Effects of COVID-19 Pandemic on the Productivity of Undergraduate Students

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Abstract

The COVID-19 crisis has drastically altered people's lives and livelihoods. Throughout the COVID-19 pandemic, online learning has been the standard for higher education institutions. The effects of the coronavirus pandemic and the resulting institution closures caused significant physical isolation among university students worldwide. Thisstudy aims to evaluate the perceived influence of COVID-19 productivity on undergraduate students of Mapúa University. The researchers used descriptive statistics to analyze data from a sample of 100 participants who completed an online survey that contained demographic profiles and academic information. Moreover, the researchers also utilized a paired sample t-test to measure the students' satisfaction with overall experiences in online and traditional face-to-face classes before and during the COVID-19 pandemic. Four (4) factors were identified: workload, financialstatus, convenience, and technology use. As a result, researchers distinguished the effects of the COVID-19 pandemicon the productivity of undergraduate students at Mapúa University.

Keywords
COVID-19, face-to-face, paired sample t-test, higher education, and satisfaction.

1. Introduction
The COVID-19 pandemic, caused by a novel coronavirus, has drastically changed the lives of millions of people worldwide, including students, in just a few months (Aristovnik, 2020). This pandemic has far-reaching ramifications for higher education students living and working, significantly impacting their physical and mental health. As a result of the need to protect their students against viral transmissions, schools and universities have come to a complete halt in their regular work. Due to the rapidly spreading contamination, only a few schools in China and a few other significantly affected nations were forced to close as of the first week of February of 2020. As of mid-March, almost 75 countries have enacted or declared the shutdown of academic institutions (Muthuprasad et al., 2021).
In contrast, students adapt to the 'new normal,' particularly online education, the sense of a comparatively more significant burden prohibited students from perceiving a higher performance. Students were primarily bored, uncomfortable, and dissatisfied and expressed concerns about their future professional careers and study challenges. Throughout the COVID-19 pandemic, more than nations employed lock-down procedures at least once nationally or locally. As a result of these closures, face-to-face classes have been converted to online learning (Kwok et al., 2020). This infectious disease has a considerable effect on the lives of students. Issues can involve increased workload, rapidly transitioning to an e-learning environment, and increased anxiety due to uncertainties and pandemic anxiety. Furthermore, in the study of Paul & Jefferson (2019), there has been an increase in students taking online classes. For them, the traditional classroom setting is constricting, rigid, and ineffective. As technology continues to progress, schools are capable of providing classroom instruction through the internet. In light of this transition in educational tools, schools and universities are compelled to reevaluate how they intend to offer their course material.

The coronavirus causes cough, cold, sneezing, fever, and other respiratory symptoms (WHO, 2019). This disease

is a highly infectious illness that is rapidly spreading among humans. COVID-19 is a new strain that first appeared in Wuhan, China, in 2019 and is found in animals; however, some strains can be transmitted from animals to people (Perlman & Mclntosh, 2020). The consequences of the COVID-19 epidemic on the education sector have resulted in extensive school and college closures worldwide. On March 24, India imposed a nationwide school and college lockdown (NDTV, 2020) to prevent the spread of the coronavirus among students (Bayham & Fenichel, 2020).In response to the COVID-19 outbreak, school cancellations have brought several challenges affecting educational access. This can be supported by the study of Bridge (2020), who claimed that schools and universities are shifting toward educational technology for student learning to minimize stress during the pandemic season. As a result,this study aims to design and evaluate a conceptual model of student satisfaction with online education during COVID- 19, when both students and teachers have no choice but to use the online platform for continuous learning and teaching.

The e-learning framework has been increasingly employed as a dynamic platform for learning and teaching operations(Salloum & Shaalan, 2018). This learning mode is a novel approach to online education built on information technology (Moore et al., 2011). In contrast to conventional education, academics, educators, and other practitioners are keen to study how e-learning improves academic outcomes. The only way to get an answer is to look at student experience and performance. Much research has been conducted to determine if face-to-face or traditional teaching techniques are more effective (Lockman & Schirmer, 2020; Pei & Wu, 2019; González-Gómez et al., 2016; González-Gómez et al., 2016).

