Online Education And Students' Wellbeing During Covid-19 Pandemic

Dr Fayyaz Hussain Qureshi[1]
Sarwar Khawaja[2],
Tayyaba Zia[3],
Dr Ruqaiya Javed[4],
[1]Head of Research,
Oxford Business College (OBC),
65 George Street, Oxford, United Kingdom
Doctoral Supervisor
University of Wales Trinity Saint David (UWTSD)
orcid.org/0000-0003-1305-9493
[2]Chairman Business Development,
Oxford Business College (OBC),
65 George Street, Oxford, United Kingdom
[3]Research Associate,
Oxford Business College (OBC),
65 George Street, Oxford, United Kingdom
[4]Research Associate,
Oxford Business College (OBC),
65 George Street, Oxford, United Kingdom

Correspondence: email Tayyaba.zia@oxfordbusinesscollege.ac.uk

Abstract

The primary purpose of this study is to analyse students' opinions on the effects of online education during the pandemic on students' well-being. The unprecedented world scenario that the students have been dealing with may delineate their academic performances and state of well-being to a great extent and subsequently make it a substantial challenge for researchers and practitioners. In addition to the prevailing adverse circumstances due to the pandemic in the educational sector, the stern measures taken by the UK government to avoid spreading the coronavirus also added to the adverse effect on HE students' well- being in England during the autumn back in 2020. It is evident that the pandemic enforced the drastic digital adjustment among Higher Education Institutions (HEIs) across the globe and pushed educational institutions to prioritise remote learning. For example, Oxford Business College (OBC), one of the leading independent (private) HEI in the UK was enforced all campus closures and made digital transformation a substantially more fundamental tactical precedence specifically for core learning among students.

The foremost aim of the present research was to examine how online learning mode affected students' well-being at OBC and the variables contributing to students' opinions. A quantitative research design was adopted, and RStudio was used to analyse the data (N=944). The multi-nominal regression yielded significant results. It was found that online education at OBC did not impact students' well-being negatively, and variables such as gender, awareness of 'no detriment policy' and 'student hardship funds', general health, type of work, and positive measures of UK government significantly contributed to participants' opinions. In conclusion, OBC created a constructive online learning environment during the pandemic, leading students to appreciate digital education and maintain a positive sense of well-being. Furthermore, it is suggested that academic institutions should identify more relevant and interpretable underlying factors that could explain the enduring effects of the pandemic on student well-being.

Keywords: Online Education, Student Well-being, COVID-19, Private Higher Education

Introduction

Corona **V**irus **D**isease 20**19** (COVID-19) was widespread first in Wuhan City, China, in December 2019, then in Europe and the United States of America in the early 2020s has posed significant challenges for all industries, including the global higher education industry (Qureshi et al., 2020). The COVID-19 outbreak continued spreading rapidly since December 2019 and hit 114 countries; World Health Organization declared a pandemic on 11 March 2020 (WHO, 2020). The subsequent exponential transmission of Covid-19 occurred rapidly and significantly changed the mechanisms of everyday life of the majority. According to NHS (2020), the most common sign of covid-19 includes respiratory problems and a range of other symptoms, including continuous cough, fever and a loss of smell/taste. As a result, it became necessary for all nations worldwide to announce a 'Lockdown' that aimed at a complete reduction in social interaction, mainly in the mainstream workplace and educational domain.

On 23 March, UK prime minister announced the first lockdown in the UK, ordering people to "stay at home" (Institute for Government analysis, 2022). Since the lockdown, UK higher education institutions (HEIs) have been experiencing an unprecedented massive migration from traditional in-class face-to-face teaching to online teaching (Qureshi et al., 2020).

