

Chapter 3 Students of public higher education institutions and their economic impact during COVID-19, case study, 2020

Capítulo 3 Los alumnos de instituciones públicas de educación superior y su impacto económico durante el COVID-19, caso de estudio, 2020

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Abstract

The economic impact on students caused by COVID-19 seriously affected the economy of families, as well as the teaching-learning process. Unfortunately, educational institutions from preschool to higher education, which is the subject of our analysis, were forced to close their facilities. The objective of this research is to determine the economic impact generated in higher education students as a consequence of COVID-19. Supported by a case study and with the help of an electronic survey, we intend to identify elements that will help us to know the degree of economic impact on higher education students. In order to achieve the research objective, we will work under the model of a case study that will allow us to clearly and objectively identify those factors that had a significant impact on the economy of students at the higher education level. The type of research included in the study is conclusive - descriptive. The research approach is qualitative, since a survey is used to review the information under study.

COVID-19, Impact, Economics, Impact, Students

Resumen

El impacto económico en los alumnos causado por el COVID-19 afectó seriamente la economía de las familias; así como el proceso de enseñanza-aprendizaje, lamentablemente las instituciones de educación desde el nivel preescolar hasta el superior que es nuestro tema de análisis; se vieron en la necesidad de cerrar sus instalaciones. El objetivo de la presente investigación es conocer el impacto de tipo económico que se generó en los estudiantes de educación superior como consecuencia del COVID-19. Apoyados en un caso de estudio y con la ayuda de una encuesta electrónica se pretende identificar elementos que nos ayuden a conocer el grado de afectación económica en los estudiantes de educación superior. Para lograr dar cumplimiento al objetivo planteado en la investigación, se trabajará bajo el modelo de un caso de estudio que permitirá de manera clara y objetiva identificar aquellos factores que impactaron de forma significativa en la economía de alumnos a nivel superior. El tipo de investigación que comprende el estudio es concluyente – descriptiva. El enfoque de la investigación es cualitativo, debido a que se utiliza una encuesta para la revisión de la información objeto de estudio.

COVID-19, Impacto, Economía, Afectación, Estudiantes

3.1 Introduction

The COVID-19 pandemic poses a challenge to the global socio-economic system. The measures of "social distancing" that have been taken in the world and in the different countries of the Latin American region to mitigate the speed of COVID-19 contagion have generated a strong economic contraction which, among the most notable consequences, has us immersed in a context of forced digitalisation between the different productive sectors.

And in the case of education, the academic sector has been directly affected and forced into a context of forced digitalisation among the different productive sectors.

There are a number of doubts and unknowns to be answered, "how long schools may remain closed, how student learning will be affected, and to what extent this will affect the poorest and most vulnerable populations are difficult questions to answer" ¹; as we can see, as this source also publishes, at the level of our university students it is important to consider that not everything has been said.

The social consequences generated by the COVID-19 outbreak are diverse; however, one of them, and the most marked at local, state, national and global levels, is economic. In the educational sphere, there were various academic aspects such as the limited student-teacher interrelationship, and together with this, the new techniques and changes in the teaching-learning process, adding to this, perceived by both parties, an extra burden of activities due to the use of technology, which to a certain extent generated academic stress.

The projections were not at all encouraging as the International Monetary Fund predicted: "Economic crisis: According to International Monetary Fund (IMF) forecasts, the world economy will shrink by 3% in 2020, much more than during the global financial crisis of 2008-95. This crisis will have serious consequences for both governments and families, and will hit both the demand and supply side of education: ∞ School dropouts will increase and many of these students will drop out of school for good. The highest dropout rate will be concentrated among vulnerable groups. When schools reopened after nearly an academic year of closure due to the Ebola crisis in Sierra Leone, girls were 16 percentage points less likely to go to school.

The higher dropout rate is likely to be accompanied by an increase in child labour and child and adolescent marriages. ∞ The impact on learning will be even greater due to economic pressures on households. Even for students who do not drop out of school, their households may pay less for school inputs (such as books or tutoring) until the economy recovers. In addition, many parents may switch their children from private to public schools, overburdening public systems and reducing their quality. ∞ On the supply side, the economic impact will hit schools and teachers. Fiscal pressures will lead to a fall in educational investment, reducing the resources available to teachers. In addition, the quality of education will suffer (whether while online education is provided or when classes resume), as the health crisis will affect some teachers directly and others will suffer financial pressures due to salary cuts or delays in payments. The lack of student assessments during closures means that teachers will be blind to learning at the same time as they try to support their students from a distance. Finally, "school supply may contract as lack of revenue forces public schools to close".²

Unfortunately, the reality in higher education has exceeded projections, as a large number of university students were forced to seek employment opportunities and leave their academic training in the background, because the economy of each family became very vulnerable to such a public health condition.

3.2 Development

Since the COVID-19 pandemic was declared by the World Health Organisation (WHO) in March 2020, plans to control the effects of this virus on the entire population have been implemented in all countries of the world. Governments decreed the limitation of people's mobility in the social and work environment. Then, this situation also affected universities, which established virtual teaching-learning processes. This challenge was faced by higher education institutions, highlighting the structural deficits and limitations of e-services in the progress of the academic path. The face-to-face institutions urgently migrated to remote teaching, alluding to the willingness of teachers who turned their home spaces into improvised classrooms, while they delved into educational technologies.

On the other hand, we have the students who, surprised by the confinement they had never experienced before, had to face and adapt to the virtual modality. It is too early to estimate the educational consequences that this situation may have on them, pointing out the worsening of inequalities in the case of students whose families do not have economic or cultural capital, as defined by various international organisations (World Bank, 2020; Organisation for Economic Co-operation and Development [OECD], 2020; Organisation of Ibero-American States [OEI], 2020; UNESCO, 2020; United Nations Children's Fund [UNICEF], 2020).

Those most affected by this pandemic are students who are furthest removed from the digital culture. While this crisis is leaving us with many doubts about the future of schooling, it is imperative to assess the quality of remote learning and the personal and academic difficulties these students have faced.

Whatever the results, it is necessary to analyse the quality of remote learning received by students in order to diagnose evidence-based scenarios for the short and medium term.

