Locate, gather & and organize information using appropriate technology and information systems	3.29	3.92
ANALYTICAL AND PROBLEM-SOLVING ABILITIES	**3.61**	**3.90**
Ability to apply knowledge, principles, and concepts in the workplace	3.71	4.01
Ability to think globally and consider issues from a variety of perspectives	3.73	3.93
Ability to apply logical and rational processes to analyze problems	3.57	3.85
Ability to synthesize and evaluate information gathered	3.67	3.93
Ability to think creatively to generate solutions	3.47	3.97
Ability to implement solutions and act on opportunities for improvement	3.57	3.67
Ability to understand and apply a range of strategies to solve problems	3.56	3.93
WORK ATTITUDE	**3.80**	**4.24**
Sense of responsibility and commitment	4.01	4.57
Ability to work independently	3.93	4.21
Perseverance	4.01	4.17
Initiative and drive	3.57	4.15
Receptivity and adaptability to new ideas and environment	3.67	4.11
Ability to demonstrate ethical practices	3.58	4.21
INTER-PERSONAL SKILLS	**3.73**	**4.08**
Inter-personal relationship	3.77	4.01
Ability to work in a team	3.81	4.31
Ability to sustain intellectual curiosity	3.69	3.93

Ability to appreciate and understand individual differences	3.71	3.93
Able to accept and provide feedback in a constructive and considerate manner	3.65	4.21
RECORDS KEEPING SKILLS	**3.76**	**3.83**
Observes Procedures	3.77	3.93
Able to organize files	3.84	3.77
Ability to access information by using appropriate channels and resources	3.67	3.81
MANAGEMENT SKILLS	**3.79**	**3.87**
Organization of work	3.93	4.01
Able to manage and resolve conflict when appropriate	3.83	3.93
Ability to demonstrate leadership skills	3.77	3.81
Able to motivate team members	3.75	3.87
Management of available resources and ability to seek resources and assistance	3.67	3.77
Ability to deliver ideas/solutions to colleagues	3.79	3.83
TECHNICAL SKILLS REQUIRED FOR THE JOB	**3.68**	**3.98**
Technical knowledge	3.63	4.01
Ability to handle technical demands in work	3.69	3.93
Ability to solve technical problems	3.67	3.77
Ability to select and use appropriate tools and technology for a task or project	3.71	3.93
Able to work to agreed quality standards and specification	3.53	4.11
Be aware of occupational health and safety practices and procedures and act in accordance with these.	4.01	4.27
Ability to apply international standards and practices within a discipline or professional area.	3.53	3.87
Total Weighted Mean	**3.71**	**4.02**

The employers rated and gave feedback on the competency of their employed BS Math graduates. Table 3 presents the employers' feedback on 68 employed graduates regarding various attributes. Among the competencies, only the "Application of data" was rated as "Always exceeds the employer's required standards." The graduates were perceived to 'Sometimes exceed the employers' required standard' in 86% or 38% of the performance attributes. The results showed that the employers involved in this survey are delighted with the competency of the hired employee in the workplace. This means those are areas where the graduates can perform and exceed the required standards as expected by employers.

Nilsson (2010), as cited by Dotong *et al*. (2017), noted that a common understanding among graduates is that employers expect commitment to the organization and loyalty from employees. Important employability aspects include organizational involvement, generosity, earnestness, honesty, sharing information with colleagues, ability to satisfy the job requirements, conscientiousness, trustworthiness, and reliability in the professional role.

Among the indicators of employee performance, it was revealed that graduates are aware of the application and comprehension of data expected of BS Math graduates. 'Sense of responsibility and commitment,' 'perseverance,' and 'Aware of occupational health and safety practices and procedures, and act by these' were above 4.00.

Meanwhile, regarding the importance of these attributes, comprehension of data, a sense of responsibility and commitment, ability to work in a team, application of data, awareness of occupational hazards, ability to demonstrate ethical practices, ability to work independently, and ability to accept feedback in a constructive and considerate manner are considered highly important by the employers as indicated in Table 3. The rest of the attributes were rated as necessary by the employers.

Table 4. Summary of the Performance and Importance Ratings

ATTRIBUTES	Performance Rating	Importance Rating
Communication Skills	3.44	3.90
Numerical Competency	4.20	4.43
Information Technology Literacy	3.36	3.76
Analytical and Problem-Solving Abilities	3.61	3.90
Work Attitude	3.80	4.24
Inter-Personal Skills	3.73	4.08
Records Keeping Skills	3.76	3.83
Management Skills	3.79	3.87
Technical Aspects Required for the Job	3.68	3.98
Total Weighted Mean	**3.71**	**4.00**

The performance rating of the nine significant attributes is 3.71, implying that the graduates could perform better than the required employer standard. However, graduates' performance varied among different aspects, with the lowest score of 3.44 for Communication Skills and the highest score of 4.20 for Numerical Competency, both under the category of ‘Sometimes exceeds employer’s required standards.’

Figure 1 plots the performance and importance ratings on a two-dimensional graph below. There is a positive relationship between the two scores. For attributes considered relatively more important, the graduates generally received a relatively high rating in their performance score.

