Students' Behavior towards Electronic Devices during Covid-19 in Karachi

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Abstract

The objective of this study was to find to what extent was there availability of electronic devices for students involved in online education during Covid-19 in Karachi and if there was not, in what ways did the students react and what were its implications. Another objective was to find the idea of success of online education among these students. A comprehensive Google Forms questionnaire was circulated among university/high school students in Karachi. Descriptive Analysis has been done on excel to analyze the behavior of students towards electronic devices for academic purpose. The study found that 78.7%had a proper device, and from the remaining, 13.4% either bought a new device, got their devices repaired and 7.3% borrowed from someone or rented it. These numbers implied that around 20.7% of our sample sought help from the electronics industry by buying new devices, getting their devices repaired, and renting them, generating an income of PKR 860,733 (USD 5370) for the electronics industry just from this sample size. More findings of the study are that more than 50% of the respondents rejected the idea of online learning in near future. Major problems they faced were unstable internet and unclear course concepts. The overall results concluded that the influx of consumers towards the consumer electronics industry has led to a minor boost in Pakistan's economy, and the students in Karachi have come closer to adopting technology and IT, which is a necessity in the contemporary world.

Introduction

We are living in a world where any sudden aberration pushes human behavior to an unexpected turn. No doubt, these aberrations are incredibly difficult may it be in terms of business or education. Everyone faces challenges of different levels throughout a crisis.

The historical antecedent such as world war-II, a global war, is a variation of the pandemic now in 2020. Back then in the years 1935-1945, people developed new patterns of living and started practicing different lifestyles after the huge destruction even though the rival gangs clashed far-off. The United States underwent many changes as many Americans were not satisfied with their old way of living. The war interrupted the education of countless children and compelled the companies and their workers from financial activities. Many people started leaving their hometown, city, as well as country to begin a new life **(Lichtenstein, 2020)**.

The 2020 pandemic "Covid-19" or novel corona virus SARS-CoV2 is an infectious disease that is causing a cold, cough, and other severe illnesses across the globe **(Tesini, 2020)**. The pandemic is rapidly bringing unpredictable variables that are affecting the lives of people as well as business actions.

Businesses are now moving with many new dares and ventures as country borders are closed and people are isolating at home. Many firms are closing either shortly or perpetually. In this scenario, employees and staff members are facing huge financial uncertainty, especially lower-wage workers **(OECD, 2020)**. On the other hand, isolation is inducing a method of self-studying with extended schedules for students, which makes education stressful in many aspects. The online shift to education has affected all students depending on their different reasons according to their living standards **(Garcia and Weiss, 2020)**.

In Pakistan, the pandemic has given an upsetting bash on the economy. Pakistan's economy is expected to shrink by $15 billion because of the lockdown **(Saleem, 2020)**. According to the predictions, the gross domestic product will decline by 10 percent till the end of December 2020 leading to a huge downfall in the economy of the country **(Sareen, 2020)**.

Many educators say that nothing like such is found in the history of Pakistan from which they could estimate the expected damage that will happen to the education sector due to the corona virus. Pakistan was already striving to educate millions of children before the schools were shut down due to lockdown, around 23 million children are not getting any education before and after the COVID-19 lockdown **(Gul, 2020)**.

In Karachi, educational institutes were told to shut down in March 2020, and a nation-wide lockdown was imposed **(ICG, 2020)**. Many institutes, along with the government, magnificently settled and managed COVID-19 calamity online which was challenging for every student but varied depending on their different living standards as in the other countries of the world. These different living standards include the area where they are living, the age group, family income, background, etc. The children that stayed at home lacked regular schooling and also missed out on many of their group activities, sports, and leisure interests **(Dunton *et al.*, 2020)**. In all of this, we knew that students faced multiple issues, but one that needed immediate attention was whether there was availability of electronic devices for them and if there was not, what did the students do? Even after the Covid-19 lockdown was lifted in August 2020, many institutes chose to remain shut and students remained unsure whether the institutes will open or the learning system will continue online. In this uncertainty, students knew they had to study online using electronic gadgets one way or another at least for some part of the semester **(Bari, 2020)**. Thus, we in our report chose to run a study on how the lockdown held due to Covid-19 brought about the daily education being moved to vitality, prompting an expansion in the requirement for electronic gadgets such as smart phones, laptops, and tablets.