The evidence of common mental health problems and worsening well-being during the pandemic has been depicted in many studies. For instance, a survey conducted by the Higher Education Policy Institute in the UK found that 58% of undergraduate students reported a deterioration in their mental health due to the restrictive pandemic, 14% stated it to be better, and the remaining 28% found it as same (Hewitt, 2020). As mentioned earlier, the unexpected closure of campuses (student halls, annulment of exchange studies and graduation ceremonies) and increased uncertainties regarding career options are some of the impacts of the lockdown. Several surveys had been conducted to study students' mental health throughout the pandemic. These included questions concerning comprehending the prevalence of the virus among students and the factors responsible for magnifying the risk of spreading/transmission of the disease.

For instance, the experimental statistics from one of the three pilot Student COVID Insights Survey (SCIS), including over 100,000 students from various universities across England, conducted by the Office for National Statistics (2020), reported that more than 50% of HE students stated their overall mental health to be worsened due to the pandemic situation, more than half of the student population (53%) reported being dissatisfied with their social experience, and students were found to be significantly high on anxiety scores as compared to the general public in Great Britain (Gibbs, 2020). In addition, most students reported that they complied with the COVID-19 guidelines such as washing hands frequently, using sanitisers more often, maintaining a two-meter distance from people inside and outside the university campus, etc. The Exeter student intention survey based on a case study method emphasised students' travel iteration, which reported that over 55% of students were willing to take a COVID-19 test before leaving the campus. Most of the questions in the survey were similar to those in SCIS. The recent pilot study conducted by SCIS highlighted the mode of teaching for which approximately 60% of students reported that university had been directed towards online teaching methods, and over 50% of students were engaged in remote learning for more than six hours.

Tinsley (2020) reported that according to Higher Education Statistics Agency (HESA), the declension in the mental health of UK-domiciled students raised from 1.8% to 4.3% in the past few years. Moreover, an extensive Student Academic Experience Survey (SAES) showed low levels of happiness (12%) during the pandemic as compared to the pre-pandemic situation (18%).

Several other studies have a significant input to identify factors associated with higher levels of distress that helps researchers understand the pandemic's impact and the lockdown on students' mental well-being. A longitudinal comparative study found sleep deprivation as the prime cause of 15% increase in clinical depression and low levels of well-being among 254 undergraduate students during the first lockdown in the UK in April and May 2020 as compared to the pre-covid situation back in Fall, 2019 (Evan, Alkan, Bhangoo, Tenenbaum & Ng-Knight, 2021). Another study confirms high anxiety regarding academic outcomes and future job engagement (Sundarasen et al., 2017; Aristovnik et al., 2020) among many HE students in the UK due to the challenges faced during the pandemic, such as the sudden shift to online learning and difficulty in engaging with the educators and seeking direct support and assistance (Rapanta, Botturi, Goodyear, Guàrdia, & Koole, 2020).

The lockdown restricted students from engaging in activities necessary to their well-being. It also reduces the chances of socialisation and leads to high indulgence in social media, which culminates in social isolation and feelings of loneliness (Shah, Nogueras, Van Woerden, Kiparoglou, 2020).

Numerous studies confirmed the prevalence of higher levels of anxiety, stress and depression among students in other countries like Nigeria (Ojewale, 2021) and Ethiopia, wherein the researchers found demographical factors such as age, gender, prior medical condition, area to be linked with COVID-19, family income, family member infected with COVID-19, etc. (Salman et al., 2020; Islam et al., 2020; Aylie et al., 2020; Tadesse et al., 2020). In addition, interview surveys in the US from undergraduates reported high levels of mental health distress (Kecojevic, Basch, Sullivan, Davi, 2020), negative impacts of the COVID-19 pandemic and the urgent need to develop interventions and preventive strategies for its students (Son, Hegde, Smith, Wang, Sasangohar, 2020). The universities in eastern countries also conducted surveys to determine the deplorable effects of the pandemic on their students. For example, an online survey conducted by a university in Hong Kong (N=255) in July 2020 found high levels of depression in students (Sun, Lin, Chung, 2020). In contrast, a cross-sectional e-survey of more than 300 college students in India between November and December 2020 reported that 68.8% had high fear of COVID-19, 28.7% had moderate to severe depression, 51.5% had mild to severe anxiety, and the family member got infected with COVID-19 suffered from mental health conditions such as anxiety and depression (Chaudhary, Sonar, Jamuna, Banerjee, Yadav, 2021). In addition, a cross-sectional study was conducted on undergraduate students enrolled in post-secondary private higher education institutions in Oman (Abushammala, Qazi and Manchiryal, 2021) to determine the possible outcomes of various methods used to deliver education during the pandemic and its effects on academic activities and quality of education. The results showed that student satisfaction with online learning was less than 50%, and, in some cases, approximately 40%, the financial constraint was a primary concern among students.