According to Lopez et al. (2021), Academic self-efficacy is also a strong predictor of how well a student will perform in a given task. On the other hand, academic motivation is critical for all students because it is the source of their perseverance in the face of adversity. Thus, self-efficacy and academic motivation are essential in every student's education to be more productive in online learning, especially during this pandemic.

Based on the findings of the studies, students do far better in online learning than in traditional knowledge. Henriksen et al. (2020) discussed the difficulties instructors experience while transitioning from an offline to an online style of instruction. Several research studies on online learning have investigated student experience, acceptability of e-learning, distant learning success factors, and learning efficiency (Sher, 2009; Lee, 2014; Yen et al., 2018). However,there is a lack of research on the characteristics that influence student experience and performance in online classrooms during the COVID-19 epidemic (Rajabalee & Santally, 2020).

The impact of the COVID-19 pandemic on students' productivity has been studied extensively. In particular, Byrnes et al. (2020) found that the COVID-19 pandemic has caused havoc on practically every sector of society, severely impacting students' learning in higher education. According to the findings of the data gathering, nearly 90% of participants said the virus pandemic had a significant impact on learning. The study's respondents found that the COVID-19 pandemic has impacted students' education, including classwork, task loads, learning effectiveness, academic motivation, educational activities, goals, skills, learning ability, and the length of one year's studies. According to Qazi et al. (2020), when learners do not have enough resources in e-learning, they receive poor ratings and have detrimental consequences on their performance. As a result, colleges should concerted effort to provide adequate resources for online learning.

The impacts of the COVID-19 pandemic have been studied extensively by several researchers; however, the study ofthe effects of the pandemic on the productivity of the students has not been clarified. Previous studies have not includedfactors, particularly the students' workload, financial status, convenience, and the use of technology. Moreover, minimal studies were conducted regarding student academic productivity during the pandemic.

This study aims to identify the effects of the COVID-19 pandemic that greatly influence undergraduate students' productivity at Mapúa University. Under that main objective, the researchers propose to distinguish how those effects affect students' overall productivity. Moreover, this study will cover undergraduate students' satisfaction level of fulfillment regarding their experience in online and traditional face-to-face classes. The comparison between traditional face-to-face and online learning modes for students' productivity will also be studied.

The study's result will benefit undergraduate students, college professors, and future researchers. The data gathered from the said students will be helpful as it will provide information about the effects of the COVID-19pandemic on their productivity. It also determines their productivity depending on their workload; therefore,adjustment depends on their habits. With this information, university administrators can make more informeddecisions about

how to respond to the pandemic's impacts on students and faculty members. Moreover, it is also beneficial to college professors to assess the weight of the workload given to the students for the upcoming semesters.Lastly, the result will be a great help for future researchers in determining the effect of the COVID-19 pandemic on students; it will also help them understand that under different circumstances, the productivity of the students differs from each other. In the long run, findings in this study can benefit both the survey takers and the rest of the communityis taken into consideration.

This study focuses on the impacts of the COVID-19 pandemic on the productivity of the undergraduate students of Mapúa University. In addition, the respondents will only include the undergraduate students of Mapúa University in any campus branch and department. That said, the study mainly focuses on the productivity of undergraduate students who have experience taking fully online classes during the pandemic or traditional face-to-face classes before the outbreak of COVID-19. It will not cover nor focus on students studying in other universities and their productivity. Moreover, the study will not cover other impacts on students' productivity, such as video games, peer pressure, or family conflicts.

2. Review of Related Literature

2.1. Workload

Academics are the university's most valuable asset and a significant constituent. To overstate their significance in thedissemination of information is to undervalue it. Educators contribute to society by spreading additional knowledge, solving real-world problems, and ensuring students are well-prepared for the hurdles they will face in the future. Overthe past two decades, many empirical literary works on educational productivity and workload have increased in many countries. Most of these investigations concluded that workload significantly impacted productivity (Kelvin, 2021). Consequently, it is becoming increasingly difficult for students to receive the same education and support in person as schools across the country when they begin using online platforms. Lack of face-to-face assistance becomesdifficult when students' workload remains the same as previously lectures went online. Students and teachers in poorareas, particularly public schools, are less familiar with the technology. Hence, instructors cannot streamtheir classes for learners to study in person. As such, students are required to learn independently through text materials, which are far less advantageous than direct instruction from an instructor (Gil, 2020).

