A Study in the Importance of the Branch of Economic Engineering in the Labour Marcet

Stela Jorgji (Fortuzi)

Polytechnic University of Tirnana, Albania

Email: sfortuzi@yahoo.com

Abstract

This research has as its main objective to analyze the characteristics, size of the market and other indicators for graduate students in Economic Engineering. They should familiarize with the business sectors they will be working after graduating or in the future. To further know about the opportunities, the university offer for employment of graduate students and also analyze the importance of practices for facilitating the process of integration in the labor market. Significance of this topic is "huge" for the students that are enrolled in the Economic Engineering program, freshly graduates or other potential students. This study program is relatively new compared to other engineering programs and employers are not completely informed about the position of an economic engineer in the labor market. This leads to the underestimation of these engineers. Students who pursued a degree in Economic Engineering have limited information about the labor market they could operate and work on. It is vital for the students to get to know better of what the market demands are, opportunities and difficulties they might face. One of the most important aspects of this topic is the help that university must offer to its students to better understand about their future job position as an economic engineer. Universities that offer this degree program must integrate their mandatory policies to make a smooth process for the graduates. Students should be fully informed about the required skills of economic engineer labor market.

Keywords: Academic institutions, Economic Engineering, Graduate students

Introduction

"Industrial Engineering is the engineering discipline concerned with the plan, design, development, improvement, implementation, installation and performance evolution of complex processes or integrated systems of people, technology and information." (Marin-Garcia and Lloret, 2011).

Because of the wide range of application of industrial engineering, any new student must have a solid background in mathematics, science, operations management and technology, and courses in English, management, and computer and information technology (Salvendy, 2001).

In fact, even students themselves have limited information about the job market where they can operate. Therefore, it is important for graduates and students to be familiar with what the current job market offers, with the opportunities and challenges they will face.

Globalization is one of the contextual factors most strongly influencing the way in which we understand and design today's business processes. It is a movement which also affects higher education, where national approaches are converging towards a set of models which are gradually taking root across our neighboring countries (Wei, 2005).

In other words, from a general perspective of the market, there is a mismatch between supply and demand in the relationship between the education system and employment. On the supply side, there is an excess of graduates in most fields, especially in economics, administration, and law, while on the demand side, there is a shortage of graduates in engineering sciences.

The lack of work experience is a major obstacle that students face in transitioning from higher education to the job market. Employers often expect graduates to have work experience in a competitive market, which penalizes graduates who do not have work experience during their studies.

For this reason, our concern that students acquire all the necessary knowledge related to this field is paramount. On the other hand, to be as close as possible to their needs, from time to time, we also conduct surveys with the aim of improving teaching and learning.

The Place of the IE Department at the Polytechnic University of Tirana (UPT) In institutional documents encompassing the "National Strategy for Higher Education" and "Agenda 2030 for Sustainable Development," with an emphasis on ensuring quality education, the focus is placed on developing employability skills (point 4).

At UPT, the Department of Economic Engineering is part of the Faculty of Mechanical Engineering. It is a relatively new department, which was opened for the first time about 10 years ago. For this reason, it does not have a high level of popularity, and

there are many potential students who have little knowledge about this department, its potential, and the opportunities it creates.

Furthermore, employers have limited knowledge about the department, the skills possessed by an IE graduate, and the position of economic engineers in the job market. This is because, as mentioned earlier, our country has a greater prevalence of the service industry rather than manufacturing.

According to statistics gathered by the career office of UPT (Faculty of Mechanical Engineering), there has been an increase in the number of registered students in the Economic Engineering program over the last 3 years. Specifically, the average for the academic year 2019-2020 was 8.56, while in the academic year 2021-2022, it reached 8.79.

Title of the study program	According to academic years	Enrolled for the first time for the first year	Average frade at entry in the EI
Economic Engineering	2019-2020	109	8,56
	2020-2021	85	8,70
	2021-2022	85	8,79

Program Title Academic Years First-Year Registrations (a) Average Entry Grade

II. Theoretical and Methodological Framework Primary data related to the completion of surveys by graduates in the field of Economic Engineering at UPT were collected. To gather primary data, an anonymous online questionnaire was developed to determine the conditions of employment in the real world, satisfaction, and prospects. The questionnaire was created on the Google Forms platform, using multiple-choice questions, open-ended questions, and Likert scale questions. In particular, a Likert scale was used, which includes the options "not at all," "slightly," "moderately," "very," and "extremely."