Oxford Business College (OBC) is one of the fast-growing independent (private) HEIs in the UK, known for its high academic standards and highly qualified staff. It allows students to experience educational learning. OBC had to revisit and revamp digital learning strategies and COVID-19-related guidelines through a fresh lens in this critical time.

During the pandemic, the HE sectors, public and private in the UK, including OBC, enforced campus closures and made digital transformation a substantially more fundamental tactical precedence specifically for core learning among students and to acquire technology-driven learning standards and infrastructure that assures quality and innovation.

Literature Review

The tertiary students were instructed, due to COVID-19 guidance, to follow new norms and adopt novel learning experiences that could have caused direct or indirect impacts on their mental health and resulted in a reduction in post-secondary enrolments, particularly among low-income students (Rath & Beland, 2020). The research reports from western countries provided information concerning the negative impact of the pandemic on students' mental health. It emphasised the decline in their mental health status (Sheasley, 2021) that was primarily caused due to the separation of students from the school/college/university counsellors who were responsible for providing help and essential support across multiple issues and the new barriers in the accessibility of institutional resources and provisions (Meyers, 2020). The unsolicited parting from the pre-existing support networks developing a sense of disconnectedness in prospective students showed a strong connection with psychological problems such as anxiety, stress and depression (Richardson et al., 2017). Therefore, it became a matter of concern for most psychologists, educational collaborators, wellness coaches and student counsellors to understand the coping mechanism for students during the pandemic. Moreover, implement renewed measures to support the student community in their academic journey, to guide and encourage them in difficult situations that stress change at a behavioural level by focusing more on their emotional and social learning.

The unprecedented world scenario that the students dealing with today may delineate their academic performances and state of well-being to a great extent and subsequently make it a substantial challenge for researchers and practitioners. In addition to the prevailing adverse circumstances of the pandemic in the educational sector, the stern measures taken by the government to avoid the spreading of the coronavirus added to the adverse effect on HE students' well-being in England during the autumn back in 2020. It affected the everyday lifestyle and overall mental well-being of students and the general public.

Furthermore, during the COVID-19 phase, the sudden transition to an altered learning domain has profoundly affected many students' learning status and mental health, which has become a matter of concern for most researchers in recent years (Chen & Lucock, 2022).

It is evident that the pandemic enforced the drastic digital adjustment among HEIs across the globe and pushed educational institutions to prioritise remote learning (Gallagher & Palmer, 2020). According to UNESCO (2020), 1.5 billion students were engaged in remote learning at the height of the COVID-19 Pandemic in March 2020. The restrictions caused during the pandemic had led to colossal perplexity among young minds, as the sudden unexpected transition to an entirely new digital mode of learning was monumental enough in terms of students' independence and behavioural choices. It was reported that 6 out of 10 students strongly disagreed with engaging with desk-based learning, which involved self-studies and online learning, and 50% of students were willing to return to their campus accommodation. In contrast, the remaining 50% found online learning to harm their academic learning and experience (Office for National Statistics, 2020).

The pandemic forced universities in the UK to close their campuses for students and staff, which was required to avoid social contact and protect them from getting infected. The harsh response from students due to the uncertainty caused by the pandemic was reflected in mental and emotional well-being and other mental health conditions (Burns, Dagnall & Holt, 2020).