Before we could start our specific study, we gathered important data and consulted existing research studies about the impact of Covid19 on different aspects such as e-commerce, online education, work from home, and consumer behavior to get an overview. A change in the trend of the prices and demand for electronic devices during Covid19 was seen. It is predicted that 24% of consumers will increase their long-term use of digital channels due to Covid19 **(Boidron and Crowell, 2020)**. Lenovo laptops and concluded that the sudden

shift to work from home and remote learning during the corona virus have resulted in increased demand for laptops between INR Rs.32,000 and Rs.52,000 (approx. USD 430 and USD 700) price bracket in India **(Bhatia, 2020)**.Also, the increase in demand for laptops has created a shortage in stores and an increase in prices **(Tilley and Needlemen, 2020)**. An article states that prices of new and refurbished laptops due to online work and study have increased by 30-40% **(Kulkarni, 2020)**.

The impact of the shift to online education in a school in Georgia due to Covid19 was discussed in a research paper **(Basilaia and Kvavadze, 2020)** It concluded that the overall impact of virtual learning has been positive because 86 teachers were given proper training and tools to be able to assist students. There were only 10 cases where teachers had technical issues in the first week. Grade I to VII and XII had 98% attendance, while VIII-XI grades had 94%. It further discussed that low-grade students were performing better at home assignments now that could potentially be the result of the government's advice to cancel official grading. However, these results only speak for the first week of online learning. It does give us a general trend on the impact of virtual learning on any other school given that the school takes all possible measures, but it cannot be exactly used to determine the trend for the rest of the weeks and schools in other areas/regions. On the contrary, a few papers gave the opposite view. A paper talks about how decreased learning time has impeded student learning during the pandemic **(Garcia and Weiss, 2020)**. It uses the help of a 2015 NAEP mathematics assessment that shows how the students' performance becomes worse as the students miss school more frequently. Another paper targeting three Jordanian universities concluded that the increased screen time due to online shifts was detrimental to student's mental health, causing depression and anxiety **(Haider and Al-Salman, 2020)**. 203 corporate sector professionals performing 9-5 work from home and of 325 undergraduate and postgraduate university students during the lockdown, and concluded that the online shift has increased insomnia, caused depressive symptoms, and caused a delay in bedtime and wake up time **(Majumdar *et al.*, 2020)**.These papers are all comprehensive studies of the effectiveness of online learning, which we will also focus on in our research. However, it does not give us data about how many students had the comfort of their personal electronic devices.

The data we consulted gave us a green light to carry out our research by making us aware of the general trends and behavioral changes during the pandemic lockdown. However, regional and cultural differences play a vital part in determining certain trends, and to some extent, behaviors do vary from culture to culture. For instance, in a western, economically stable country, it may have been easy for some schools and universities to lend laptops to their students during the lockdown, but it may not have been possible for schools in Pakistan. Therefore, we felt the need to find out the behavior of people in Karachi, the most populated city of Pakistan, and since remote working and learning are not a very popular thing in our country due to vast economic differences and unpopularity of IT resources, and not much research was done on it before or during the pandemic,

it was a sensible choice to go ahead with this topic. It was then necessary to find out how people of such a country coped with the challenges including the availability of electronic devices, what were the positives of the process, and whether there were feasibility and effectiveness in it. We hope our research can be used in some way in the future for analysis of remote learning potential in our region, and to examine its related impact.

Methodology

Our study's data was collected by a comprehensive Google form questionnaire that was circulated among high school and university students in Karachi, Pakistan who did remote learning and took online classes during the lockdown. These students mostly belonged to the private institutes. The questionnaire's link was shared with respondents on different social media platforms such as Facebook, Instagram, WhatsApp, and through email. The questionnaire consisted of three main sections of categorical questions for the respondent:

1. Demographic data: Personal information such as age, qualification, family income.
2. Students' behavior towards electronic device: If there was a need for an electronic device, efforts for arranging a device, costs incurred, consumer preferences, and whether they faced issues with the device.
3. Impact of virtual studies: Problems with online education, feasibility or non-feasibility of online studies, effectiveness or non-effectiveness of online studies, and future preference for online education.