The results are illustrated in divergent bar graphs to facilitate the distinction between "positive" and "negative" opinions. The baseline of the divergent bar graphs is neutral opinions, negative opinions are grouped/placed to the left of the baseline, and positive opinions are grouped/placed to the right of the baseline. The questionnaire consisted of five main sections:

1. Demographics: Basic demographic data such as age, gender, and the city of origin of the respondents were collected.
2. Educational Profile: Data regarding the educational profile of the respondents (continuation of studies, BSc, MSc) were collected.
3. Employment Profile: Information about the employment profile was requested, including years of experience, placement in various sectors of the job market covered by the Economic Engineering field (e.g., construction, production, services, telecommunications, finance, etc.), and the number of different employments to date.
4. Job Satisfaction: Job satisfaction was evaluated concerning monthly salary, working hours, work environment, interest in the job, and career prospects.
5. IE Studies at UPT and the Job Market: This section reveals how easy it is to find a job for those holding IE degrees and how the elements of the university (curriculum, internships, university image, ALUMNI network) have influenced employment.

The questionnaire was made publicly available to the graduates of the Department of Production Management at the Faculty of Mechanical Engineering. The first students graduated in 2013, three years after the establishment of the department in 2010. The survey was communicated through email notifications, announcements on Facebook and LinkedIn. The survey was completed on February 7, 2023, gathering a total of 69 responses, of which 5 were deemed invalid.

Analysis and Interpretation of the Data

In this chapter, the results of the survey conducted with students and graduates of the Economic Engineering program at the Polytechnic University of Tirana are presented. The presentation of the results is done through tables and graphs accompanied by the corresponding analysis to assess the impact of the factors mentioned above on the integration of these students into the job market in Albania.

Employment field	Female	Male	Bachelor	Master	Both BSc & MSc	Public sector	Private sector	Self-employed	NGO
Construction sector	12.20%	0	0	66.67%	6.12%	0	10.87%	0	0

Education sector	31.70%	50%	20%	0	40.82%	12.50%	43.48%	0	0
Manufacturing sector	26.83%	25%	60%	33.33%	22.45%	50%	19.56%	50%	100%
Financial sector	19.51%	0	20%	0	14.29%	37.50%	10.87%	0	0
Transportation sector	4.88%	12.50%	0%	0	8.16%	0	8.70%	50%	0
Telecommunication	4.88%	12.50%	0%	0	8.16%	0	6.52%	0	0

The majority of participants in this survey are employed in the manufacturing industry, with 31.7% of females and 50% of males working in this sector. For females, transportation and telecommunications are the fields where a lower percentage of them work, accounting for 4.88% each. In contrast, for males, the fields of construction and the financial sector are the dominant ones. Individuals who have completed only their bachelor's studies at UPT are more often placed in the service industry, where a significant percentage of them work in this direction. Those who have completed only their master's studies at UPT are concentrated in the construction industry, while those who have completed both bachelor's and master's studies at UPT are more likely to be employed in the manufacturing industry. Most of the respondents are focused on the private sector, where the majority of them are employed in the manufacturing industry, accounting for 43.48% of them, while fewer are employed in the telecommunications sector (6.52%). Those working in the public sector are more oriented towards the service industry, with 50% of them working in this sector.

Region	Family	Friends/acquaintance	Public programs	Aacademic staff	Independent research
Durrës	0	28.57%	14.285%	14.285%	42.86%
Elbasan	40%	20%	0	0	40%

Berat	0	50%	0	50%	0
Fier	0	25%	0	25%	50%
Shkodër	0	50%	0	50%	0
Vlorë	0	50%	0	0	50%
Gjirokastër	0	0	0	0	100%
Korçë	0	0	0	33.33%	66.67%
Lezhë	0	0	0	0	100%
Kukës	33.33%	0	0	0	66.67%
Tiranë	21.73%	17.4%	13.04%	17.4%	30.43%

Based on the data analysis, it can be observed that respondents from the Tirana region primarily found their first job through independent job searches, with 30.43% of them. Other channels such as friends/acquaintances and university staff had less influence. Additionally, for individuals coming from Durrës, Fier, Gjirokastra, Korça, Lezhë, and Kukës, the most important channel for finding their first job was independent job searching. On the other hand, for those from Berat and Shkodra, friends/acquaintances and university staff were the most important channels for finding their first job.

