Evaluation of Business Students' Satisfaction from Internship by using a Multi-criteria Method: A Case Study from Greece

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Abstract

Internship programs organized by universities are vital since they introduce students to a real business environment while reinforcing the reputation and attractiveness of the institution. This research study examines university business students' satisfaction with internship programs concerning various factors, such as internship effectiveness, organization, object, and implementation company. A specially developed questionnaire was conducted and applied during March to May 2021, and 173 cases were collected. The research outcomes of student satisfaction were analyzed with the Multicriteria Satisfaction Analysis (MUSA) method. MUSA is considered an aggregation–disaggregation approach developed on the qualitative analysis regression. According to the calculated weights put on the criteria, the organization of the internship was the most crucial criterion, while more emphasis should be put on the object of the internship and on the internship effectiveness which the students underappreciate.

Keywords

Business students, student satisfaction, internship program, multi-criteria analysis

1. Introduction

Education is an instrument that helps societies move forward since, without education, society would collapse as its established members expire. Knowledge dissemination is the main objective of an educational system. According to Bass (1997), education consists of all the knowledge that a person has acquired up to the present time and continues to grow until the end of the person's life. Therefore, the education received in schools, universities and lifelong learning training centers is a small part of a person's education, including other informal education sources such as the knowledge gained through the occupational and social experience during a person's life (Gupta et al., 2010). Greece has a high percentage of formal educational attainment among the OECD member countries since 87% of the population aged between 25-34 are graduates of at least upper secondary education.

In comparison, 42.8% hold a tertiary education degree. On the other hand, Greece has the highest percentage among the OECD countries of the unemployment rate for the tertiary education graduates, at 23.2% (OECD, 2020). Given the difficulty of filling vacancies with staff with appropriate knowledge and skills, the consequences of the Greek debt crisis of 2009-2018, and also the pandemic, new initiatives are needed, including an emphasis on student internships.

An intern "is someone working in a temporary position with an emphasis on education rather than employment. Thus, an internship is similar in several respects to an apprenticeship" (Weible, 2009). An essential prerequisite for the successful implementation of an internship program is the study of the satisfaction of the students that take part in internships. The internship helps students understand the business environment and enables companies to take advantage of new knowledge, skills and

innovative ideas, which students transfer through close contact with the academic and research community. Also, companies that offer quality internships have the opportunity to create a pool of valuable human resources, through which they can draw capable future executives, upgrade their corporate image and promote their reputation as employers (employer brand). This cooperation between universities and businesses must be strengthened since sometimes there is a gap between the theoretical knowledge offered by the universities and the actual job demands (Bhaskar, 2009).

Therefore, this paper aims to explore student satisfaction and locate and analyze the factors that are involved in it by applying a multi-criteria methodology known as MUSA (Grigoroudis and Siskos, 2002, Drosos et al., 2019).

2. Materials and Methods

The research aims to measure student satisfaction from the internship program organized by the school of Administrative, Economics and Social Sciences at the University of West Attica.

The University of West Attica is situated in the area of Egaleo in Athens-Greece. It is the third-largest university in Greece under the criterion of registered students since it has over 50,000 registered students in 27 departments operating under five schools. This university was established in 2018 because of the Technological Educational Institute of Athens and the Technological Educational Institute of Piraeus merger. Since 2018 there has been a new course program offered to all students. Still, the old program is also in operation until the graduation of students who have selected to get the degree of a technological orientation.

The questionnaire was applied to 173 business students who followed an internship program for 2021. The survey was conducted in March-May 2021. In this research, customer satisfaction criteria and sub-criteria are selected based on an extensive review of the relevant literature (Drosos et al., 2019, Skordoulis et al., 2018, Drosos et al., 2021a, Drosos et al., 2021b, Papasotiriou et al., 2019, Drosos et al., 2015, Drosos et al., 2014, Drosos et al., 2020). The satisfaction criteria were based on the relevant literature concerning customers' satisfaction, as follows:

- Implementation company: satisfaction from the private or public company which offered the internship experience to the students
- Object of internship: satisfaction from the daily tasks and job relevancy to the student's previous knowledge
- Internship organization: satisfaction from the total organization and monitoring of the internship program from the university
- Internship effectiveness: satisfaction from the benefits and knowledge gained from the internship program

Table 1
Sample Demographics

		% Percent
Gender	Male	34.2
	Female	65.8
Age	23 years or less	24.7
	24 years and up	75.3
Year of study	4th	19.2
	5th	11.0
	6th	13.7
	7th	21.9
	8th	19.2
	9th	15.1
Selected Program	Old course syllabus	24.7
	New course syllabus	75.3

The satisfaction survey results were based on MUSA's multi-criteria model (Multicriteria Satisfaction Analysis). The Multi-criteria Satisfaction Analysis (MUSA) method was used to measure customer satisfaction. The technique is an ordinal–regression-based approach used to assess a set of collective satisfaction functions so that the global satisfaction criterion becomes as consistent as possible with customers' judgments (Grigoroudis and Siskos, 2002). This method inferred an additive collective value function Y* and a set of partial satisfaction (value) functions Xi*, given customers' global satisfaction Y and partial satisfaction Xi according to the i–th criterion (ordinal scaling). The main research objective was to achieve the maximum consistency between the value function Y*and the customers' judgments Y. Based on the modelling of preference disaggregation approach (Jacquet-Lagreze and Siskos, 1982, Siskos and Yannacopoulos, 1985), the ordinal regression equation was termed as follows:

$$
\begin{cases}
Y^* = \displaystyle\sum_{i=1}^{n} b_i X_i^* \\[2em]
\displaystyle\sum_{i=1}^{n} b_i = 1
\end{cases}
\tag{1}
$$

Where $\tilde{Y}^*$ represents the estimation of the global value function, n represents the number of criteria, bi is a positive weight of the i–th criterion, $\sigma+$ and $\sigma-$ are the overestimation and the underestimation errors, respectively, and the value functions Y* and Xi are normalized in the interval [0,100]. The global and partial satisfaction Y* and Xi* are monotonic functions normalized in the interval [0,100]. Thus, in order to reduce the size of the mathematical program, removing the monotonicity constraints for Y* and Xi*, the following transformation equations were utilized:

$$
\begin{cases}
z_m = y^{*m+1} - y^{*m} & \text{for } m = 1,2, \ldots, a-1 \\
w_{ik} = b_i\left(x_i^{*k+1} - x_i^{*k}\right) & \text{for } k = 1,2, \ldots, a_i - 1 \text{ και } i = 1,2, \ldots, n
\end{cases}
\tag{2}
$$

where y*m is the value of the ym satisfaction level, xi*k is the value of the xik satisfaction level, and α and αi are the number of global and partial satisfaction levels. According to the aforementioned definitions and the assumptions, the basic estimation model can be written in alignment with the following linear program formulation:

$$
\begin{cases}
[\min]F = \displaystyle\sum_{j=1}^{M} \sigma_j^+ + \sigma_j^- \\
\text{under the constraints:} \\
\displaystyle\sum_{i=1}^{n}\sum_{k=1}^{t_{ji}-1} w_{ik} - \sum_{m=1}^{t_j-1} z_m - \sigma_j^+ + \sigma_j^- = 0 \; \forall j = 1,2, \ldots, M \\
\displaystyle\sum_{m=1}^{a-1} z_m = 100 \\
\displaystyle\sum_{i=1}^{n}\sum_{k=1}^{a_j-1} w_{ik} = 100 \\
z_m, w_{ik}, \sigma_j^+, \sigma_j^- \geq 0 \; \forall \; m,i,k,j
\end{cases}
\tag{3}
$$

where M is the number of customers, n is the number of criteria, and xi*j, y*j are the jth level on which variables Xi and Y were estimated.