According to the press release Number 185/21 published on 23 March 2021, in its social communication, INEGI presents results of the survey for the measurement of the impact of COVID-19 on education (ECOVID-ED) 2020, it suggests:

Measuring the impact of the COVID-19 pandemic in different fields is a new challenge faced by countries around the world. Specifically, the field of education has been particularly affected, given the recommendations of social distancing. In order to provide interesting and up-to-date information, the National Institute of Statistics and Geography (INEGI) presents the results of the Survey for the Measurement of the COVID-19 Impact on Education (ECOVID-ED) 2020. ECOVID-ED 2020 provides information on the impact of the temporary cancellation of face-to-face classes in the country's educational institutions on the educational experience of children, adolescents and young people aged 3 to 29, both in the past school year 2019-2020, the current school year 2019-2020, and the current school year 2021-2021. The data collection was carried out through telephone interviews, under the sampling framework derived from the National Numbering Plan of the Federal Telecommunications Institute (IFT) for both mobile and fixed telephones; given its probabilistic selection, it allows to expand its results to the country's population (94% of the telephone-using population).

3.2.1 Characteristics of the distance learning class

By level of schooling, 55.7% of the population in higher education used a laptop as a tool to receive classes, while 70.2% of primary school students used a smartphone. In 28.6 per cent of households with an enrolled population aged 3 to 29, additional expenditure was made to purchase smartphones, in 26.4 per cent to contract fixed internet service and in 20.9 per cent to purchase furniture such as chairs, tables, desks or to adapt space for study. 56.4% of households think that the benefit of distance learning is that it does not put the students' health at risk, followed by the advantages of family life (22.3%) and saving money on various expenses such as fares and school materials (19.4%).

In terms of the main disadvantages, 58.3 per cent said that they do not learn or learn only in person, followed by the lack of monitoring of students' learning 27.1 per cent and the lack of technical capacity or pedagogical ability of parents or tutors to transmit knowledge 23.9 per cent. For all age groups, more than half of the students are very willing to attend face-to-face classes once the government allows it; the 13-18 age group is the most willing with 64.1%, followed by the 6-12 age group with 60.7%.

According to research by the IDB and Universia Banco Santander, the following challenges have been identified among the most outstanding ones:

3.2.2 Inequity in the expeditious construction of a technology infrastructure

In the case of universities where there was already some experience in digitisation processes, a satisfactory response to the situation could be given, while in universities where there was no preliminary experience in tele-education, great difficulties have been identified in responding immediately to the creation of an effective technological platform, compromising some educational systems and the training of thousands of students. As a consequence, depending on the response capacity of each university, an imbalance in the implementation of resources and the deployment of competences has been evidenced.

3.2.3 The lack of assessment or accreditation tools for student knowledge in an e-learning context

Virtual assessment differs from face-to-face assessment, so there is a need to develop other methodologies that respond to the context. Considering that training and experience in virtual teaching are scarce, there has been a deficiency in the regulations and legality that cover assessment methods.

3.2.3 Few teachers trained for tele-education and the importance of accreditation

As in the case of accreditation of student knowledge, the pedagogical dynamics of virtual education varies from face-to-face education, showing how in some cases students have been overloaded due to the teacher's lack of knowledge of the management of virtual pedagogy. Considering the novelty of the digital context, teachers are challenged to incorporate new educational mechanisms, making accreditation a standardised solution.

3.2.4 The digital divide and limited access to technologies

Many students in the region have difficulty accessing computers or do not have connectivity at their disposal, resulting in an increased dropout rate. Mexico has long had many problems with internet connectivity, and with the pandemic this exacerbated and highlighted the shortcomings of this service. For 20 years the internet service in our country has not evolved according to the current needs of academic institutions; in conjunction with the above, economic conditions, such as income, education and digital skills have been considered as some of the main causes of the current digital divide in Mexico and then in the Tecnológico de Estudios Superiores de Jocotitlán..

3.2.5 The psychological effect of confinement impacts on students' ability to learn

Many students live in environments that are not conducive to adapting to virtual formats, considering their home conditions, network availability and access to the required technologies.

3.2.6 Research paralysis in the context of the pandemic

As a consequence of the social distancing protocols imposed, the research capacity of universities has been compromised. Clinical teachings and laboratories require face-to-face attendance, so there is a challenge in how to make them sustainable.

3.2.7 The risk of university financial sustainability

Late payment of tuition fees and the dropout of some students has put their financial health at risk.

3.2.8 The risk to the economic health of universities

In the case of public universities, the economic recovery of countries in the Latin American region implies the generation of significant adjustments in university budgets, creating a financial and economic dilemma that includes additional adjustments in the financing of socio-economic scholarships (which is considered a tool that reduces the incidence of student dropout).

The advantages identified in the process

3.2.9 The university's educational model influences its responsiveness

Universities that had begun a transition to digitization before the pandemic and had a technological infrastructure in place already had some experience in developing a digital culture, with students and faculty more adapted to mechanisms such as digitized procedures and face-to-face courses delivered in a hybrid format and with online curricular content.

3.2.10 Financial investment in resources for educational continuity and bridging the digital divide

Some universities have made efforts to facilitate access to virtual classes, especially in rural areas or areas with less connectivity, generating an extension of resources and mitigating cases of abandonment. Among the activities identified to reduce the digital divide, surveys have been carried out among the student and teaching population to help identify technological equipment needs. Among the resources made available are tablets and laptops, Zoom and Webex licences for the virtualisation of courses, SIMS cards or modems to improve the educational experience, data for free downloads and food vouchers as an extension of the benefit that some students received at the university.

3.2.11 Continuous pedagogical training processes for teachers

Through webinars and tutorials, ongoing efforts have been made to help teachers adapt to tele-education. It has highlighted the importance of the value of collaboration and solidarity of more skilled colleagues with those who are in the process of learning the mechanics of virtual pedagogy.

3.2.12 The facilitation of remote working by university administrative staff

3.2.12.1 The institutional strength of universities

If there is a strong relationship between deans, professors and the university government, and if there are shared ideals and no power struggles, it is possible to mobilise the university from a face-to-face to a virtual form in a short period of time.