Academic institutions around the globe espoused various tactics to convert the educational curriculum to the online environment, with the assistance of educational websites and digital tools (Zhaohui, 2020). However, the quick rush to remote learning was not feasible enough for those with less digital literacy due to the significant challenges, such as the rapid digitalisation of course curricula (Crawford et al., 2020). Moreover, the new learning environment for students with digital poverty, especially for mature students, is a concern, specifically in the absence of any typical support networks (Qureshi et al., 2020). For new students, it was unusual to completely alter their behaviour for potentially positive or negative change and conform to the new regulations due to the abstruse situation (Mulye et al., 2009).

Online education is a flexible instructional delivery system encompassing any kind of learning that occurs via the Internet (Encylopaedia.com, 2022). Online education is teaching a class totally or partially through the Internet and online course management tools (Guler, 2017).

Most dictionaries define *well-being* as the state of being comfortable, healthy, or happy. For example, the Cambridge Dictionary defines 'well-being' as 'the state of feeling healthy and happy. According to Naci and Ioannidis (2015), Wellness/Well-being refers to *"the diverse and interconnected dimensions of physical, mental, and social well-being that extend beyond the traditional definition of health. It includes choices and activities to achieve physical vitality, mental alacrity, social satisfaction, a sense of accomplishment, and personal fulfilment."*

There is no consensual agreement around a single definition of well-being. Still, there is general agreement that, at minimum, well-being includes the presence of positive emotions and moods (e.g., contentment, happiness), the absence of negative emotions (e.g., depression, anxiety), satisfaction with life, fulfilment and positive functioning (Frey and Stutzer, 2002).

Generally, *well-being* can be defined as judging life positively and feeling good (Diener, Suh, and Oishi, 1997; Veenhoven, 2008). Well-being, a vital construct expounded in positive psychology, is described as a state of overall mental and physical health, strength, resilience and fitness to function well at work and personally. Positive psychologists have brought it to attention in the public and educational domain. For example, the pioneer of positive psychology, Martin Seligman (2011) suggested that despite many configurations, humans could experience three kinds of happiness: pleasure and gratification, the embodiment of strengths, and meaning and purpose of life.

The vast intricacies of HE students' well-being have been augmented even more due to the impact of the pandemic on their psychological outcomes and the prodigious change in teaching delivery mode and campus closures. An immense progressiveness in the development of the well-being domain in the HE sector has been seen but it still requires more work to deliver a positive impact on the student population targeting their mental health issues and psychological distress (Burns, Dagnall & Holt, 2020). Every university has a different approach to dealing with students' well-being as it is multi-layered and has begun to orient towards the positive aspects of psychological approaches.

The elucidation of the term 'student well-being' can be challenging within the HE sectors, and so does its comprehension. In recent years, the student well-being sphere has started to embrace core tenets of the positive psychology approach. Student well-being is described as "a population-level term encompassing positive emotion and the inner capacity for an individual to cope with the challenges of day-to-day life and their academic journey (Barkham et al., 2019)." Some research has shown that well-being has significant associations with an individual's personality traits such as extraversion, introversion, optimism, and feeling of competency (Heady et al., 1984). In contrast, others have verified happiness, an active emotion, to be linked with various aspects that contribute to the complexity of well-being, such as purpose in life, resources, assessment of needs, etc. (Shin & Johnson, 1978). The two early conceptual approaches of well-being, 'Hedonic' and 'Eudaimonic' principles (Young, 1952; Rogers, 1961), are profuse enough to validate that well-being is multidimensional with inextricable subjective domains.

General good Health, well-being and social inclusion contribute to academic attainment and engagement (Gutman, 2012). Improving well-being may be the key to educational success for students, as there is a positive association between improved educational attainment and improved well-being (Public Health England, 2014).

As we know, the growing concerns about students' mental well-being need more attention than ever, and due to the lack of direct communication between teachers and counsellors, it became even more difficult for the latter to promote positive academic outcomes for students. Therefore, it became vital for researchers to decipher students' opinions on the new mode of online learning while experiencing monumental discomfort due to the pandemic situation.