3. Results

The results given by MUSA method showed that students seem to be totally satisfied with the quality of internship. Based on Figure 1, the total student satisfaction amounted to a high 94.27% scoring.
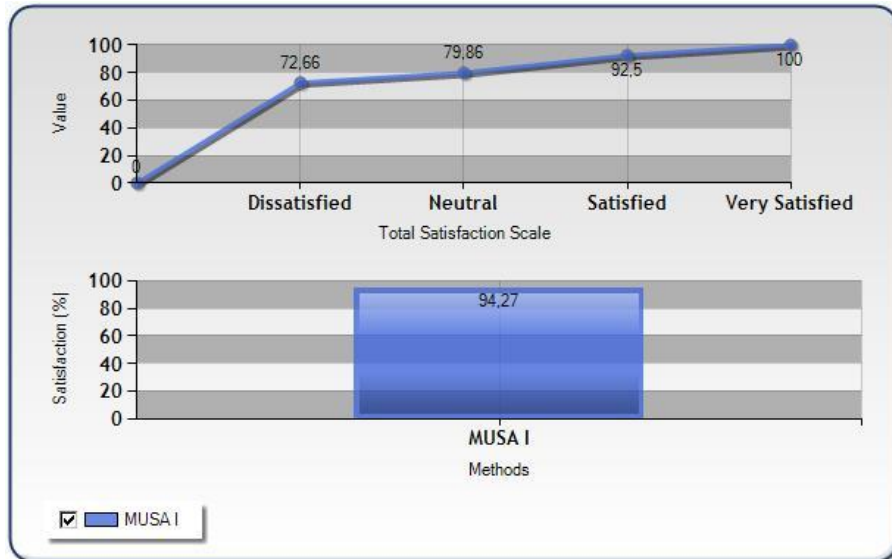

Figure 1: Satisfaction Function

Concerning calculating the weights presented in Figure 2, the criterion of "Internship organization" had the highest weight 55.3%, followed by "implementation company" at 21.34%. In comparison, the "Internship effectiveness" criteria and "object of internship" had 11.89% and 11.47%, respectively.
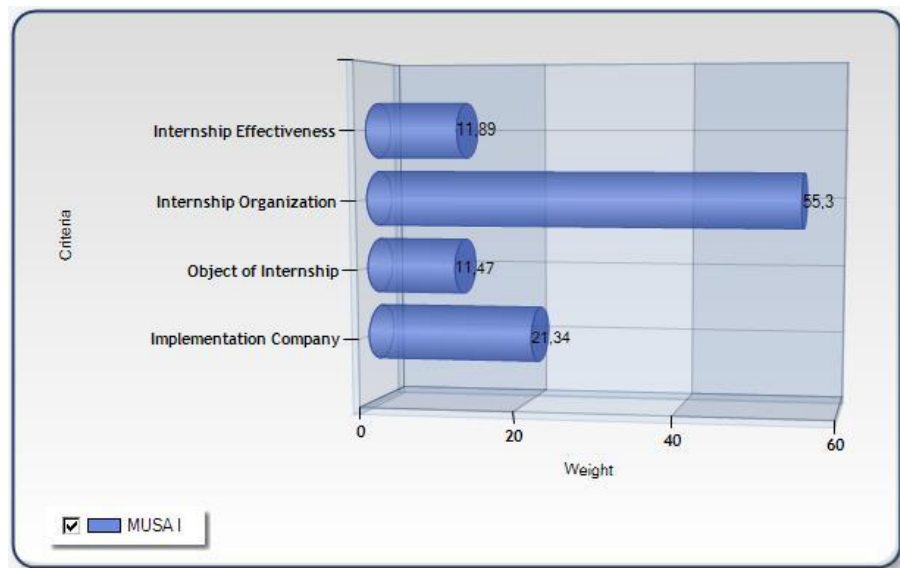

Figure 2: Satisfaction Criteria Weights (importance)

