Impact of COVID-19 Pandemic on Graduates Seeking Jobs

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Summary

The appearance of COVID-19 virus has affected many aspects of our life. These include and not limited to social, financial and economic changes. One of the most important impacts is the economic effects. Many countries have taken actions to continue the teaching process through online teaching platforms. The students are expected to graduate during the next few semesters with certificates that include some online-completed courses and their graduation certificates are called mixed certificates.

This paper considers graduation mixed certificates with some online courses and its impact on graduates seeking jobs. First, we study how well the mixed certificates are accepted by job market. In other words, how different companies, organizations and even governmental entities would accept such certificates when hiring. We study the perception of job market for such certificates for different learning fields. Secondly, we study how well the online courses are accepted by the students keeping in mind that these students are used to traditional face to face teaching. Finally, we paper our results and recommendations according to the collected data from the surveys. Some of the results show that about 60% of companies don't have policies to encourage hiring graduates with mixed certificates. Also, colleges are almost divided evenly between preferring face to face and preferring online teaching.

Key words: Computer science, Covid-19, Graduates seeking jobs

1. Introduction

The wide spread of COVID-19 virus all over the world has changed our lives in many aspects. People's life has been changed socially, financially and economically due to the COVID-19 virus. One of the most important changes is the economic changes. The economic changes could have direct or indirect consequences on people. This proposal focuses on the economic consequences COVID-19 and specifically its impact on graduates seeking jobs.

Because of the need to social distancing to prevent the spread of the virus, many countries have taken actions towards suspending schools and universities. For example, Saudi Arabia was one of the first countries to take such measures to protect students in schools and universities. Suspending schools and universities was proven to be one important measure to protect the students and their families and the society as a whole. At the same time, countries always tried to continue the teaching process through online learning [1,2,3,4,10]. In such cases, students who are currently enrolled in universities are completing some courses in their study through online platforms. These students are expected to graduate during the next few semesters with certificates that include some online-completed courses and some traditional face-to-face courses (This type of learning is called blended learning [5,6,7,8,9]). In this proposal, we call such certificates, mixed certificates.

University graduates with mixed certificates need to be hired after graduation. In this proposal, we study how different companies, organizations and even governmental entities would accept such mixed certificates. We plan to study the perception of job market for such certificates for different learning fields.

There is a number of different teaching systems that exist in different countries. The most popular system is the traditional face-to-face teaching system. In this traditional system [11,12], all the courses are taught in classes with personal contact. Classes that need practical skills benefit very much from the system where the students are allowed to attend classes and labs physically and get direct guidance from instructors.

On the other hand, distance learning (or online learning) [13,14,15,16,17,18,19,20] started as another way of teaching which offers new opportunities to

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people who cannot attend classes physically. In distance learning, all classes are conducted virtually online and no face-to-face interaction. This type of learning provides course materials through Internet and also facilitates the interaction between instructors and students. However, the certificates earned completely virtual through distance learning does not have good reputation where all the courses within these programs are online courses. These certificates are perceived by job market as having lower quality as compared to traditional certificates earned with face-to-face teaching strategies.

This paper considers the graduation certificates with some face-to-face courses and some online courses, mixed certificates, and their effect on graduates seeking jobs. Again, because of COVID-19 pandemic, our universities are going to issue mixed certificates for all currently enrolled students. This paper has two-fold. Firstly, we try to answer the question, how well the mixed certificates, are accepted by job market. This is in the view that a student gets grade of Pass/Fail in online courses if the course grade would hurt his grade point average (GPA). We consider several learning fields such as Computer Science, Engineering, Medical and Trading.

The second track considers the question, how well the online courses are accepted by the students keeping in mind that these students are used to traditional face-to-face teaching. We focus on students from computer science and engineering. The results could lead us to recommending that some courses could be online courses even in normal times not only in pandemic times. The importance of this wok can be characterized as follows.

Saudi Arabia effort in containing the COVID-19 pandemic is noticeable, and this work would help in measuring the consequences of outbreak of virus at the economic level.

Students in traditional programs are completing some of their courses online, and it is important to gather their feedback to help improving the online teaching process.

Classification of the learning fields with mixed certificates according to their level of acceptance by job market is important to universities and decision makers.

Studying the effect of including some specific online courses in the traditional curriculum is important to scientific departments such as computer science.