The main purpose of this questionnaire was to collect data regarding students' behavior towards the need for electronic devices, how the students catered to the issue of non-availability of electronic devices to continue their studies virtually, and their perceptions about remote learning. This questionnaire was forwarded to the educational institutes and we received 310 responses out of which 301 fell under our criteria and are used in the analysis. We received responses from a couple of schools/universities, including the following:

IoBM, Mak collegiate, IBA, SZABIST, NUST, DOW University of Health and Sciences, Aga Khan Higher Secondary School, University of Karachi, Ziauddin University, Shaheed-e-Millat College, Khatoon-e-Pakistan Govt. College, Iqra University, NED University, FAST, Usman Institute of Technology, Beaconhouse School, St. Lawrence Govt. Degree College, Cordoba School, Government Degree Science and Commerce College, Indus University, St. Patrick's School.

Some aspects of our data analysis and the graphical representation are done with the help of Microsoft excel.

Results and discussion

We received 310 responses in total out of which 301 fell under our criterion. 9 respondents were outliers, who were studying in other cities of Pakistan, and did not belong to our sample area. The study level of the 301 students is shown in the following figure:
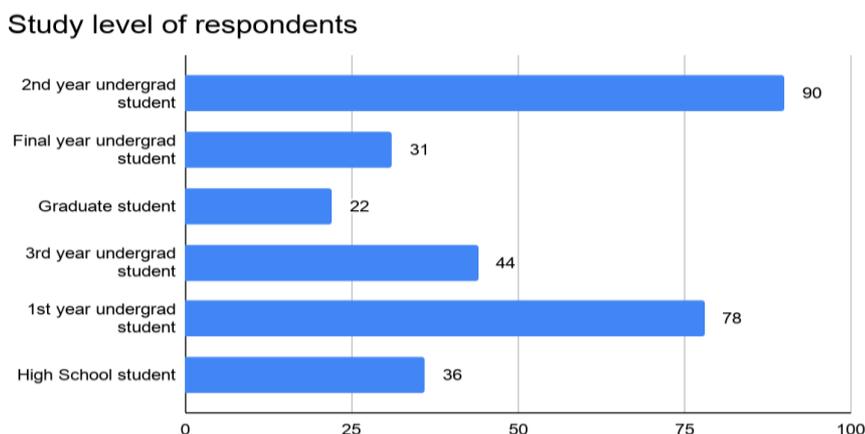
Study level of respondents

Figure 1

A primary question of our questionnaire was "When the government first imposed Covid-19 lockdown, did you have a proper-functioning electronic device for online education?" Out of the 301 respondents, the majority i.e. 237 (78.7%) stated that they already had a proper functioning electronic device when the Covid-19 lockdown was imposed. The other 21.3% did not, therefore, they responded to the unavailability of the electronic device in the following ways:

•   24 respondents said they bought a new device
•   20 respondents said they got their device repaired
•   18 respondents borrowed a device from a friend/relative
•   2 respondents rented a device

Availability of device when first covid-19 lockdown was imposed:

- ● already had a device
- ● borrowed
- ● bought
- ● repaired
- ● rented

Figure 2

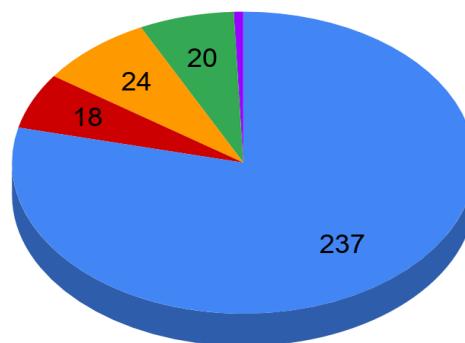Based on the answers the respondents gave to the previous question, they were further asked: "How much did buying a device cost you?" and "How much did getting your device repaired cost you?" The following graphs show the range of costs the respondents incurred from either buying a device or by availing repairing service services such as getting a battery, laptop touchpad, keyboard, etc. replaced.