Qarku	Employment before graduation	Employment before graduation	Immediately after graduation	Immediately after graduation	<6 months after graduation	<6 months after graduation	6-12 months after graduation	6-12 months after graduation
	Bachelor	Master	Bachelor	Master	Bachelor	Master	Bachelor	Master

Durrës	14.28%	28.58%	14.28%	28.58%	0	14.28 %	0	0
Elbasan	40%	20%	20%	20%	0	0	0	0
Berat	0	0	0	100%	0	0	0	0
Fier	50%	25%	0	25%	0	0	0	0
Shkodër	0	50%	0	50%	0	0	0	0
Vlorë	100%	0	0	0	0	0	0	0
Gjirokastër	0	60%	0	20%	0	0	0	20%
Korçë	0	33.335 %	33.335 %	33.33%	0	0	0	0
Lezhë	0	100%	0	0	0	0	0	0
Kukës	33.33%	0	0	0	33.335 %	0	33.335 %	0
Tiranë	21.74%	26.1%	8.69%	34.78%	0	8.69%	0	0

To analyze the difficulty that students from different regions face in finding a job, we grouped the respective regions and the time when they found their first employment. It is noted that individuals from the Vlorë region were employed before completing their bachelor's degree, and a high percentage of them are also from the Fier region. The majority of respondents from various regions found their first job before completing their master's degree. Furthermore, a significant portion of them started a job immediately after completing their master's degree, with 100% of those from Berat being employed right after their master's degree, and 34.78% of those from Tirana.

On the other hand, those who were employed 6-12 months after completing their bachelor's degree and are from Kukës are 33.335%. We can see that 20% of respondents from Gjirokastra faced more difficulty in finding a job, with 20% of them being employed 6-12 months after completing their master's degree. None of the respondents from any region took more than 12 months after completing their master's or bachelor's degree to get employed. Therefore, from the statistics, it can be observed that finding a job has not been very difficult for individuals from each region.

Conclusions

Employment Sectors: Manufacturing appears to be the dominant sector where graduates from the program find employment, with a significant percentage working in this industry. Other sectors such as construction, finance, and services also attract graduates.

Job Search Channels: Independent job searching is the most common method for finding the first job among respondents, followed by channels like friends/acquaintances and university staff. This highlights the importance of self-initiative in the job search process.

Regional Differences: There are variations in the timing of employment and the sectors where graduates find jobs based on their regions of origin. For instance, individuals from Vlorë and Fier tend to find employment before completing their bachelor's degree, while those from Berat and Tirana are more likely to secure employment immediately after completing their master's degree.

Alignment with Study Profile: A significant portion of respondents believe that their current jobs align reasonably well with their study profiles. However, there is also a noticeable percentage who feel that their current jobs do not align with their study profiles, indicating a potential mismatch between education and employment.

Private vs. Public Sector: Respondents are primarily focused on the private sector for employment opportunities, with a significant proportion finding jobs in manufacturing within this sector.

Relatively Easy Job Market Entry: The data suggests that graduates from various regions did not face significant difficulties in finding employment, with the majority securing jobs within 12 months of completing their bachelor's or master's degrees.

In summary, the study provides insights into the employment patterns and experiences of Economic Engineering graduates from UPT. It highlights the importance of regional variations, independent job searching, and the alignment of study profiles with actual jobs. Overall, it suggests a relatively favorable job market for graduates in this field.

Discussion

In this section, we engage in a discussion that connects the findings of our study with relevant literature, providing a broader context for understanding the employment experiences of Economic Engineering graduates at the Polytechnic University of Tirana (UPT).

Employment Sectors, this study revealed that manufacturing is the dominant sector where UPT graduates find employment. This observation aligns with global trends, where engineering graduates often seek opportunities in manufacturing and related industries due to the strong demand for technical skills in these sectors. The emphasis on manufacturing suggests that the Economic Engineering program at UPT effectively addresses the needs of the local job market, which often includes manufacturing activities.

Job Search Channels, the prevalence of independent job searching as the primary method for graduates to secure their first job mirrors findings in the literature. Graduates, especially those in technical fields, tend to proactively search for opportunities through online platforms, job fairs, and direct applications. However, the role of personal networks, represented by friends/acquaintances, is also consistent with research highlighting the significance of social connections in the job search process.

Regional Differences, this study identified regional variations in both the timing of employment and the sectors where graduates secure jobs. This aligns with the broader literature on regional labor markets, where factors such as local industries, economic conditions, and networking opportunities influence employment outcomes. The findings underscore the importance of considering regional dynamics when designing career support programs and policies.

Alignment with Study Profile, the perception among some graduates that their current jobs do not align with their study profiles echoes a common concern in higher education. Research indicates that mismatches between education and employment can be attributed to a variety of factors, including changes in labor market demands, evolving job roles, and the adaptability of educational programs. This finding underscores the need for continuous curriculum evaluation and alignment with industry needs.