Our findings and recommendations could benefit the job market as well as the universities.

This paper is organized as follows. The next section describes the methodology we followed int his paper. Section 3 discusses the companies' survey results. In section 4, we discuss the results of the students' survey. Section 5 summarizes the results and gives some recommendations. Finally, in section 6, we give some concluding remarks.

2. Methodology

In this research, we started by surveying the different existing teaching strategies. This survey looked at different ways and mainly focused on traditional and virtual teaching strategies. We looked at techniques of such systems and the acceptance of these strategies by job market as well as students.

The results of the survey would be important in comparing these techniques to the new technique of mixed teaching strategies.

We measured the acceptance of the new techniques of mixed strategies (some courses are traditional face to face while some other courses are conducted online). Measuring the acceptance of the new strategy is done through questionnaires. Two main surveys are designed and conducted. The first is targeting and is answered by companies, entities, and even governmental organizations. This questionnaire would give us the answer on how well such mixed certificates are accepted by job market. Also, it classifies different fields of science in relation to the acceptance of their certificates. The second questionnaire is targeting and is answered by students who are used to traditional way of teaching and were switched to distant learning strategies because of the Coronavirus pandemic.

Finally, we analyzed the questionnaires data and based on the findings, some results and recommendations are suggested. The next section shows the results of the companies' survey.

3. Results of Companies' survey

In this section, we analyze the questionnaires data for the survey directed to companies and organizations. This survey tries to measure to what extent the different hiring entities are accepting mixed certificates. In other words, we try to measure the

impact of having online courses on the process of job seeking.

Our survey target different companies/organizations working in different fields. A total of 20 Companies participated in the survey have different fields like Computer Science (64%), Mechanical Engineering (7 %), Medical (15%), and Trading (7 %).

Based on the data, people who participated in the survey were classified as 74% as Higher management, 13% as Human resources, and 13% as Technical personal. The questionnaire contains nine questions that measure how graduates seeking jobs will be affected by Covid-19 pandemic.

Question 1: This was related to the degree to which the companies adopted online work environment during Covid-19 pandemic. This question tries to see how online environment is important to different companies and how well equipped are the companies to switch to online environment. The results were as follows.

13.3% of companies adopted the online environment completely.

66.7% of companies adopted the online environment with a percentage 75-99.

6.7% of companies adopted the online environment with a percentage 50-74.

6.7% of companies adopted the online environment with a percentage 25-49.

6.7% of companies adopted the online environment with a percentage 0-24.

From the above data, it is clear that most companies (86.6%) used online platforms in most of the tasks related to their work. Only small percentage (13.4%) either used online platforms partially or never used online platforms.

This indicates that most companies have sufficient infrastructure to switch to online environment and the rest of companies need to upgrade their digital infrastructure.

Question 2: This was related to the degree to which the companies prefers graduates who are familiar with online communication platforms. The question measures the tendency of companies to have employees who have high technological skills. The results were as follows.

26.7% of companies strongly agree to prefer students who are familiar with online communication platforms.

40.7% of companies agree to prefer students who are familiar with online communication platforms.

26.7% of companies weakly agree to prefer students who are familiar with online communication platforms.

From the above data, it is clear that most of companies prefer to have employees who have high technological skills. 26.7% of companies either have their own training courses for new employees or they don't care much about technological skills.

Question 3: This was related to whether the organization/company has good knowledge about the quality of online courses. This question tries to measure the degree of awareness of companies about online courses and their quality. The results were as follows.

20% of companies strongly agree to have good knowledge about the quality of online courses.

73.3% of companies agree to have good knowledge about the quality of online courses.

6.7% of companies weakly agree to have good knowledge about the quality of online courses.

From the above data, it is clear that most of companies (93.3%) have good knowledge about the quality online courses. This indicates that the decisions of most companies related to mixed certificates would be justified.

Question 4: This was related to whether the organization/company discussed the quality of new graduates with online courses during Covid-19 pandemic. The question tries to measure the awareness of the companies about the effect of pandemic issues related to education on graduates. The results were as follows.

13.3 % of companies strongly agree that they discussed the quality of new graduates with online courses during Covid-19 pandemic.

20% of companies agree that they discussed the quality of new graduates with online courses during Covid-19 pandemic.

46.7% of companies weakly agree that they discussed the quality of new graduates with online courses during Covid-19 pandemic.