2.2. Financial Status

In a study by Javaid et al. (2015), it has been stated that Pakistani university students' academic performance and behavioral perceptions are linked to their parent's financial status. The researcher used cluster sampling with proportional allocation to choose an independent sample of 275 students at random from among its student body in auniversity in Pakistan. A questionnaire is created to evaluate numerous components of the impact of parental status. The data is analyzed using descriptive and inferential statistics. This can be supported by the study of Hicks (2021), wherein it is stated that students' college years are celebrated as a period of learning and discovery. Taking advantageof this opportunity will not happen without its own set of hurdles. As most students have a stronger feeling of financialresponsibility than ever, this can be a difficult obstacle to overcome. Due to financial stress, an escalation in student debt is connected to a decline in grade point averages.

Similarly, students' academic and career ego is lowered due tofinancial hardship. When analyzing college students, consider that those from lower socioeconomic backgrounds maylack access to information that higher-income students commonly take for granted as necessary for academic achievement (Assari, 2018). As for Heckman et al. (2014), financial burdens in university students were studied utilizing Roy Adaptation Model (RAM), a conceptual framework commonly used in medical applications. Researchers used multivariate logistic regression to examine the 2010 Ohio Student Financial Wellness Survey responses. 71% of the students surveyed said they are highly concerned about their finances. According to the proportion tests and logistic regressions, this study identified significant financial stressors for college students. A lack of financial resources and the fear of accumulating student loan debt were two critical financial stressors for students. Results revealed that students who are more confident in their financial abilities and more optimistic about the future are less inclined to disclose financial stress.

2.3. Convenience

Using the internet has produced numerous positive results, including fulfilling one's own wants and needs, leading toa sense of personal satisfaction. Everyone may benefit from the internet, particularly in the digital age, when most ofour daily duties can be completed online. This can be supported by the study of Shahibi & Rusli (2017), whostated

that everybody hopes to benefit from being exposed to cutting-edge technological advances. It also considers the advantages students might obtain from the emergence of the internet as a teaching tool. Students can utilize online resources to learn about the internet, which can be advantageous. Abelido et al. (2021) stated that due to theCOVID-19 pandemic, many schools have turned to a virtual learning setup based on a modular system. Having internet connectivity is a requirement for all types of education. Still, it was highly crucial for courses online since connecting to a network and engaging in online engagement were both reliant on it. Transportation is another factor that affects students' productivity.

2.4. Use of Technology

Another factor is how students use technology for academic-related tasks or communication, which can be supportedby the study of Carstens et al. (2021). Modern culture strongly prefers electronic devices such as smartphones and computers and Wi-Fi and entertainment systems. It has been stated that technology is a controversialsubject amongst students nowadays and that every student's life revolves around technology. As advantageous as it has been, bringing technology into classrooms has its pitfalls. As a result of technological advancements, students have become more enthusiastic and engaged in their education. According to Bombay et al. (2021), learners' difficulties include a lack of technology and intermittent network connectivity. Several teachers have expressedtheir displeasure with the challenges of online classes, which they claim have resulted in several students dropping out of school.

3. Methodology

3.1. Conceptual Framework

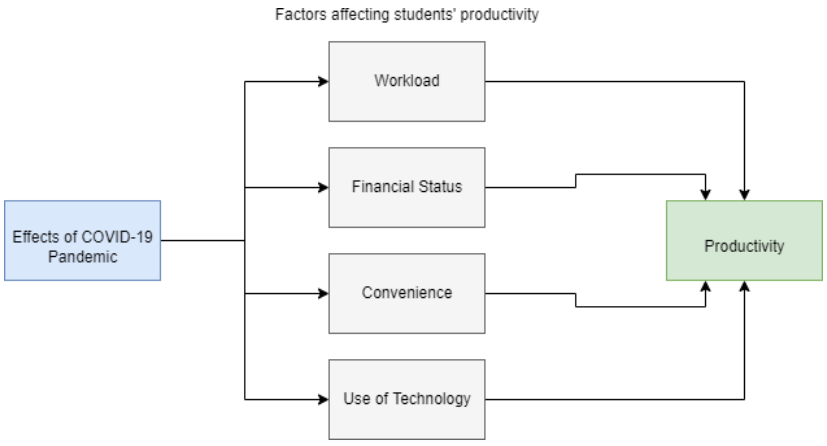

Figure 1. Conceptual Framework

Figure 1 depicts the various components of the study, including the workload, financial status, convenience, and use of technology. Both learning modes, fully online and traditional face-to-face, include subfactors such as the number of units taken, time management, study duration, household income, tuition fee (quarterly), assessments, internet speed, device, communication, and source of internet. These factors and subfactors will identify the most significant effect on students' productivity before and during the COVID-19 pandemic.