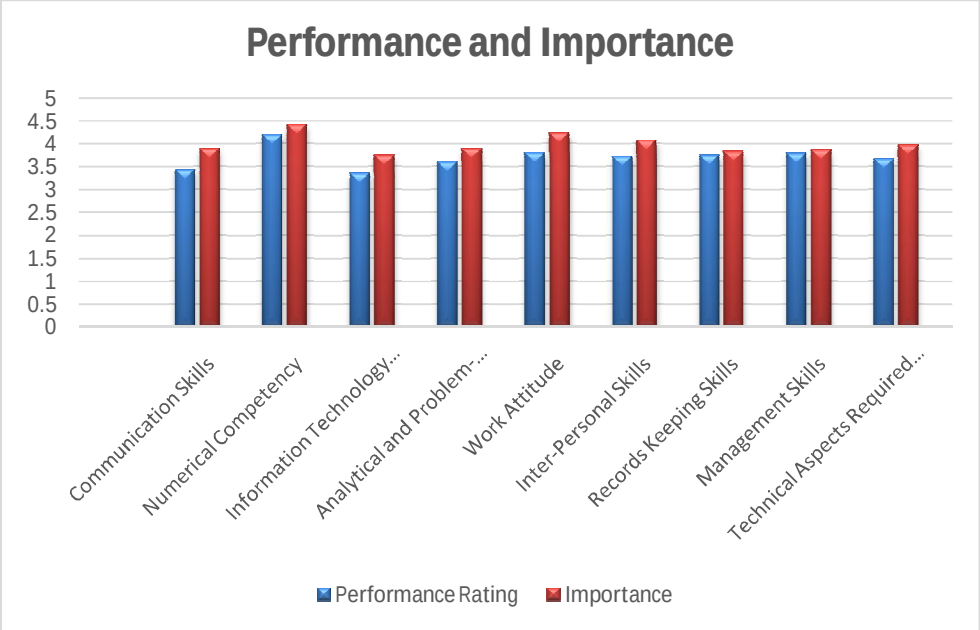

Figure 1. Performance of BS Math Graduates and Importance Rating

Table 5. Overall Performance of our CS Graduate

Rate	Over-all Performance	Frequency	Percentage (%)
5	Very Much Satisfied	25	37%
4	Much Satisfied	41	60%
3	Moderately Satisfied	2	3%
2	Less Satisfied	0	0%
1	Not Satisfied	0	0%
	Total	**68**	**100%**

25 or 37 % of employers are 'very much satisfied' with the performance of BS Math graduates, confirming the above-average performance of the graduates, as shown in Table 5. Forty-one or 60% of the employers are very satisfied with performance, while only 2 or 3% of the employer respondents are moderately satisfied.

Summary, Conclusion, and Recommendation

Summary

The majority (43.00%) of the respondents work on a contractual basis while 35.00% are on permanent status, and 5.00%are self-employed. On the other hand, the majority (43.00%) of the respondents work on a contractual basis. There are 35.00% who are in permanent positions and 5.00% who are self-employed.

Most of them are professional teachers. Most (36 or 40.00%) of our respondents are professionals, followed by clerks. The present minor occupation of the respondents is that of a trade or related worker involved in selling glass supplies. The demand for teachers today because of the K to 12 implementation means more opportunities for BS Math graduates to land a job as teachers. Fifty-five (55) employers, mainly from the academe, have given their feedback on the performance of our graduates.

Sixty-eight employers answered the survey form, mainly in the academe. The employers rated and gave feedback on the competency of their employed BS Math graduates. Among the competencies, only the "Application of data" was placed as "Always exceeds the employer's required standards." The graduates were perceived to 'Sometimes exceed the employers' required standard' in 86% or 38% of the performance attributes. The results showed that the employers involved in this survey are delighted with the competency of the hired employee in the workplace. This means those are areas where the graduates can perform and exceed the required standards as expected by employers.

Among the indicators of employee performance, it was revealed that graduates are aware of the application and comprehension of data expected of BS Math graduates. 'Sense of responsibility and commitment,' 'perseverance,' and 'Aware of occupational health and safety practices and procedures, and act following these' were above 4.00.

Regarding the importance of these attributes, comprehension of data, a sense of responsibility and commitment, ability to work in a team, application of data, awareness of occupational hazards, ability to demonstrate ethical practices, ability to work independently, and ability to accept feedback in a constructive and considerate manner are considered highly important. The rest of the attributes were rated as necessary by the employers.

The performance rating of the nine significant attributes is 3.71, implying that the graduates could perform better than the required employer's standard. It is shown that 25 or 37 % of employers are 'very much satisfied' with the performance of BS Math graduates, confirming the above-average performance of the graduates.

Conclusion

This study was conducted to determine the employers' feedback on the job performance of BS Mathematics graduates of the College of Science through the quality of job performance in terms of communication skills, numerical competency, information technology literacy, analytical and problem-solving abilities, work attitude, inter-personal skills, records keeping skills, management skills, and technical skills. This study utilized quantitative descriptive research with 68 respondents.

Based on the findings of the study, the following conclusions are drawn:

1. The research findings showed that the BS Math graduates performed better than the employers' required standards.
2. The employers in this survey are delighted with the BS Math graduates attached to their companies or organizations.

Recommendation

The University may consider programs to strengthen the students' soft skills through continued linkage and collaboration with partner industries to prepare the students for a more diverse and modern world of work. The University may create a Career and Development Office, Alumni, and Placement to promote an environment that encourages higher acquisition and development of student skills, knowledge, and attitude through a planned, deliberate, and systematic learning process to improve personal and professional effectiveness.

However, this study has some limitations. One of these is the number of respondents. Therefore, the number of sources of information should be enlarged to cover the large pools of employers in the market. A focus group discussion can also be proposed to gather in-depth ideas from the industry.

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