20% of companies don't agree that they discussed the quality of new graduates with online courses during Covid-19 pandemic.
From the above data, it is clear that few of companies (33.3%) have already discussed the quality of new graduates during the pandemic era. However, 66.7% of companies are not aware that pandemic could have impact of graduates' quality or at least was not discussed.

Question 5: This was related to whether the organization/company hired before, graduates with completely online certificates. The question measures the acceptance of online certificates by different companies. The results were as follows.
13.3% of companies agree that they hired before, graduates with completely online certificates.
26.7% of companies weakly agree that they hired before, graduates with completely online certificates.
60% of companies don't agree that they hired before, graduates with completely online certificates.
From the above data, only few companies (13.3%) did hire graduates before with completely online certificates and the companies were open to accept such certificates. However, 86.7% of companies did not hire before graduates with online certificates. This could be due to the reputation of online certificates which tends to be not having high quality.

Question 6: This was related to whether the organization/company hired before, graduates with mixed certificates. The question measures the acceptance of mixed certificates by different companies. The results were as follows.
40% of companies agree that they hired before, graduates with mixed certificates.
40% of companies weakly agree that they hired before, graduates with mixed certificates.
20% of companies don't agree that they hired before, graduates with mixed certificates.
From the above data, almost less than half the companies accept mixed certificates and almost more than half the companies did not accept mixed certificates for hiring. In other words, companies are more open to deal with mixed certificates than online certificates.

Question 7: This was related to whether the organization/company has policies that encourage hiring graduates with mixed certificates. The question measures the tendency of companies to hire graduates with mixed certificates. The results were as follows.
13.3% of companies agree that they have policies that encourage hiring graduates with mixed certificates.
46.7% of companies weakly agree that they have policies that encourage hiring graduates with mixed certificates.
40% of companies don't agree that they have policies that encourage hiring graduates with mixed certificates.
From the above data, it is clear that most companies (86.7%) don't have tendency to hire graduates with mixed certificates. Only 13.3% of companies encourage having graduates with mixed certificates.

Question 8: This was related to whether the organization/company has plans that postpone hiring graduates because of having mixed certificates. The results were as follows.
6.7% of companies agree that they have plans that postpone hiring graduates because of having mixed certificates.
40% of companies weakly agree that they have plans that postpone hiring graduates because of having mixed certificates.
53.3% of companies don't agree that they have plans that postpone hiring graduates because of having mixed certificates.
From the above data, it is clear that most of companies (93.3%) don't intend to postpone hiring because of mixed certificates.

Question 9: This was related to whether the organization/company rates graduates with regular certificates to be better qualified than graduates with mixed certificates. The results were as follows.
20% of companies strongly agree that they rate graduates with regular certificates to be better qualified than graduates with mixed certificates.
40% of companies agree that they rate graduates with regular certificates to be better qualified than graduates with mixed certificates.
6.7% of companies weakly agree that they rate graduates with regular certificates to be better qualified than graduates with mixed certificates.
33.3% of companies don't agree that they rate graduates with regular certificates to be better qualified than graduates with mixed certificates.

From the above data, it is clear that 60% of companies rate graduates with regular certificates to better qualified than graduates with mixed certificates.
Based on the above findings, some recommendations are made section 5.

4. Results of Students' Survey

In this section, we analyze the questionnaire's data for the survey directed to students. This survey tries to measure how well the online courses are accepted by the students and comparison to face to face courses from their point of view. We focus on students from computer science and engineering majors. A total of 30 students participated in the survey. Students were enrolled in different levels (from 3rd level to 10th level.) It should be noted that the data recorded here is based on the students' point of view.

Question 1: This was related to the degree different colleges have adopted online teaching environment during Covid-19 pandemic. The question tires to see to what extent colleges used online courses as an alternative solution during the pandemic. The results were as follows.
33.3% of colleges adopted the online environment completely.
20% of colleges adopted the online environment with a percentage 75-99.
6.7% of colleges adopted the online environment with a percentage 25-49.
40% of colleges adopted the online environment with a percentage 0-24.
From the above data, it is clear that almost one third of colleges used online platforms completely while two thirds of colleges used online teaching with different percentages.