3.2. Respondents of the Study

The study sample included 100 undergraduate students from Mapúa University who had taken traditional face-to-face classes before the outbreak of the COVID-19 pandemic and are currently enrolled in the third term of the academic year 2021-2022. This study would be limited to undergraduate students of both university branches: Makati and Intramuros. Using a 5-point Likert scale and demographic questions, the researchers created an online survey using Google Forms. The first section of the survey questionnaire required information suchas the student's age, gender, and current location. Moreover, the following section involves the student's academic information: preferred mode of learning, the number of courses taken this third term and the total units, the number of courses taken before the lockdown, and the corresponding units. The last section covers the different factors and their subfactors: workload, financial status, convenience, and use of technology. Moreover, it contains 20 questions to

be used for data analysis.

3.3. Survey Tools

According to Nayak (2019), online surveys help prepare questionnaires, collect data, data storage, visualize data, and collaborate on work. Online surveys can be administered for a minimal cost and a short period of time. The researcher can begin the survey at any time, take a break, and restart it as needed. With that, researchers in the current study used a questionnaire distributed to 100 respondents through a Likert scale. This contained statements and other information answered by the respondents to determine their productivity level. Factors such as workload, financial status, convenience, and use of technology are included in the questionnaire. Moreover, it has four (4) sections: demographics, students' academic information, fully online, and traditional face-to-face. For the third and fourth sections, researchers used a 5-point Likert scale for the respondents to rate the degree to which they are very satisfied, satisfied, neutral, dissatisfied, or very dissatisfied with the statements. Moreover, the questionnaire will be used to understand the study further and compare satisfaction between traditional face-to-faceand online classes.

3.4. Statistical Treatment of Data

In the study of Yellapu (2018), among the essential elements of quality research practice is providing descriptive statistics that follow a structured procedure to avoid revealing ambiguous or factually inaccurate findings. Therefore, as for the statistical treatment of data, researchers used descriptive statistics and paired samplet-tests to determine if there is a significant difference between traditional and online classes that affect the students' productivity. Respondents' profiles and responses are summarized using descriptive statistics, which is a wayof describing the fundamental characteristics of the data. Moreover, the researchers used the paired sample t-test to compare the means of two data obtained from the responses to identify the distinction between variables.

4. Results and Discussion

4.1. Demographic Profile of the Respondents

Table 1. Descriptive Statistics of Students' Age

Demographic Variable	n	Mean	Standard Deviation	Minimum Value	Maximum Value
Age	100	20.46	0.9684	19	23

From the results above, Table 1 shows the respondents' age, and the sample's mean age is 20.46. the minimum age is 19 years old, and the maximum is 23 years old. Moreover, the given factor's mean, standard deviation, and range are reasonably symmetrical since the mean is close to the center of the range.

Table 2. Descriptive Analysis of Students' Gender and Current Location

Demographic Variables		n	%
Gender	Female	43	43
	Male	57	57

As for gender, Table 2 reveals that 57% of the respondents are male, and 43% are female. Moreover, for the current location, 52% of the respondents are located in NCR, 26% in Region IV-A – CALABARZON, 15% in Region III – Central Luzon, 3% in MIMAROPA Region, 2% in Region II – Cagayan Valley, and 1% both in Region V – Bicol Region and Region IX – Zamboanga Peninsula. With these results, it can be concluded that the majority of the respondents reside in Luzon.