Today's higher education students are facing great challenges, ranging from family, psychological, social, work-related and, above all, economic challenges.

The pandemic situation caused by COVID-19 has generated that higher education students tend to suspend or even worse, forget their studies in order to look for a job opportunity that will allow them to help themselves and their families with the minimum household expenses such as food and basic services.

Nowadays, higher education students suffer from a crisis of concentration for their studies, derived from each and every one of the needs they face, which are diverse and of different magnitude; from no longer having family support due to the death of one of the members of their family who supported the household and education expenses, which in most cases are their parents, or, without reaching the extreme of absence, the loss of the source of employment, which resulted in not having the necessary resources to be able to continue with their studies.

A very marked vulnerability in higher education students that has resulted from the pandemic we are still experiencing is the increase in their economic difficulties and conditions, since unfortunately their level of income has been impacted in such a way that what in a certain way was their resource to maintain their studies has nowadays become secondary for many of them, due to the fact that the local and national economy has suffered devastating damage, thus generating a crisis of lack of opportunities to find employment.

It is worth noting that there are several conditions that have curbed the expectations of students; that not even the government itself has been able to offer a plan or scheme to rescue all those university students from the situation in which they find themselves, just at the national level have stopped many projects, programs and economic resources where unfortunately students at this level do not figure either.

The institutions of higher education are a fundamental and important part of this whole crisis process, because unfortunately their student population, as well as society in general, has had a very drastic impact on the economy, first and foremost on each of the students, and jointly on the members of their families.

In order to give an overview of the magnitude of this impact on higher education students, we can say that, first of all, many of them have had to stop their studies in a radical and untimely manner, as they have had to look for work opportunities to support their family economy, a situation that has not been so easy for them either; This is due to the fact that the workplaces that before the arrival of the pandemic regularly hired personnel during the different seasons of the year, to this day these same companies continue to cut personnel due to the precarious economic situation at the local, state, national and international level, a not at all favourable condition; because in addition to abandoning their studies, job opportunities are very limited; to the extent that many of them have hired themselves out to work as construction assistants or in small establishments to be able to obtain an income that at least allows them to cover their basic needs.

The outlook is not at all encouraging for the student sector that is the subject of this research, as time goes by and we see that a good number of our students are already preparing for professional internships, social services and of course professional residencies; however, employers are still very closed to opening their doors to these future generations about to graduate, each one of the governments has a very big task and unfortunately we observe that they do not seem to be interested in the future of our new generations, every day the social problems continue to grow, the most marked for the students being the lack of job opportunities.

The economy for higher education students has not been selective; that is to say that it is not only the fact of covering basic needs such as food; but as time goes by and the insecure health condition does not improve; regardless of government statistics, students who make the effort to maintain their studies are already thinking about whether or not to re-enroll for the next semesters, or what is more critical; parents at this time are in a great dilemma to consider whether or not to enroll their children in the next semester; They are already thinking about whether or not to re-enroll for the next semesters, or what is more critical, parents are currently in a great dilemma to consider whether to enroll their children at a higher level or momentarily wait to see what will happen with the pandemic condition.

The wear and tear that higher education students are still suffering seems to have no end in sight, because in addition to all the material aspects, the days of teaching and hours in front of a computer have not brought good news in terms of academic achievement and performance; of course this could certainly be a great subject for study and analysis, but the opportunity to address it goes hand in hand with all the impact that the current public health situation has brought.

It is very true that researchers have analyzed the great differences that exist in our country in comparison with other countries in terms of technology, since unfortunately many of our students have to borrow or rent computer equipment to be able to receive their classes, while others struggle to pay for a basic internet service to at least receive advice that will allow them to continue with their academic training. "Marion Lloyd presents very specific information for the case of Mexico, in the context of Latin America. In both cases, Mexico fares quite badly. In 2016, the country ranked 87th in the world and 8th in Latin America in access to ICTs, behind Uruguay, Argentina, Chile, Costa Rica, Brazil, Colombia and Venezuela, in that order, according to indicators from the International Telecommunications Union (ITU), based in Switzerland.

There is also a large digital divide within the country: only 45 per cent of Mexicans have a computer and 53 per cent have access to the internet at home, according to the 2018 National Survey on the Availability and Use of Information Technologies in Households (ENDUTIH). As expected, such access is not evenly distributed, with 73 percent of the population in urban areas having access to the internet, compared to 40 percent in rural areas. Even more worrying, only 4 percent of rural residents have internet at home). "3

The crisis that we are experiencing worldwide in all areas, but especially in education, which is the subject of this article, has triggered a restructuring and rethinking of the provision of educational services and supply at all levels, as the intensive use of all kinds of technological platforms and media have come to occupy a central place in each of the institutions and homes to ensure and guarantee the continuity of learning.

Unfortunately, the foundations of this technological environment applied to education have not yet been laid; that is to say, a whole range of platforms have been implemented in an unexpected and unplanned manner in order to get ahead in the last three school cycles, where teachers and students have had to learn together in each of the subjects taught.

It is important to highlight that in this case, the central theme of our study is the economic impact that our higher education students have had to face in a titanic way; First of all, the fact of not having technological resources has not been easy for them, a situation that has generated a great gap of technological inequality among our students in public higher education institutions. Digital tools became essential to continue with academic activities during the coronavirus pandemic; however, this situation highlighted the lack of training of teachers and students in the use of these tools, as well as the inequality of access to technological resources in the population, in such a way that nobody was prepared for such a sudden and drastic change in education; To the extent of changing and innovating the entire methodology of the teaching-learning process and bringing it together with digital platforms; a situation that after almost a year and a half of this public health condition has not achieved a total mastery of them, and what is more regrettable and worrying; the level or degree of academic achievement of each of our students.

On the other hand, and this has been mentioned in many of the studies, the role of parents in the basic levels has been of great help and support for their children, as they have had to assume the role of guides, advisors and tutors for them in order to accredit the corresponding school cycle.

The face of the higher level is very different, as students have had to make decisive decisions to convince themselves whether or not to continue with their professional studies, as the central point of our topic is the protagonist in their decisions "the economy"; both personal and family.