Figure 3

Figure 4

From the results, we wanted to know in what magnitude was there an influx towards the consumer electronics industry in Karachi. Hence, the total income generated from the above costs summed up to PKR 860,733 (around USD 5370 according to the exchange rate as of Nov 26, 2020). Therefore, during the first wave lockdown of Covid-19 in Pakistan, an income of at least PKR 860,733 was generated for the electronics industry in Karachi just from our sample of 301 people (the income from all responses is PKR 900,000 if we consider the 9 outliers as well). However, these are underreported costs because two respondents did not mention how much buying a new device cost them, and the two people who rented an electronic device did not mention the rent they paid for it, therefore the income produced from our sample is more than mentioned here. As can be seen, the total number of respondents who consulted the electronics industry during the lockdown alone was 46; 15.28% of our sample size. This ratio and statistics can be used for inferential statistics to estimate the results for all high school and university student population in Karachi. There are hundreds and thousands of other higher secondary and university students in Karachi who had to respond to the online shift in some way, and whom we could not include in our sample. In short, we can say the income generated for this specific industry has given a minor boost to the country's economy.

Since it was electronic devices that made remote learning possible during the lockdown, we wanted to find out the success of online education and students' perceptions about it. Therefore, a third section in our questionnaire was included aiming to find this. We discovered that for the majority of people, online learning was a challenge. The following data testifies this fact:

- Firstly, upon being asked what the major issue was during online learning, the second majority i.e. 23.9% of our sample said that their course concepts were unclear. This is a significant number, which implies that students had to compromise on their concepts during online learning.
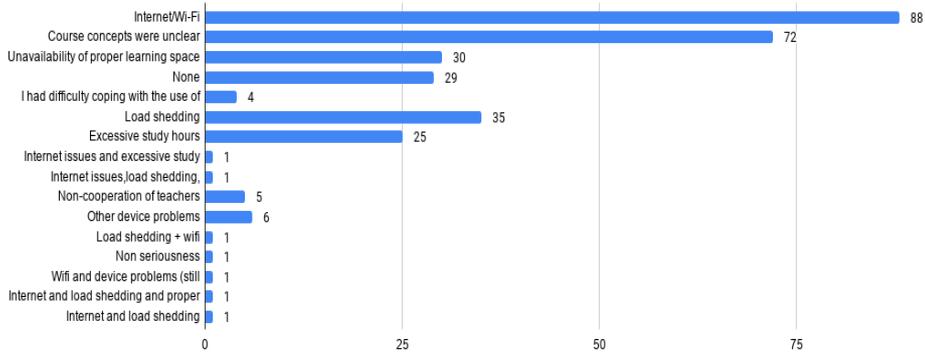
Which was a major problem in online learning?

Figure 5

- Secondly, in response to the question "On a scale of 1-5, how feasible was online learning for you?" respondents answered as shown in Figure 6 below. The mean scale was 2.9, which shows that our sample was more inclined towards non-feasibility of online education.

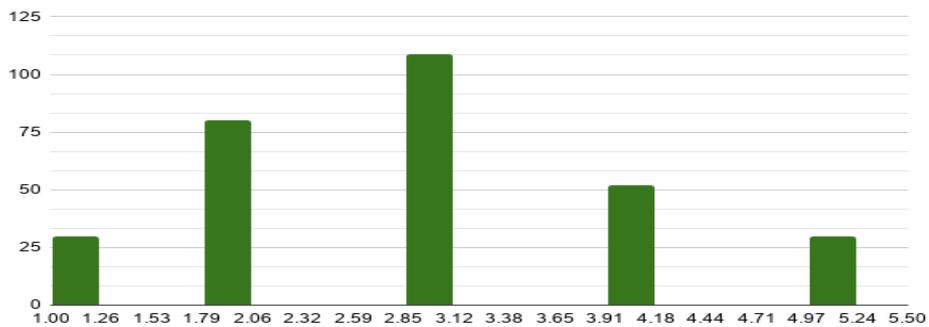On a scale of 1-5, how feasible online learning is for you?

Figure 6

- Lastly, we asked if respondents would prefer online education in the future. The majority from 301 said they would not. The others said they would, or they were not sure.