	Total	**100**	**100**
Current Location	Region II – Cagayan Valley	2	2
	Region III – Central Luzon	15	15
	Region IV-A – CALABARZON	26	26
	MIMAROPA Region	3	3
	Region V – Bicol Region	1	1
	Region IX – Zamboanga Peninsula	1	1
	NCR – National Capital Region	52	52
	Total	**100**	**100**

4.2. Student's Academic Information

Table 3. Descriptive Analysis of Students' Academic Information

Variables		**No. of Responses**	**%**
No. of Courses Taken for the 3rd Term	2	1	1
	5	40	40
	6	50	50
	7	8	8
	9	1	1
	Total	100	100
Corresponding No. of Units	≤ 15	35	35
	16	1	1
	17	10	10
	18	48	48
	≥ 20	6	6
	Total	100	100
No. of Courses Taken before the Lockdown	≤ 5	16	16
	6	24	24
	7	4	4
	8	3	3
	9	2	2
	None	51	51
	Total	100	100
Corresponding No. of Units	≤ 15	17	17
	16	3	3
	17	5	5
	17.5	1	1
	18	19	19
	≥ 21	4	4
	None	51	51
	Total	100	100
Preferred Mode of Learning	Fully Online	48	48
	Traditional Face-to-Face	52	52
	Total	100	100

Table 3 shows the results obtained from the academic information of the students. For the 3rd quarter of AY 2021-2022, 91% of the respondents take 2-6 courses, while the remaining 9% currently have 7-9 courses. As a result, 35%of the respondents have corresponding units of less than or equal to 15, 59% have 16-18 units, and the remaining 6%have units greater than or equal to 20. As for the students who have experienced attending traditional face-to-face classes before the lockdown, 16% have less than or equal to five (5) courses taken, and 33% have taken

6-9 courses. In comparison, 6% of the respondents did not experience the traditional face-to-face class setup. With that, the corresponding units of the 17% of the respondents have taken less than or equal to 15 units, 28% had 16-18 units, andthe remaining 6% only experienced fully online mode. The last part revealed that 52% of the respondents prefer a fully online setup, while 48% favor a traditional face-to-face setting.

4.3. Fully Online Setup

A. Workload

Table 4. Descriptive Analysis of Students' Satisfaction on Workload for Fully Online Setup

Factor	Subfactors	Scale	No. of Responses	%
Workload	No. of Units Taken	Very Dissatisfied	2	2
		Dissatisfied	8	8
		Neutral	23	23
		Satisfied	46	46
		Very Satisfied	21	21
	Time Management	Very Dissatisfied	5	5
		Dissatisfied	12	12
		Neutral	28	28
		Satisfied	40	40
		Very Satisfied	15	15
	Duration of Study	Very Dissatisfied	4	4
		Dissatisfied	21	21
		Neutral	29	29
		Satisfied	29	29
		Very Satisfied	17	17

As shown in Table 4, the results for students' workload in a fully online setting have been acquired. 46% of the students are satisfied with the number of units taken, 23% are neutral, 21% are very satisfied, 8% are dissatisfied, and 2% arevery satisfied. For time management, 40% of the students are satisfied, 28% are neutral, 15% are very satisfied, 12%are dissatisfied, and the remaining 5% are very dissatisfied. Considering the duration of the study, 29% of the studentsare satisfied, 29% of the students are neutral, 21% are neutral, 17% are very satisfied, and 4% are very dissatisfied.

B. Financial Status

Table 5. Descriptive Analysis of Students' Satisfaction on Financial Status for Fully Online Setup

Factor	Subfactors	Scale	No. of Responses	%
Financial Status	Household Income	Very Dissatisfied	2	2
		Dissatisfied	14	14
		Neutral	32	32
		Satisfied	30	30
		Very Satisfied	22	22
	Tuition Fee (Quarterly)	Very Dissatisfied	3	3
		Dissatisfied	17	17
		Neutral	29	29
		Satisfied	31	31
		Very Satisfied	20	20

Table 5 reveals the students' financial status wherein 32% of the respondents rated their household income as neutral,30% are satisfied, 22% are very satisfied, 14% are very dissatisfied, and 2% are very dissatisfied. For the quarterly tuition fee, 31% of students are satisfied, 29% are neutral, 20% are very satisfied, 17% are dissatisfied, and the rest of3% of the respondents are very dissatisfied.