It is very important to emphasise that we should not confine ourselves to an environment in which the precarious economic conditions of our students only began as a consequence of the pandemic; the reality is that this was emphasised even more by this public health condition, because before the arrival of COVID-19 the world was already facing a learning crisis; Many of them were not enrolled in any level of education and what is more regrettable is that it was no longer a priority to continue studying, because the economy of each of the economic zones of our country already brings a great background where the primary activity is primarily to ensure a source of work that allows the family to support themselves and their families.

Unfortunately, many of the students at the public higher education level have been immersed in the loss of first-line family members and what is more regrettable; their parents have lost their source of employment, a condition that has forced them to seek family sustenance and leave their academic training on another plane. School dropout rates have increased considerably and many of our students have left school for good, with no possibility of returning to continue their education. The highest dropout rate has been found among vulnerable groups.

It is likely that the higher dropout rate is accompanied by an increase in informal work, which in many cases has also led to a high rate of vandalism as a consequence of the lack of employment.

The negative impact on the teaching-learning process will continue to increase due to economic pressures within households. Even in the case of students who do not drop out of school, their households will be able to pay less for each of the requirements and inputs demanded by the institutions; until the economy shows a better and safer trend; on the other hand our public institutions are presenting a very worrying condition; as many parents who could afford a private or private institution are now in search of a private institution; Today they are looking for a public educational alternative; a situation that puts public schools in check with an overload, because although they intend to have more educational enrolment, their conditions and facilities do not allow them to receive all those young people who wish to continue their higher education.

On the academic side, the economic impact is hitting schools and teachers. Tax conditions will lead to a drop in educational investments, which will reduce the resources available to teachers.

In addition, the quality of education is suffering, as the health crisis has affected teachers directly and others will suffer economic pressures due to salary cuts or delays in payments. The failure to properly assess students during closures means that teachers will be blind to learning while trying to support their students in the officially sanctioned "online" mode.

The issue of the digital divide, the socio-economic situation of students and their families is a factor that is increasingly aggravated, students who are in a difficult economic situation have more complications of having poor or no access to information technologies and equipment, because of the cost of a laptop or Internet connection or because in the areas or regions or neighbourhoods there is low connectivity or signal.

For example, in populations far from the municipal capitals, they have limited electricity services and even less internet service; for which this condition complicates the student's work, as he/she must travel several kilometres to have good connectivity that at least allows him/her to carry out the elaboration of academic activities and products.

Under these conditions and many others, the economic deterioration of the student is being added to, as it has had such an impact that it is already very difficult to convince them to resume their academic activities; unfortunately they tell us that their economic conditions at the moment are not the best to think about continuing their studies, as they have decided to support their parents or relatives to have at least the minimum necessary to support their family.

The students are going through an economic, psychological, social and family wear and tear that affects them considerably, it is important to consider that within the institutions they implement strengthening and support programmes; analysing the financial conditions of the institution, so that our students do not feel forgotten and do not think that they are just one more number within the entire student community.

3.3 Theoretical framework

The COVID-19 pandemic poses a challenge to the global socio-economic system. The measures of "social distancing" that have been taken in the world and in the different countries of the Latin American region to mitigate the speed of COVID-19 contagion have generated a strong economic contraction which, among the most notable consequences, has us immersed in a context of forced digitalisation between the different productive sectors.

And in the case of education, the academic sector has been directly affected and forced into a context of forced digitalisation among the different productive sectors.

Since their foundation, universities, like any other social institution, have had to face devastating epidemics that have impacted their daily functioning. And they have survived and continued with their mission even with their doors closed. In 1665, Cambridge University closed because of an epidemic of the Black Death that struck England.

Today, temporary closures of higher education institutions (HEIs) due to the COVID-19 pandemic are no longer newsworthy because most countries have already ceased to operate in person.

Considering the information and estimates from UNSCO IESALC, (2020) indicate that the temporary closure affects approximately 23.4 million higher education students (ISCED 5, 6, 7 and 8) and 1.4 million teachers in Latin America and the Caribbean; this represents approximately more than 98% of the higher education student and teacher population in the region.

DE (Distance Education) is complex in nature and scope, involving a wide range of non-traditional forms. DE is complex in nature and scope, involving a wide range of non-traditional forms of teaching and learning.

Broadly speaking, it is teaching that takes place away from the place of learning, requires the use of technologies (Moore and Kearsley, 2012), allows for flexible time management and gives greater autonomy to learners (Vlachopoulos and Makri, 2019).

There is already evidence that the closure of schools caused by COVID-19 has increased inequality of opportunity, particularly in families with low socio-cultural and economic capital (Cabrera, 2020; Cabrera, Pérez and Santana, 2020).

Students have also been forced to adapt to an educational model whose contents were designed for face-to-face learning and which required them to manage their time better and, therefore, to be more disciplined and organised. In fact, authors such as Giesbers et al. (2013) and Moallen (2015) have shown that students prefer blended learning models that combine synchronous and asynchronous learning.

The World Bank has undertaken research into the possible effects of the pandemic on higher education, some of the data analysed up to May 2020 is described below.

The COVID-19 pandemic is having profound impacts on education. With school closures at all levels in almost every part of the world, the damage will now be even more severe as the health emergency translates into a deep global recession. This report describes the multidimensional impact on education systems and outlines actions that countries can take in response.

Even before the COVID-19 pandemic, the world was facing a learning crisis. Most countries were far from achieving the 48% sustainable development goal. That goal commits the world to ensuring "inclusive and equitable quality education and promoting lifelong learning opportunities" for all by 2030, but so far even universal quality schooling at the primary level, let alone at the secondary, tertiary or lifelong learning level, has proved unattainable in many countries. The learning poverty rate has shown that before the pandemic, 53% of 10-year-olds cannot read or understand simple text in low- and middle-income countries. And this crisis does not affect the most vulnerable equally: the most vulnerable have poor access to schooling, high dropout rates and access to low quality education. Without aggressive policy action, the impacts on education and the economy will exacerbate the learning crisis.