Figure 3 pointed out that most of the survey criteria showed a reasonably high satisfaction rate. The criterion of " Internship organization" sustained the highest satisfaction with a percentage of 93.74%, followed by the criterion " implementation company" at 90.27% scoring. In comparison, students were also very satisfied with the criterion of "Internship effectiveness" (84.87%). Finally, the criterion with the lowest satisfaction rate is "object of internship".
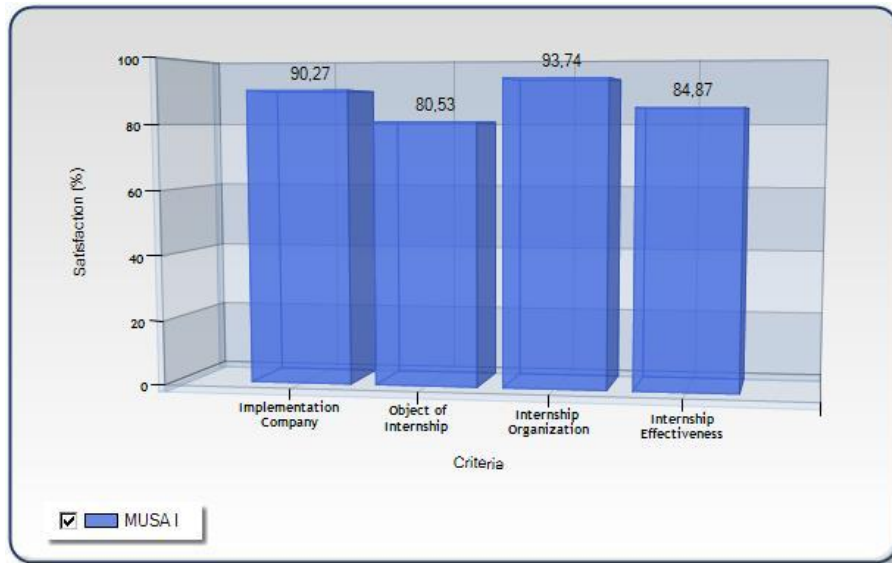
Figure 3: Students' Satisfaction with the Main Criteria(performance)

Figure 4 confirmed the initial results regarding the demanding level of students based on forming a global satisfaction function and the degree of the average total demand index. Students were less demanding regarding the Internship organization, which was the criterion with the highest level of importance.
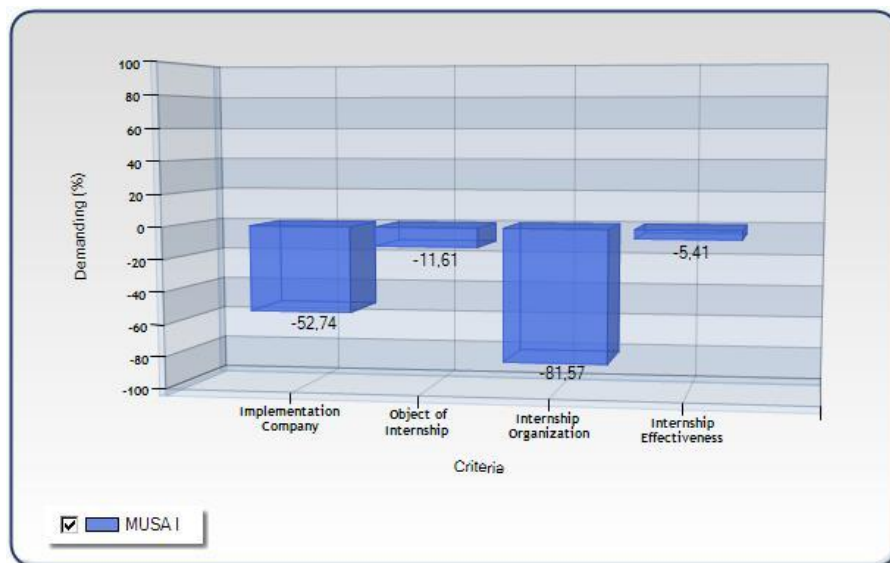

Figure 4: Students' satisfaction Demanding Criteria.