C. Convenience

Table 6. Descriptive Analysis of Students' Satisfaction on Convenience for Fully Online Setup

Factor	Subfactor	Scale	No. of Responses	%
Convenience	Assessments	Very Dissatisfied	0	0
		Dissatisfied	14	14
		Neutral	24	24
		Satisfied	41	41
		Very Satisfied	21	21
	Internet Speed	Very Dissatisfied	8	8
		Dissatisfied	17	17
		Neutral	33	33
		Satisfied	26	26
		Very Satisfied	16	16

D. Use of Technology

Table 7. Descriptive Analysis of Students' Satisfaction on Technology Use for Fully Online Setup

Factor	Subfactor	Scale	No. of Responses	%
Convenience	Assessments	Very Dissatisfied	0	0
		Dissatisfied	14	14
		Neutral	24	24
		Satisfied	41	41
		Very Satisfied	21	21
	Internet Speed	Very Dissatisfied	8	8
		Dissatisfied	17	17
		Neutral	33	33
		Satisfied	26	26
		Very Satisfied	16	16

Factor	Subfactors	Scale	No. of Responses	%
Technology Use	Device	Very Dissatisfied	2	2
		Dissatisfied	10	10
		Neutral	26	26
		Satisfied	37	37
		Very Satisfied	25	25
	Communication	Very Dissatisfied	1	1
		Dissatisfied	22	22
		Neutral	16	16
		Satisfied	46	46
		Very Satisfied	15	15
	Source of Internet	Very Dissatisfied	9	9
		Dissatisfied	19	19
		Neutral	33	33
		Satisfied	22	22
		Very Satisfied	17	17

As shown in Table 7, under the use of technology is the device wherein 37% of the students have a satisfaction levelof satisfied, 26% are neutral, 25% are very satisfied, 10% are dissatisfied, and 2% are very dissatisfied. The next subfactor is communication, in which 46% of the respondents are satisfied, 22% are dissatisfied, 16% are neutral, 15% are very satisfied, and the remaining 1% are very dissatisfied. Analyzing the source of the internet of the

respondents,33% are neutral, 22% are satisfied, 19% are dissatisfied, 17% are very satisfied, and 9% are very dissatisfied.

4.4. Traditional Face-to-Face Setup

A. Workload

Table 8. Descriptive Analysis of Students' Satisfaction on Workload for Traditional Face-to-Face Setup

Factor	Subfactors	Scale	No. of Responses	%
Workload	No. of Units Taken	Very Dissatisfied	5	5
		Dissatisfied	16	16
		Neutral	28	28
		Satisfied	42	42
		Very Satisfied	9	9
	Time Management	Very Dissatisfied	7	7
		Dissatisfied	16	16
		Neutral	26	26
		Satisfied	38	38
		Very Satisfied	13	13
	Duration of Study	Very Dissatisfied	4	4
		Dissatisfied	21	21
		Neutral	31	31
		Satisfied	36	36
		Very Satisfied	8	8

Data obtained from the section on traditional face-to-face setup can be seen in the table above. Regarding the number of units taken under the workload factor, 42% of the students are satisfied, 28% are neutral, 16% are dissatisfied, 9%are very satisfied, and 5% are very dissatisfied. As for time management, 38% of the respondents are satisfied, 26% are neutral, 16% are dissatisfied, 13% are very satisfied, and the remaining 7% are very dissatisfied. The last subfactorunder workload is the study duration, wherein 36% of the students are satisfied, 31% are neutral, 21% are dissatisfied,8% are very satisfied, and 4% are very dissatisfied.

B. Financial Status

Table 9. Descriptive Analysis of Students' Satisfaction on Financial Status for Traditional Face-to-Face Setup

Factor	Subfactors	Scale	No. of Responses	%
Financial Status	Household Income	Very Dissatisfied	5	5
		Dissatisfied	6	6
		Neutral	30	30
		Satisfied	37	37
		Very Satisfied	22	22
	Tuition Fee (Quarterly)	Very Dissatisfied	2	2
		Dissatisfied	11	11
		Neutral	28	28
		Satisfied	38	38
		Very Satisfied	21	21

It can be seen in Table 9 that the financial status of the respondents has also been summarized. Considering the students' household income, 37% are satisfied, 30% are neutral, 22% are very satisfied, 6% are dissatisfied, and 5% are very dissatisfied. As for the quarterly tuition fee, 38% are satisfied, 28% are neutral, 21% are very satisfied,

11%dissatisfied, and the remaining 2% of respondents are very dissatisfied.