Children and youth who are forced to drop out of school may not return, while those who do may have lost valuable time and find that their schools have been affected by budget cuts and economic damage to communities. Many students have lost the most important meal they received each day. And with poorer households hard hit by the ensuing economic crisis, the opportunity gaps between rich and poor will become even wider. Beyond these short-term impacts on access to education and learning, countries will ultimately be affected by significant long-term losses in terms of education and human capital. However, there is much that can be done to reduce these short-term impacts and ultimately turn the response to the crisis into long-term improvements to education. This report describes the main impacts affecting the education sector as a result of the pandemic and presents the policy response - policies that can mitigate the damage to students and communities in the short term; boost education revival, with an emphasis on closing education and access gaps that may have widened; and support 'building back better' education systems as they regain their equilibrium, accelerating their path of improvement and moving away from the learning crisis.

3.4 Background

Prior to coronavirus The American Bar Association defines distance education, also known as online learning and technology-mediated instruction, as any course in which students are separated from each other or from face-to-face faculty for more than one-third of the instruction and involves the use of technology to support regular, substantive interactions among students and among faculty members. Currently, many faculties in different fields are required to deliver undergraduate and graduate courses through distance education, even though they may have little or no training in how to conduct technology-mediated instruction online.

On the other hand, it is worth remembering that online education is conceptualised as electronically supported learning, which relies on the Internet for teacher/student interaction and the distribution of class materials. From this simple definition emerges an almost infinite number of ways of teaching and learning outside traditional classrooms and away from university campuses. With online education, students can participate in a virtual classroom from anywhere with Internet access and electricity. It can include audio, video, text, animations, virtual training environments and chats with teachers. It is a rich learning environment, with much more flexibility than a traditional classroom. When used to its full potential, it has been shown that online education can be more effective than pure face-to-face instruction. It has the potential to be engaging, fun and tailored to fit almost anyone's schedule, as long as it is managed correctly.

The basic types of online education programmes:

- 100% online education: Fully online degrees are earned from the comfort of your home without mandatory visits to your university or college campus.
- Hybrid education: Hybrid education allows students to take a combination of online and on-campus courses. Prior to the coronavirus pandemic, the global education technology sector, which includes online learning, was growing at approximately 15.4% per year, with big-name companies such as Google and Microsoft investing heavily in the industry, according to data reported by Kenneth Research. The United States is the largest market, with rapid growth also occurring in India, China and South Korea, according to a report by ICEF Monitor, a market research study focused on international education. Factors such as convenience, geography and the need to work while studying are driving most of the growth in online learning, especially in the higher education sector.

The global education sector has been a late adopter of digital technologies and only around 3% of all education spending worldwide was spent on digital initiatives. The growth of online teaching and learning had been held back by concerns about cost; lack of reliable access to digital devices and high-speed internet connections, especially among poorer families or countries; and widespread attitudes that online learning was inferior to traditional learning methods. Surprisingly, this pandemic has now forced everyone to experiment and improvise with digital learning.

3.5 Literature review

Supported by various sources, we can say that in most cases there are references from different health organisations and opinions in electronic sources, which allow us to be the main ones to strengthen the present study.

3.6 Methodology

In order to fulfil the objectives, set out in the research, an extensive bibliographical review of different primary and secondary sources has been carried out. In this sense, the methodological aspects are listed below with a general character that will allow the design and execution of the instrument for the collection of relevant information for the study, which will be applied and used to fulfil the objective.

As mentioned above, the methodological aspects of the study are presented below:

Type of research

Concluding – Descriptive

Approach:

The research approach is quantitative, the latter due to the fact that a quantitative approach instrument is used for the review of the information provided by students belonging to public higher education institutions on the economic impact during COVID 19, case in the Tecnológico de Estudios Superiores de Jocotitlán of the year 2020, the object of study.

Description of the research:

This study contemplates the application of an instrument that allows the elaboration of the diagnosis of the situation of students belonging to public higher education institutions on the economic impact during COVID 19, case the Tecnológico de Estudios Superiores de Jocotitlán of the year 2020.

Population and sample

Population:

The population under study are the students belonging to public higher education institutions, for the period 2021, on the economic impact during COVID 19; the Tecnológico de Estudios Superiores de Jocotitlán, is a public institution of higher education, offers 12 careers, divided into 9 engineering, among which we find Engineering in Computer Systems, Business Management, Mechatronics, Electromechanical, Industrial, Logistics, Chemistry, Materials and Digital Animation; and 3 Bachelor's Degrees; Public Accountant, Architecture and Tourism with specialisation in Gastronomy; for the analysis of this case, the population considered are 247 students, belonging to the Bachelor's Degree in Public Accountant.

Sample:

For the sample design of the present research, items will be selected in such a way that each unit has a chance of being selected. Therefore, the students to be subjected to this research will be selected using simple random selection techniques, i.e. selection applied through random number generators with the use of calculation software (Excel).

Sample

For finite populations where $N= 247$ students of the Bachelor of Public Accountancy.

The technically calculated sample is as follows:

$$n = \frac{Z^2(p*q)}{e^2 + \frac{Z^2(p*q)}{N}} \quad (1)$$

Statistical formula for calculating finite population samples.

Where:

n = sample size= 150.33

Z = desired level of confidence=1.96 95% confidence

p = proportion of the population with the desired characteristic (success)= 0.05

q = proportion of the population without the desired characteristic (failure)=0.05