The present research aims to examine how online learning mode affects students' well-being at OBC and the variables contributing to students' opinions in this regard.

Methods

A quantitative research design was used to analyse the data. In addition, the ethics of the research was taken into account. Participants were assured that their information/data would be kept confidential and used for research purposes only.

Research Questions:

Does online education negatively affect students' well-being at OBC?

What variables contributed to participants' opinions?

We collected 1289 responses initially. A preliminary analysis removed 345 responses that were either missing values or outliers in the sample data, and we were left with a final sample of N=944 for examining the variables under study using RStudio version 1.4. 1106 (RStudio Team, 2020). Furthermore, the variable of interest (question 27) was not binary to fit a logistic regression (Kleinbaum, Dietz, Gail, Klein & Klein, 2002). Hence, regressing all others on the dependent variable (question 27) required a rather sophisticated approach than usual. To deal with the problem, we used multinomial distribution (Kwak & Mattews, 2002) and performed a multinomial logistic regression wherein the model built considered a nominal outcome variable. The 'log odds' of the outcomes are a linear combination of the independent variables. The primary assumption is that adding or deleting alternative outcome categories does not affect the odds among the remaining outcomes. Unfortunately, it is an idealistic assumption that is hard to satisfy.

We examined the opinions of OBC students regarding online learning mode negatively affecting their well-being and the contribution of various confounding demographic variables to their respective opinions. To fulfil the purpose of the present study, the following question was taken into account as the dependent variable with 5 categories each:

Q27. *How far do you agree or disagree with the following statements as a result of Covid-19? 'I think online education at home is negatively affecting my well-being.'* Agree: 77; Disagree: 162; Neither agree nor disagree: 159; Strongly agree: 185; Strongly disagree: 361

The following survey questions/statements were treated as independent categorical variables. The frequency of responses for each variable are given below and the motivation was to regress one of the following on others:

Q1. *What is your gender?* (Please tick only one) Males: 433; Females: 511

Q2. *What is your age range?* 18-30: 309; 31-40: 393; 41-50: 192; Above 50: 50

Q3. *Do you know about the 'No Detriment' policies in place for students to take advantage of them?* No: 599; Yes: 345

Q4. *About your work* Full Time Employment: 518; Part Time Employment: 119; Furlough: 52; Unemployed: 82; Self-employed: 173

Q5. *How significant an impact has Pandemic had on your income?* (Please tick one only) Major Impact: 319; Moderate Impact: 418; Minor Impact: 124; No Impact: 83

Q6. *Do you have enough money to afford the basic needs to survive comfortably?* No: 322; Yes: 622

Q7. *Do you know that you can apply for Student Hardship Fund (SHF)?* No: 452; Maybe: 159; Yes: 333

Q8. *How is your health in general?* Very good: 376; Good: 448; Average: 100; Poor: 17; Very Poor: 3

Q9. *Have you tested positive for Covid-19 (whether presently or previously)?* No: 804; Yes: 140

Q10. *Have any of your family members or any person in your household tested positive for Covid-19 (whether presently or previously)?* No: 760; Yes: 184

Q11. How far do you agree or disagree with the following statements as a result of Covid- 19? (Please pick one response per statement) [*I am concerned about my own Health & Well-being*] Agree: 400; Disagree: 67; Neither agree nor disagree: 159; Strongly agree: 227; Strongly disagree: 91

Q12. How far do you agree or disagree with the following statements as a result of Covid- 19? (Please pick one response per statement) [*I am concerned about the Health & Well-being of my family*] Agree: 403; Disagree: 62; Neither agree nor disagree: 107; Strongly agree: 287; Strongly disagree: 85

Q13. How far do you agree or disagree with the following statements as a result of Covid- 19? (Please pick one response per statement) [*I am concerned about the Health & Well-being of my friends*] Agree: 445; Disagree: 61; Neither agree nor disagree: 139; Strongly agree: 215; Strongly disagree: 84

Q14. How far do you agree or disagree with the following statements as a result of Covid- 19?