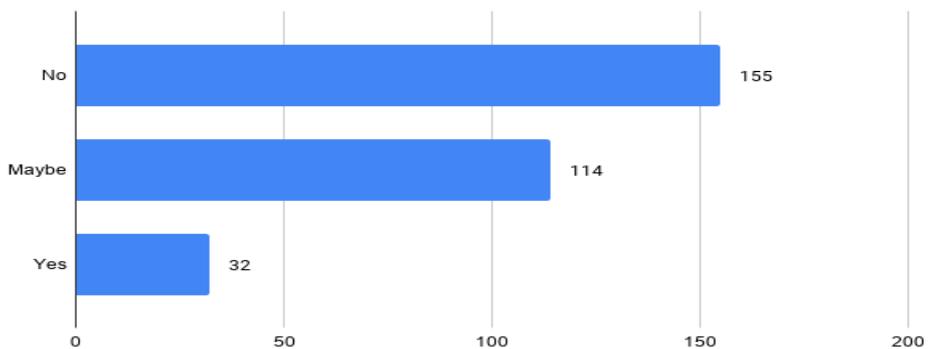Would you prefer online learning in the future?

Figure 7

From our overall results, we can see how the electronics industry has benefited due to the shift to online education and has prompted the students to have

electronic devices. However, from a bird's eye view, it has made it a necessity for students to have awareness of technology and usage of electronics, as they had to find solutions to the ambiguities they faced during online learning. This influx of consumers towards electronics has made us come closer to adopting the IT culture. The developed countries have long before inculcated their everyday lives with technology, but we have been behind in this race. IT and other technology has finally started to take a stronghold in our region now, which is not normally used to its full potential in our region. The whole situation has reiterated the fact that IT is a necessity in this contemporary world. With around 64% of Pakistan's population as a youth and under the age of 30, we can imply that if IT has really found a home in our part of the world, the future is bright not only for the electronics industry but also, more importantly, for the country as a whole.

Conclusion and recommendations

301 students who did online learning in Karachi during the first Covid-19 lockdown participated in our study, out of which 78.7% had proper-functioning electronic devices, and 21.3% did not, so they bought, borrowed, or rented devices, or got them repaired.15.3% of our sample sought help from the consumer electronics industry; thus, we saw an influx towards the electronics industry in Karachi, generating an income of PKR 860,733 just from our sample size, giving a minor boost to our economy. From the third section of our questionnaire, we also saw that for more than 50% students, online learning was not very successful since they rejected its idea in the future, and its feasibility was low. Major problems students faced during online education *were Internet/Wi-Fi issues* and *unclear course concepts*. From the above results, we see that more people in our region have come closer to adopting IT and technology, and have realized that IT and technology is the way forward to survive. With around a 64% young population, Pakistan's future is bright if it has understood the importance of IT in the contemporary world.

From the above results, we recommend the following:

- Since IT and technology has become a necessity for students to survive in the changing world, we recommend that the government should start schemes that provide students with technological facilities such as giving discounted or free laptops. Moreover, both public and private schools/universities should add IT-related courses and concepts in their syllabi, and make their curriculum more IT-oriented.
- Since the majority of students said that the Internet was a major problem for them, we recommend that the Pakistan Telecommunication Authority (PTA) ensures better network stability in the city, by taking steps such as reducing copper usage, using more Fiber to the Home (FTTH) in all areas, better bandwidth allocation, etc.
- Since students in our sample did not find online education too feasible and the majority would not prefer online learning in the future, we recommend that the everyday, formal education should not be online but should be physical. The essence of physical interaction among students,

peers, and teachers should remain intact. Other occasional courses/workshops can be online.

Limitation

Due to limited resources, our study could be performed on a small student population i.e. around 301 people. In addition to it, our study could only include very few students belonging to public universities, thus it does not represent the entire university and high school student population in the city. Public universities have a higher population of students belonging to very low-income families, who may not even have IT facilities such as Wi-Fi or electronic devices to be able to do remote learning, thus their needs and such inequalities are not considered in this study. Further research is required to focus on public sector students and propose solutions to counter their issues.

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