e = level of error willing to make = 0.05 error of 5% error

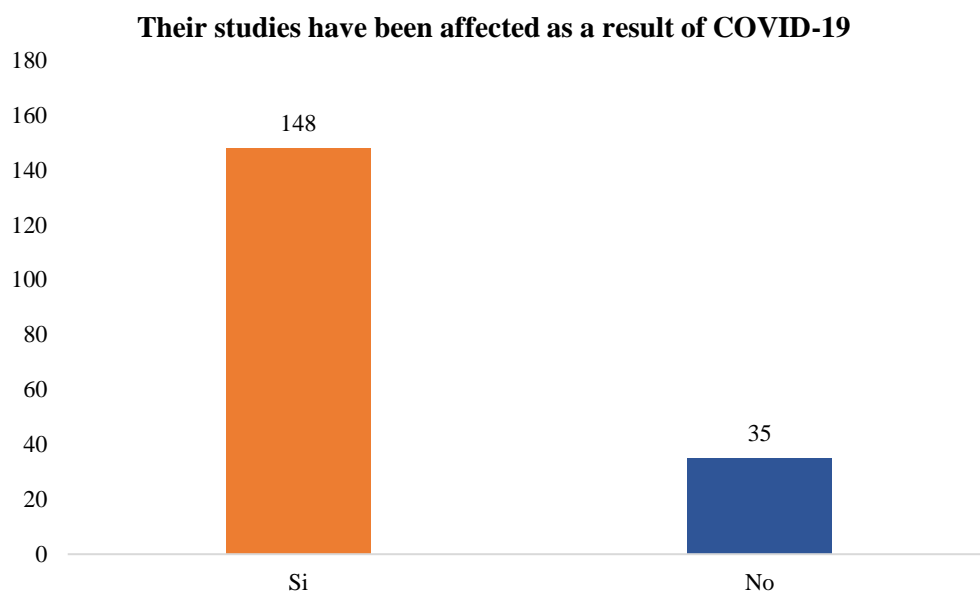
N = population size =247

Therefore, for a population of 247 students, 95% confidence level and 5% margin of error, a sample of 151 students, subject to study, is obtained. In this case there will be 183 students.

3.7 Results

According to the results obtained from the survey applied to students of public higher education institutions on the economic impact during COVID 19, in the case of the Tecnológico de Estudios Superiores de Jocotitlán, it was concluded that 80.87% of the students who answered the survey have been affected to a great extent, to the extent of making a radical change in different aspects of their daily lives.

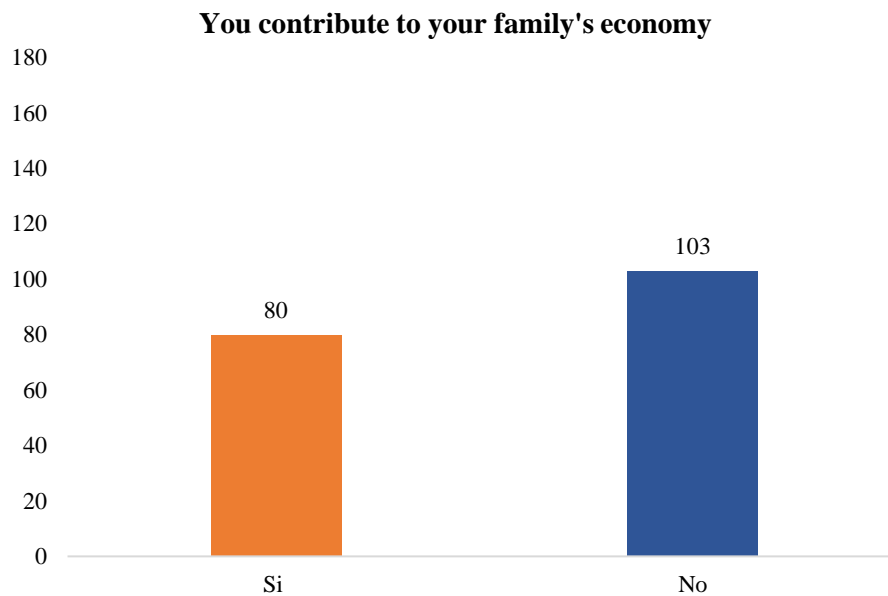
Graphic 3.1



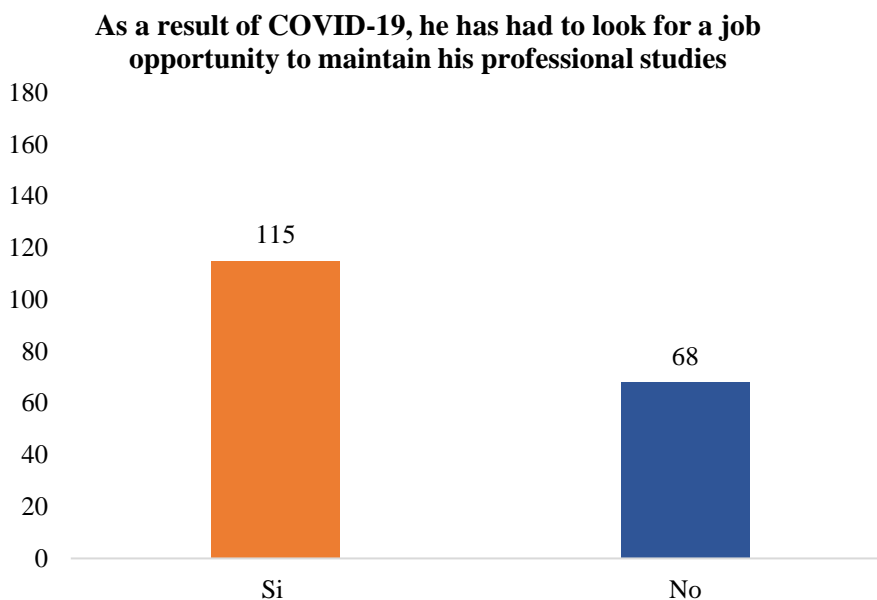
The COVID-19 pandemic seriously affected higher education, with the closure of universities resulting in the non-continuation of learning, the delivery of learning materials and security, as well as students' perception of the value of their degree. Higher education institutions were quick to replace face-to-face classes with online learning, although they often struggled with a lack of experience and time to devise new delivery formats and assignments.

Today, this situation is alarming and worrying for students as their studies are affected from different perspectives, perhaps one of the main consequences is that learning trajectories and study progress are disrupted and the value of higher education institutions is exposed, as due to the economic crisis, students are unlikely to devote full time and money on a consistent basis to take online classes.