(Please pick one response per statement) [*I feel safe in my current household*] Agree: 396; Disagree: 26; Neither agree nor disagree: 68; Strongly agree: 381; Strongly disagree: 73

Q15. How far do you agree or disagree with the following statements as a result of Covid- 19? (Please pick one response per statement) [*I managed to stay safe & stress-free during lockdown*] Agree: 401; Disagree: 65; Neither agree nor disagree: 138; Strongly agree: 262; Strongly disagree: 78

Q16. How far do you agree or disagree with the following statements as a result of Covid- 19? (Please pick one response per statement) [*I have been in contact with the relatives and friends Virtually to make me feel connected & loved.*]

Q17. *Have you seen Covid related information (Advice, support and updates) on the college website?*

No: 0; Yes: 944 **Q18.** Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*Good source of information on Covid-19*] 1: 32; 2: 35; 3: 160; 4: 291; 5: 426

Q19. Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*Provides relevant information related to Covid-19*] 1: 31; 2: 39; 3: 145; 4: 320; 5: 409

Q20. Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*Provides latest information regarding Covid-19*] 1: 39; 2: 32; 3: 150; 4: 317; 5: 406

Q21. Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*Convenient source of information regarding Covid-19*] 1: 34; 2: 41; 3: 155; 4: 320; 5: 394

Q22. Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*Provides complete information on Covid-19*] 1: 34; 2: 36; 3: 158; 4: 315; 5: 401

Q 23. Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*Provides regular updates on Covid-19*] 1: 34; 2: 44; 3: 140; 4: 309; 5: 417

Q24. *How overall satisfied are you about managing the students and learning by the College throughout the pandemic?* (5 being most important and 1 is least important) 1: 12; 2: 11; 3: 61; 4: 269; 5: 591

Q25. Please choose one response per statement. On a scale of 5 (5 being most important and1 is least important) [*I believe that UK Government has adequately considered the difficulties that Students can have as a result of Covid-19*] 1: 47; 2: 54; 3: 225; 4: 323; 5: 295

Q26. Please choose one response per statement. On a scale of 5 (5 being most important and 1 is least important) [*I think the UK Government has managed the Pandemic very well*] 1: 80; 2: 124; 3: 246; 4: 252; 5: 242

Regression Results And Interpretation

We use R to fit a model from the package 'nnet' (Ripley, Venables & Ripley, 2016). The primary motivation for using nnet is that it is not necessary to reshape data, which is customary for such modelling. To have confidence in our results, we made sure the model converged. Regression was run over 3 times, and 16 variables that showed no significant results were excluded from the final model counting survey questions 2, 5, 6, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24. The improved model converged after 100 iterations, reducing the log-likelihood from 1065.448 to 755.898 and giving significant p-values (Table1).

Also, we assumed there is no natural ordering in the response variable and set "Strongly Disagree" as the reference.

Table1: *Multi-Nominal Distribution of Improved Model: P-values*

Question no. and Categories		Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Intercept		*0.395*	*0.630*	*0.001*	*0.032*
Q1	Males	0.712	0.820	**0.028**	0.328
Q3	Yes	0.600	0.200	**0.000**	0.008
Q4	Part-time	0.760	0.790	0.810	0.620
	Furlough	0.840	0.480	0.430	0.660
	Unemployed	**0.025**	0.090	0.079	0.142
	Self-employed	0.847	0.447	0.156	0.045
Q7	Maybe	0.393	**0.022**	0.821	0.086
	Yes	0.670	0.499	0.752	**0.012**
Q8	Good	0.178	0.430	0.204	**0.003**
	Average	0.980	0.770	0.680	0.180
	Poor	0.114	0.076	0.383	0.879
	Very Poor	0.930	0.940	0.920	0.910
Q9	Yes	0.148	0.905	**0.000**	**0.009**
Q13	Disagree	**0.005**	0.320	0.095	**0.000**
	Neither Agree nor Disagree	0.110	**0.043**	0.067	**0.005**
	Agree	0.228	0.191	**0.033**	**0.002**
	Strongly Agree	0.920	0.500	0.110	**0.000**
Q14	Disagree	0.920	0.920	0.790	**0.000**
	Neither Agree nor Disagree	0.100	0.950	0.780	0.950
	Agree	0.482	0.322	0.555	**0.003**
	Strongly Agree	0.088	0.147	0.475	**0.002**
Q25	2	**0.032**	0.095	0.142	0.272
	3	0.130	0.880	0.680	0.150
	4	0.069	0.579	0.952	0.270
	5 (most important)	**0.005**	0.175	0.743	0.215
Q26	2	0.210	0.140	0.460	0.360
	3	0.044	0.552	0.154	0.770
	4	0.160	0.440	0.820	0.780
	5 (most important)	**0.013**	0.556	0.747	0.583