Moreover, the action diagram of Figure 5 denoted that none of the criteria fell in the action area (high importance-low satisfaction). This means that there were no critical criteria in which students were dissatisfied. Furthermore, the criterion of Internship organization fell in the leverage opportunity area, so this criterion may be considered as the competitive advantage of UNIWA business school internship program, which should be further improved and promoted.
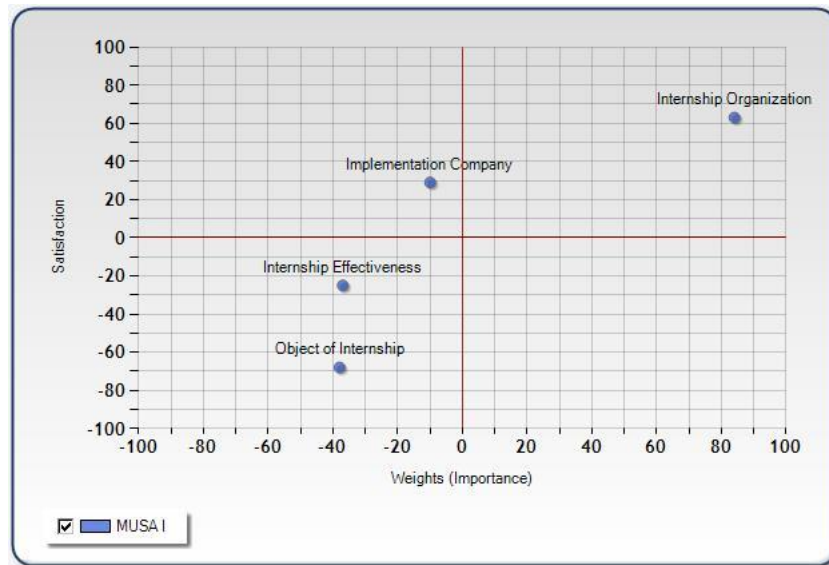
Figure 5: Action Diagram.

4. Discussion

Through the internship program, the first contact of the graduate students with their profession is achieved. The student integrates into the work environment of a well-organized company that is active in the broader field of the student's specialization and actively participates in the production process. Students acquire experiences beneficial for their subsequent professional career in procedures concerning the operation and organization of a business, which are impossible to achieve, through the teaching of a course (Knouse and Fontenot, 2008). Graduates begin to recall the theoretical and laboratory knowledge they acquired during studies at the Educational Institution, apply it in practice, and cope with the assigned problems. Until now, in the educational process, this was done hypothetically through exercises, topics, and exams, while now, it is called to face a real problem for the first time. From the most crucial issue, such as assigning a study, supervising a production process, coordinating a workshop on a construction site, dealing with a fault, customer service, patient care, etc., to the most insignificant, concerning the daily operation of the business.

During the internship, the student is in a transitional stage, he /she is certainly not an employee, but neither is he/she a student in the classical sense of the word. The student is trained in a real work environment, and this does not require full integration in it. To achieve this, students must show responsibility, work harmoniously with their colleagues, obey their boss's orders, be formal, polite, discreet, willing, and generally show their best self.

In the context of the evaluation of the internship prepared by the student, the supervising professor regularly visits the company to have a complete picture of the conditions of education/work of the student. These visits are usually a first-class opportunity for the supervisor professor to get acquainted with the company's executives. Consequently, they are the starting point for essential collaborations, which mainly concern solving technical problems that its available staff cannot address. A typical example of the benefits of an internship for both the Department and the company is that combining the institution's experience and internship results in most remarkable work. The solution to the company's real problem encloses an immediate and tangible application. It requires the direct cooperation of the student, the supervising professor, and the company's executive.

The internship can be a competitive point to attract students to the university since that program can improve the university's reputation and connection to society and also help businesses in a period of economic development (Weible, 2009).

5. Conclusions

This satisfaction survey highlighted the competitive advantages of the internship program offered to business students at the University of West Attica. According to the calculated weights put on the criteria, the organization of the internship was the most crucial criterion, while more emphasis should be put on the object of the internship and on the internship effectiveness, which the students underappreciate. An improvement to those areas, should make the internship experience more targeted to the student's personal needs and ambitions. The university policymakers should continue to invest in internship programs since this includes many advantages and connects the student to the real business world.

6. References

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