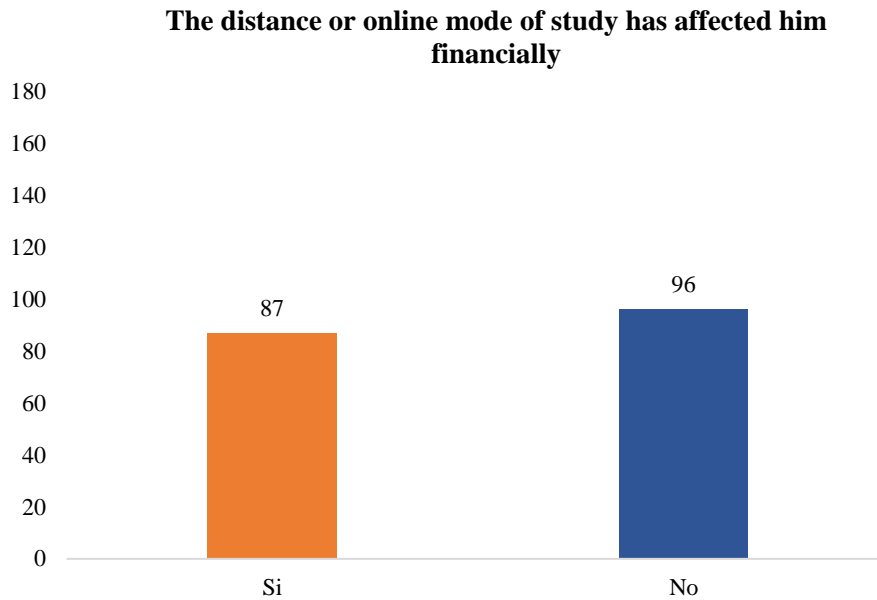
Graphic 3.2



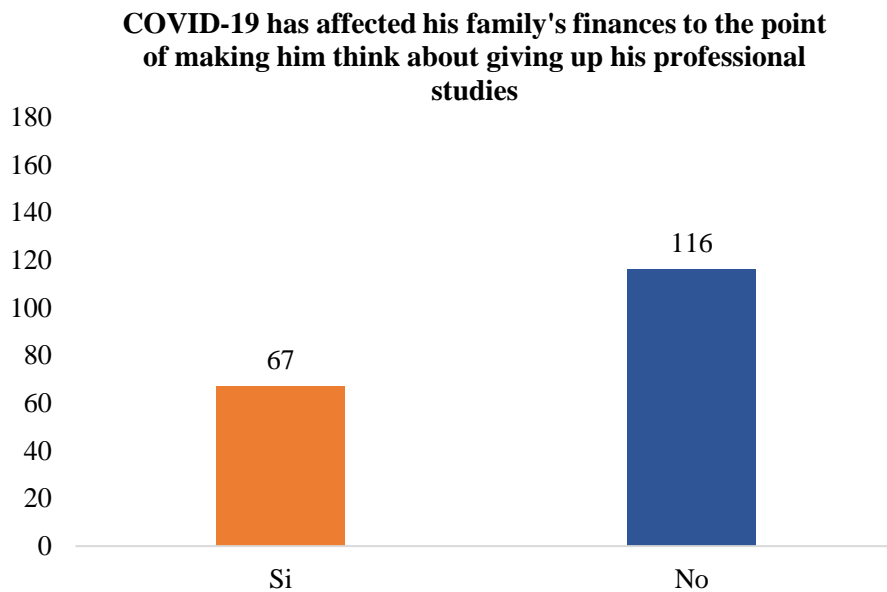
Graphic 3.3



It is very important to mention that most of the students surveyed do not contribute to the family expenses, and according to the results obtained, it is possible to conclude that there is a great risk for those respondents who do have to contribute and who are therefore in a difficult economic situation and consequently are more likely to have poor or no access to the internet, either because they cannot afford to buy a laptop or internet connection or because they live in areas with low connectivity and as a consequence many students do not spend time taking their classes and go out in search of job opportunities that allow them to generate an income to support their families' economy and to be able to somehow maintain their professional studies.

Graphic 3.4

About whether the distance or online mode of study has affected them financially, according to the results observed, it is concluded that it has not been a problem that has affected them significantly with more than half of the students surveyed, but it would be important to take this aspect into consideration since the trends indicate that, if the crisis continues, it could cause a serious problem in the future.

Graphic 3.5

Another important aspect to consider, and perhaps the most important, is that in the face of the COVID 19 pandemic, the vast majority of students have not thought about leaving their professional studies, which leads us to consider and implement strategies that allow students to continue with their studies, providing them with the necessary tools to take better advantage of their studies.

3.8 Discussion and Conclusions

Overall, this crisis has implications that are extremely difficult to grasp, including for education, and has no pre-determined implications. It will be the nature of our collective and systemic responses to these difficulties that will determine how they affect us, the prospects are very uncertain, but if the pandemic did anything, it exposed our vulnerability to crises and revealed how strong the economies we have built can be.

That includes rethinking how the economy will need to evolve to protect itself from adversity and defining the skills, education and training required to support it. It also means working hard to increase the attractiveness and labor market prospects of certain professions, including those considered critical to the common good.

The pandemic that we have been experiencing and that even our authorities at the federal, state and local levels do not have a reasonable strategy to revive the educational landscape at all levels, is leaving a big gap in the quality of education with which our undergraduate students will enter the workplace; while it is true that all economic entities seek educational quality that is reflected in the workplace; Nowadays it is important to understand that we cannot consider that it is enough to give our classes or advice virtually and thus think that we have fulfilled our task towards future generations of students, it is important to consider that implementing strategies that allow our students to continue to have the support as teachers and continue to transmit experience will be useful as a pillar to face the challenges that will be presented to them in the future.

The teaching-learning process in a certain way is questioned, because in most cases we could say that both teachers and students are not closing the educational cycle, and we are not referring to a school or civil calendar period; our vision goes beyond that; that is to say, both parties have not lived together in a face-to-face manner for logical reasons, and this has greatly reduced the quality of assimilation of the student's knowledge, the student's environment with the great diversity of inconveniences that he or she has had to face, such as those analyzed in this article, has been complicated for many, for others it has already become a conflict and for many more it is no longer a priority today, because due to the lamentable conditions we are living in, it is more important for many of our students to look for a job opportunity and support their families than to stay five or six hours in front of a platform and listen to the teacher trying to get their attention with the corresponding subject; That is how stark our reality is today in many of our higher education institutions.

The IES (Institutions of Higher Education) have made efforts to continue teaching courses virtually despite the great lack of budgets and capital to improve the technologies of each of them, it is to recognize the effort of many to try to continue to maintain the level and quality of education of our students, however the need is much greater; a worrying level of school dropout is facing many of our educational institutions, because as we mentioned before, the national health problem has come to revolutionize the conditions of each of our students.