Outcome Base Category: Strongly Disagree; *Predictor's Base Categories:* Q1-Females, Q3-No, Q4-Full-time, Q7-No, Q8-Very Good, Q9- No, Q13-Strongly Disagree, Q14- Strongly Disagree, Q25-1 (least important) and Q26-1 (least important)

The results suggest that 16 questions (as mentioned earlier) do not correlate with the response to question 27. Therefore, we used z-statistics to test against a significant difference with zero based on a two-tailed test.

The statistical evidence suggests that, response of questions 1, 3, 9 and 13 are associated with: *ln[P(Y=Agree)/P(Y=Strongly Disagree)]*; questions 7, 8, 9, 13 and 14 are associated with: *ln[P(Y=Strongly Agree)/P(Y=Strongly Disagree)]*; questions 4, 13, 25 and 26 are associated with: *ln[P(Y=Disagree)/P(Y=Strongly Disagree)]*; questions 7 and 13 are associated with: *ln[P(Y=Neither Agree nor Disagree)/P(Y=Strongly Disagree)]*.

It is worth noting that all these association increases or decreases the log odds of stated above. Since the parameter estimates are relative to the referent group (Strongly Disagree), the standard interpretation of the multinomial logit can be understood through the log odds (Table2). See Appendix. Question 13 seems to influence the log-odds more than any in the sense that it appears at all four logits above. In other words, it seems that students by and prominent were immensely concerned about the health and well-being of their peers. We can interpret this result in the following ways:

- The multinomial logit for Disagree relative to Strongly Disagree in Q13 is 2.07 units lower for being in Disagree relative to Strongly Disagree in Q27, given all other predictor variables in the model are held constant.

- The multinomial logit for Neither Agree nor Disagree relative to Strongly Disagree in Q13 is 0.12 units higher for being in Neither Agree nor Disagree relative to Strongly Disagree in Q27, which seems to be a negligible value.

- The multinomial logit for Agree relative to Strongly Disagree in Q13 is 1.81 units lower for being in Strongly Agree relative to Strongly Disagree in Q27, given that all other predictor variables in the model are held constant.

- The multinomial logit for Strongly Agree relative to Strongly Disagree in Q13 is 2.07 units lower for being in Strongly Agree relative to Strongly Disagree in Q27, given that all other predictor variables in the model are held constant.

Focusing on other predictors, the results obtained also showed significant results given all other predictor variables in the model are held constant:

- The multinomial logit for Males relative to Females in Q1 is 0.62 units higher for being in Agree relative to Strongly Disagree in Q27.

- The multinomial logit for Yes relative to No in Q3 is 1.16 units higher for being in Agree relative to Strongly Disagree in Q27.

- The multinomial logit for Unemployed relative to Full-Time Students in Q4 is 0.97 units higher for being in Disagree than Strongly Disagree in Q27.

- The multinomial logit for Maybe relative to No in Q7 is 0.76 units higher for being in Neither Agree nor Disagree relative to Strongly Disagree in Q27.

- The multinomial logit for Yes relative to No in Q7 is 1.15 units lower for being in Strongly Agree relative to Strongly Disagree in Q27.