C. Convenience

Table 10. Descriptive Analysis of Students' Satisfaction on Convenience for Traditional Face-to-Face Setup

Factor	Subfactors	Scale	No. of Responses	%
Convenience	Assessments	Very Dissatisfied	6	6
		Dissatisfied	22	22
		Neutral	32	32
		Satisfied	31	31
		Very Satisfied	9	9
	Internet Speed	Very Dissatisfied	7	7
		Dissatisfied	19	19
		Neutral	36	36
		Satisfied	30	30
		Very Satisfied	8	8

Table 10 reveals the results for the convenience factor for traditional face-to-face setup. The first subfactor is assessments in which 32% of the students are in the neutral satisfaction level, 31% are satisfied, 22% are dissatisfied, 9% are very satisfied, and 6% are very dissatisfied. Internet speed is the last subfactor which can be seen that 36% ofthe respondents are neutral, 30% are satisfied, 19% are dissatisfied, 8% are very satisfied, and the remaining 7% are very dissatisfied.

D. Use of Technology

Table 11. Descriptive Analysis of Students' Satisfaction on Technology Use for Traditional Face-to-Face Setup

Factor	Subfactors	Scale	No. of Responses	%
Technology Use	Device	Very Dissatisfied	5	5
		Dissatisfied	15	15
		Neutral	23	23
		Satisfied	40	40
		Very Satisfied	17	17
	Communication	Very Dissatisfied	6	6
		Dissatisfied	13	13
		Neutral	20	20
		Satisfied	40	40
		Very Satisfied	21	21
	Source of Internet	Very Dissatisfied	4	4
		Dissatisfied	26	26
		Neutral	30	30
		Satisfied	29	29
		Very Satisfied	11	11

As shown in the table above, the last factor consists of three (3) subfactors: device, communication, and source of theinternet. 40% of the students rated satisfied with the device currently in use, 23% were neutral, 17% were very satisfied,15% were dissatisfied, and 5% were very dissatisfied. For communication, 40% of the respondents are satisfied, 21% arevery satisfied, 20% are neutral, 13% are dissatisfied, and 6% are very dissatisfied. Consequently, 30% are neutral regarding the internet source, 29% are satisfied, 26% are dissatisfied, 11% are very satisfied, and the remaining 4% arevery dissatisfied.

4.5. Paired Sample t-tests

Table 12. Paired Sample t-tests of Both Learning Modes

Factors	1 – Very Satisfied 5 – Very Dissatisfied		N	Mean	Std. Dev.	SE Mean	P-Value
Workload	No. of Units Taken	Fully Online	100	2.240	0.944	0.094	0.004
		Traditional Face-to-Face	100	2.660	1.017	0.102	
		Difference	**100**	**-0.420**	**1.437**	**0.144**	
	Time Management	Fully Online	100	2.520	1.049	0.105	0.402
		Traditional Face-to-Face	100	2.660	1.112	0.111	
		Difference	**100**	**-0.140**	**1.664**	**0.166**	
	Duration of Study	Fully Online	100	2.660	1.112	0.111	0.513
		Traditional Face-to-Face	100	2.770	1.004	0.100	
		Difference	**100**	**-0.110**	**1.675**	**0.168**	
Financial Status	Household Income	Fully Online	100	2.440	1.048	0.105	0.473
		Traditional Face-to-Face	100	2.350	1.048	0.105	
		Difference	**100**	**0.090**	**1.248**	**0.125**	
	Tuition Fee (Quarterly)	Fully Online	100	2.520	1.087	0.109	0.190
		Traditional Face-to-Face	100	2.350	0.999	0.100	
		Difference	**100**	**0.170**	**1.288**	**0.129**	
Convenience	Assessments	Fully Online	100	2.310	0.961	0.096	0.001
		Traditional Face-to-Face	100	2.850	1.058	0.106	
		Difference	**100**	**-0.540**	**1.579**	**0.158**	
	Internet Speed	Fully Online	100	2.750	1.158	0.116	0.482
		Traditional Face-to-Face	100	2.870	1.041	0.104	
		Difference	**100**	**-0.120**	**1.701**	**0.170**	
Technology Use	Device	Fully Online	100	2.270	1.014	0.101	0.106
		Traditional Face-to-Face	100	2.510	1.096	0.110	
		Difference	**100**	**-0.240**	**1.471**	**0.147**	
	Communication	Fully Online	100	2.480	1.030	0.103	0.758
		Traditional Face-to-Face	100	2.430	1.139	0.114	
		Difference	**100**	**0.050**	**1.617**	**0.162**	
	Source of Internet	Fully Online	100	2.810	1.195	0.120	0.904
		Traditional Face-to-Face	100	2.830	1.064	0.106	
		Difference	**100**	**-0.020**	**1.651**	**0.165**	