Question 2: This was related to whether colleges prefer face to face teaching than online teaching or not. The question tries to get the perception of students regarding the college preference for online courses. The results were as follows.
30% of students strongly agree that colleges prefer face to face courses that online courses.
20% of students agree that colleges prefer face to face courses that online courses.
13.3% of students weakly agree that colleges prefer face to face courses that online courses.
36.7% of students don't agree that colleges prefer face to face courses that online courses.
It is clear that, from students' point of view, colleges are almost divided evenly between preferring face to face and preferring online teaching.

Question 3 & 4: This was related to whether students found online courses to have the same quality as face to face courses. The question tries to get the perception of students regarding the quality of online courses. The results were as follows.
56.7% of students strongly agree that online courses have the same quality as face to face courses.
16.7% of colleges agree that online courses have the same quality as face to face courses.
16.7% of colleges weakly agree that online courses have the same quality as face to face courses.
10% of colleges don't agree that online courses have the same quality as face to face courses.
From the above data, it is clear that most of students (73.4%) did not notice much difference between online courses and face to face courses.

Question 5 & 6: This was related to whether students prefer taking theoretical lectures and practical labs face to face or online. The results were as follows.
96.7% of students prefers to take theoretical lecture online.
83.3% of students prefers to take practical labs online.
From the above data, it is clear that most of almost all students prefer to have theoretical lectures and even practical labs (83.3%) online. This indicates high tendency of students towards online teaching.

Question 7 & 8: This was related to whether students prefer taking certain courses face to face or online. The results were as follows.
Students mentioned that, they prefer to take all theoretical lectures online except for some Math and Calculus courses. They prefer such courses to be face to face.
Also, students mentioned some practical labs that have some equipment in the lab to be face to face such as Microprocessor that require special equipment.

Question 9 & 10: This was related to the advantages/disadvantages of face-to-face teaching. The results were as follows.
Students mentioned some advantages that include better understanding by students and better interaction

with instructors. For the disadvantage, during Covid-19, most students mentioned that their safety could be at risk.

Question 11 & 12: This was related to the advantages/disadvantages of online teaching. The results were as follows.
For online teaching advantages, students mentioned the safety is much better during Covid-19 and also the mobility (ability to attend courses from anywhere).
For the disadvantages, students mentioned less interaction with teachers, bad internet connections, exams and assignments are not as good as in case of face to face. And also, the number of assignments and working load on the students is higher than face to face case.
In the next section, we give some recommendations based on the data collected in sections 3 and 4.

5. Recommendations

Based on our findings in sections 3 and 4, we make the following recommendations. Some of the recommendations are related to companies and some are related to universities:

- Widen the culture of technological advances among companies and encourage them to switch to online working environment. This might need upgrading their digital infrastructure.
- It is important for graduates to enhance their technology related skills as most companies prefer such skills in employees.
- Bring awareness to companies about the quality of online courses and the skills earned by students of such courses.
- Bring to the companies' attention that they might face a problem in hiring when new graduates with mixed certificates during the Covid-19 pandemic.
- Make it known to universities that online certificates are not well accepted by companies. Universities need to explain to the business society the possible strengths of online certificates.
- Since mixed certificates are accepted better than online certificates, universities may rethink the concepts of completely online certificates and they might include some regular courses to switch to mixed certificates.
- Universities issuing mixed certificates programs should explain to the business society that the strengths of such certificates.
- Universities should improve the quality of mixed certificates to be more accepted by companies.
- Bring awareness to companies about the difference between regular certificates and mixed certificates.
- Upgrade the technological infrastructure for universities to be able to deliver the courses when needed with high efficiency.
- Even in normal times, some theoretical lectures should be taught online to increase the technological skills of students especially these lectures almost have the same quality as face to face teaching. These lectures should be decided by each college individually.
- In times of pandemic, colleges are encouraged to switch to online teaching whenever possible because of the risk factor.
- For online courses, the interaction between students and instructors should be increased by emphasizing online office hours.

6. Conclusion

In this paper, we have studied the effect of Covid-19 pandemic on graduates seeking jobs. We have designed and conducted two questionnaires to collect the relevant data and based on the data, some recommendations were proposed. Results show that, universities issuing mixed certificates should spend more effort to spread the culture of mixed certificates. Also, companies should enhance their technological infrastructure to be able more to switch to online work environment. For colleges, they should allow raking online courses for some subjects where the quality is the same as face to face teaching. This would require upgrading the infrastructure of some universities and colleges.

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