Private vs. Public Sector, the strong preference for the private sector among UPT graduates aligns with the global trend of engineering graduates seeking opportunities in the private industry. This preference may be driven by the perceived potential for career growth, competitive salaries, and exposure to innovative technologies in the private sector. However, it is essential to monitor whether this trend impacts the availability of engineering talent in the public sector, especially in roles vital for public infrastructure and services.

Relatively Easy Job Market Entry, the ease with which graduates from various regions found employment within 12 months of completing their degrees is a positive indicator. This aligns with research indicating that engineering graduates typically experience relatively low unemployment rates and strong job market entry. However, it's crucial to continue monitoring employment trends to ensure that they remain favorable for graduates in the field.

Recommendations for Further Studies/Research, in light of our findings and the discussion above, future research in this area should explore the long-term career trajectories of Economic Engineering graduates from UPT. Understanding whether their early employment experiences align with their later career progression can provide valuable insights into the impact of their education.

Additionally, more in-depth investigations into the specific skills and competencies that employers in the manufacturing sector seek from graduates can inform curriculum enhancements. Furthermore, examining the evolving landscape of the Albanian job market and its implications for engineering graduates can help institutions and policymakers make informed decisions regarding educational programs and workforce development.

In conclusion, our study offers a comprehensive view of the employment experiences of Economic Engineering graduates at UPT. The discussion section underscores the importance of aligning education with industry needs, understanding regional labor market dynamics, and continuing research efforts to support the career success of graduates in this field.

Recommendations for Further Studies/Research

As we conclude this study, it is important to highlight the need for further research in several areas. Future studies could delve deeper into the factors that contribute to the alignment or misalignment of graduates' jobs with their study profiles, exploring the role of curriculum design and industry-specific skills development.

Moreover, understanding the evolving dynamics of the job market in Albania and its responsiveness to graduates from different regions and academic backgrounds could provide valuable insights. Long-term career trajectories and job satisfaction of Economic Engineering graduates can also be areas of interest for researchers aiming to offer comprehensive guidance for both educational institutions and graduates themselves.

In conclusion, this study provides a foundational understanding of the employment landscape for Economic Engineering graduates from UPT. It offers valuable insights for program evaluation, career counseling, and policy development. Further research in the mentioned areas can contribute to more tailored educational programs and enhanced career prospects for graduates.

References

[1] D.Rodrik, 1996. Understanding Economic Policy Reforms. Journal of Economic Literature, Volume 34, pp. 9-41.
[2] D.Salvatore, T. Hatcher, 1991. Inward and Outward Oriented Trade Strategies. Journal of Developing Studies, Volume 27, pp. 7-25.
[3] European Commission/EACEA/Eurydice (2015): The European Higher Education Area in 2015: Bologna Process Implementation Report, 304 p. Luxembourg: Publications Office of the European Union [revised 2015.09.17] http://eacea.ec.europa.eu/education/ eurydice/documents/thematic_reports/182EN.pdf.
[4] Krawczyk, E (2014): Instruments for higher education adjustment to local labour market needs. Polish Journal of Management Studies, Vol. 1., 104-114
[5] Marin-Garcia, J. A. (2011) Where are published research articles related to university teaching of Industrial Ingineering? Worging papers on operations management, 2(1), 01-06.
[6] Salvendy, G. (2001) Handbook of industrial Engineering. Technology and operations management. New York: John Wiley&Sons. Doi:101002/9780470172339.
[7] Steers, R. M. & Porter, L. W., 1987. Motivation and Ëork Behavior. Neë York: McGraëHill.
[8] Wei, J. (2005). Engimeering education for a post-industrial word. Technology in Society, 27 (2). 123-132. doi:10.1016/j.techsoc.2005.01.001.
[9] CNAM Nouvelle Aquitaine – organizwm qw merret me formimin profesional nw nivel universitar, ku formatorwt vijnw nga mjedisi i punws. Burimi: https://www.cnam-nouvelle-aquitaine.fr/unite-d-enseignement,information-et-communication-pour-l-ingenieur-oral-probatoire-automatique,ENG223
[10] Draft strategjia kombëtare për edukimin (2021-2026), burimi: https://planipolis.iiep.unesco.org/sites/default/files/ressources/albania_draft_national_education_strategy_2021-2026.pdf
[11] Burimi: https://www.oiq.qc.ca/wp-content/uploads/documents/DAP/guide-autodeveloppement-competences-communication.pdf&https://www.oiq.qc.ca/wp-content/uploads/documents/DAP/guide-autodeveloppement-competences-communication.pdf