Table 12 shows the paired samples statistics of fully online and traditional face-to-face setups. The data above showsa significant difference between the number of units taken under the factor workload for fully online and traditional face-to-face setups having a P-value of 0.004, and assessments under the factor convenience for fully online and traditional face-to-face setups having a P-value of 0.001. Other subfactors such as Workload: time management and duration of the study, Financial Status: household income and tuition fee, Convenience: internet speed, Technology Use: device, communication, and source of internet depict no significant differences at all in both teaching setups as P-values were greater than 0.05.

5. Conclusion

In this study, the researchers gathered 100 undergraduate students of Mapúa University in both branches of Intramurosand Makati. The 5-point Likert scale and demographic questions were used to determine the effect of the COVID-19pandemic on the productivity of undergraduate students. Moreover, the demographic of the students, such as age, location, or sex, did not affect the research because it was done through google forms, and they are all undergraduatesof Mapúa University.

Based on the study result in the fully online class category, most of the students are male, aged 20 years old, and fromNCR. The courses are taken by each student per semester range from 2 to 9 courses with a unit of less than or equal to 15or more than 15. Most of the students took 2-6 courses with less than or equal to 15 units, which is

expected under Mapúa's academic curriculum. Moreover, some of the students had experienced traditional classes and were entirely online; however, most of the students preferred online classes (52%). Although there are different units taken by eachstudent, 46 of them are satisfied with their unit load, and 40% of the students can manage their time very well. On theother hand, the unit load taken by the students corresponds to the price of their enrollment. The more units are taken,the more subjects to pay for. Therefore, the respondents are mostly neutral to the financial category.

Furthermore, the students who took traditional classes vary differently. Regarding workload, the respondents are satisfied with the number of units taken because they can manage their time, and their study duration aligns and fits well with their routine. Moreover, in the financial category, the respondents are satisfied with their income and the matriculation payment for each semester. The majority of the students can handle finance. However, there is a neutral response regarding convenience for the students. The result is almost the same from dissatisfied to satisfied. Some students find the traditional face slightly inconvenient, while some are pleased with the classes. Lastly, most students are satisfied with the devices because gadgets such as mobile phones and laptops are allowed inside the campus, which is very convenient for studying. In terms of communication, many satisfied students can easily communicate with the other students for some schoolwork. However, some are neutral aboutthe source of the internet on campus.

Given that the result is assessed and appropriately organized according to the respondents' answers, most students aresatisfied with the fully online and traditional setup. However, some are neutral in the financial category ofthis pandemic. Several students are neutral regarding internet speed and source of the internet because some have connectivity issues due to many people using the internet for work and school. Hence, the effects of the COVID-19 pandemic on the productivity of the students slightly have a negative impact in terms of online classes because there are hindrances such as internet speed, source of internet, and financial status. On the other hand, regarding the students' workload, the majority of the respondents are satisfied. Thus, the effect of COVID-19 on productivity did not slightlyaffect. The students adapted well to the pandemic environment; that is why some are satisfied with the current phase of their college.

6. Recommendation

This research has uncovered several new possibilities for future research. While the current study focused mainly on identifying the effects of COVID-19 on undergraduate students of Mapúa University, further analysis can include other students from different universities within the country for more extensive research. With that, current researchersrecommend increasing the number of respondents to acquire more information from students enrolled in various universities in the Philippines. Moreover, future researchers can consider the mental well-being of the students during the COVID-19 pandemic, as this is deemed to be one of the possible factors most affected bythe current circumstances. The relevance of these issues regarding mental health is associated with how students perform in schools and universities; thus, it needs more awareness to ensure that this matter is tackled.

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