On the other hand, our institutions are becoming more and more vulnerable to the issue of financial conditions to compensate for all the problems that afflict them both academically and administratively, and of course also in terms of employment. It is very important that within these institutions, a great deal of attention is paid to implementing the continuous improvement of all their management, teaching, administrative and service staff, because to the extent that training and human quality is injected into all the staff, it will be to the extent that our HEIs will be able to move forward.

There are many determining factors that local, state and federal governments must consider in the scenario that is still not so encouraging; and of course the proposal is towards the educational part; it is important to understand that our students of higher education in public institutions, which is our case study, are the immediate workforce that will be inserted into the labour market, therefore generating strategies for continuous improvement to minimise dropout levels are of vital importance.

On the other hand, the sensitisation and training of teachers to transmit knowledge to their students is another issue that nowadays we cannot leave aside, unfortunately we are living a very harsh reality, where teaching-learning has become a mechanised process; And we refer to this because with the use of digital platforms, many teachers have become detached from their students, there is no longer a real interest in the problems they are going through and indifference is leading us to the fact that professional training is not fulfilling its mission, which is that all this accumulation of information and knowledge that our students receive in the classroom and nowadays in their homes or public spaces supported by information technologies will allow them in a very short future to the insertion, reinsertion and updating of their work.

On the other hand, HEIs must prepare students as well as possible; of course, as we have already mentioned, through their teaching staff, for activity in a professional field and facilitate their adaptation to the changes in the labour market that may occur throughout their lives, that is to say, in short, to build specific professional and labour profiles highly specialised in certain subjects.

Throughout the Covid-19 pandemic, motivating students in virtual classes has undoubtedly been of great importance and relevance, as a group of unmotivated students is very alarming and risky, as their uncertainty and doubts about continuing their academic training are very vulnerable. The importance and the great role that motivation plays in learning is well known and has been supported by many researchers on the subject.

Unfortunately, the motivational part of the teaching staff has not been seen, has not been encouraged or has not been given much attention in many HEIs, to such an extent that teachers themselves sometimes forget or neglect its importance when exercising their profession both in classrooms and much less nowadays online, of course we cannot put all the blame on the teaching staff of the different institutions; Of course, in this case, higher education students must also do their part to ensure that this motivation is not forgotten day by day, but this responsibility must be shared in a tripartite manner: students-parents-teachers.

Together with the central theme of our research, which is the economic impact, we could not leave aside the motivational factor, as we wish to emphasise that it is a determining factor in the training process of our students; if there is no motivation, the student, even if he or she has the best conditions for training and qualification, will not achieve or reach full fulfilment as a student, much less on a personal level; And much less on a personal and work level, hence the urgent importance of keeping alert with each of our working groups, because if we add the economic detriment for which they have and are going through, adding the poor motivational condition in each of them; the issue of school dropout will continue to increase.

It is time to reconsider and analyse as teachers what areas of opportunity we have to improve and that these allow or help us to train our students in a better way and with a high level of academic quality, because tomorrow we should not complain that unemployment and social problems such as vandalism will continue to increase. A well-trained and well-oriented student knows which path to follow in order to achieve success; because nowadays, as is well known, the demand for work is very great and the supply is very limited. It is important to emphasise to our students that distance learning is important at this time, we are clear that it does not have a better level than classroom training; but adapting to different work systems is something that characterises us as human beings; "adaptability to survive", it is of the utmost importance that our role as teachers is not to make things easy for our students; however, continuous accompaniment can certainly help to prevent our students from leaving or putting their academic training on the back burner as far as possible.

The economy in general in our country has had a very drastic effect on our students; we have clearly analysed this in our case study, of course we cannot ignore this situation of our student population at higher education level; but with all this analysis we can take up many areas of opportunity that have been left by the wayside of this national health condition. The impact of the COVID-19 pandemic not only reached the health system, but also the education system, especially for two reasons: the economic crisis that reduces family income and the lack of conditions for learning through non-classroom education. Thus, with this brief conclusion, these are two major issues that we leave to be analysed and we can see the great scope and consequences that they may continue to have.

It is very true that the impact could be even greater, as the economic effect could last much longer than we imagine, as we must be aware that the recovery of jobs will not occur in the short term, but on the contrary, the great powers themselves are today in a continuous struggle to impose their economic standards, impacting the most vulnerable economies. We could continue to analyse the conditions that have greatly affected our students, but we believe that the most important is the economic factor; since they are limited, they are looking for the best alternative to find a balance for their needs, and of course we know that their food and safety come first; It is very true that we are limited to influence the economic issue in a certain way, but it is also very true that what we have to do as teachers, if we do it as we should, we can mitigate in part the conditions of desertion that our HEIs are going through.

Following the analysis and compilation of research and classroom experience we share that several research studies have presented data suggesting that more than 85% of educators who teach online courses feel that students learn as much as they would in the classroom.

The biggest mistake, experts say, is trying to make online learning "the same" as classroom learning, when in fact it should be very different. Given the spread of the coronavirus outbreak, this sudden global shift to online learning will not stop in a week or two. Universities will need to consider carefully how to assess and manage student learning outcomes, which will lead to a whole new set of challenges. There is the scenario where dissatisfied students who consider online learning to be inferior to face-to-face classes may take action against universities.

Indeed, it is happening in some countries that students affected by the shift to 100% online learning, as a result of coronavirus measures, are requesting a refund of their tuition fees. The perceived ease and usefulness of online education is largely influenced by users' first experiences. This has a significant impact on its ultimate actual adoption. The idea that online education is being implemented rapidly at the expense of quality is something to be concerned about, as online education could be discarded once the coronavirus outbreak is over. Online connectivity must be carefully planned, and faculty members on the front line of this movement need more support than a simple notice of operation justified by a declaration of emergency.

If anything, experts say, the pandemic exposes how online education is still in its infancy. The pandemic quickly shows the collateral effects of institutions run by leaders inexperienced in the field of online education, who are circumstantially charged with formulating policies that treat online education as a crisis management tool. Things might have developed differently if online education had previously been treated as a vital part of normal teaching and learning.

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