- The multinomial logit for Good relative to Very Good in Q8 is 1.32 units lower for being in Strongly Agree relative to Strongly Disagree in Q27.

- The multinomial logit for Yes relative to No in Q9 is 1.36 and 1.38 units higher for being in Agree and Strongly Agree, respectively, relative to Strongly Disagree in Q27.

- The multinomial logit for Agree to Strongly Disagree in Q14 is 0.36 units lower for being in Strongly Agree relative to Strongly Disagree in Q27.

- The multinomial logit for Most Important to Least Important in Q25 and Q26 is 0.08 and 1.29 units lower for being in Disagree relative to Strongly Disagree in Q27.

Further Analysis suggested that the accuracy of the improved model showed 76% correct prediction in the training data set (70%) whereas 66% correct prediction was found in the validation data set (30%). We found a considerable discrepancy in the accuracy of both data sets that may affect the predictive ability of any new data. However, accepting that the data works in corporeality and the way opinions of individuals vary across situations, we can merely justify our results in the current setting.

Another interesting result was obtained when checked for a specific group in the training and testing data. The students who strongly disagreed with Q27 were in the majority (57%).

Discussion

The main aim of this study was to answer the research question, 'Does online education negatively affect students' well-being at OBC? What variables contributed to participants' opinions?' The results showed that over 50% of private HE students strongly disagreed with Q27, '*I think online education at home is negatively affecting my well-being*' (a dependent categorical variable). Thus, based on these results, online education at OBC does not impact students' well-being negatively. This is the answer to the first research question.

The results found that female students were more likely to have a positive opinion about online education not negatively affecting their well-being than their male counterparts. The 'No detriment policy' awareness among students suggested a negative opinion about online education. In contrast, considering the type of work students were engaged in, we found that unemployed students were more likely to disagree on the negative effects of online learning mode than full-time working students. This could be aligned with the fact that full-time students are more concerned about degree completion and their future job employment and experience negative emotions, further decreasing their learning engagements due to pandemic (Plakhotnik Maria et al., 2021). Moreover, those who knew about the student hardship fund felt safe in their current household, had relatively good health in general, believed that the UK government has adequately considered the difficulties faced by students and has managed the pandemic very well, and found online education less detrimental for their well-being. On the contrary, students who tested positive for covid-19 were more likely to attribute online education to the poor well-being of students at OBC. Evidence showing contradictory results states that HE male students were found to be less depressed and anxious but less physically active than the female students during the pandemic, and both found their mental health to deteriorate immensely (Gestsdottir et al., 2021).

Secondly, we found several factors responsible for regulating students' opinions regarding online education during the pandemic. The opinions of students concerning the health and well-being of their friends were found to be most significant among all other predictors.

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Those who strongly agreed that they are concerned about their peers' well-being were more likely to strongly disagree that online education negatively affects students' well-being at OBC.

Apart from that, factors such as gender, awareness of the 'no detriment policy' and 'student hardship funds', general health, type of work, and positive measures of the UK government significantly contributed to participants' opinions. This answers the second research question.

Social confinement measures of the UK government harmed students' emotional and mental well-being (Burns, Dagnall & Holt, 2020) due to less interaction with social educators (Rapanta, Botturi, Goodyear, Guàrdia, & Koole, 2020). Lack of recognition for their specific academic and life situation further reduces students' well-being by 75% (Holm-Hadulla, Klimov, Juche, Möltner & Herpertz, 2021), which shows some disparity with our results. However, such norms and regulations are subjective to individuals. Also, the time length of the research work influences student preferences (Amir, Tanti, Maharani et al., 2020). Our result suggests that HE students at OBC found the UK management system during the pandemic satisfactory. Analogous results were shown at an Italian University where 90% understood the government's preventive measures, and 55% of students were willing to contribute substantially to face the pandemic (Villani et al., 2021). Similar results were reported by Hewitt (2020), which stated that 14% of students found their mental health to be better during the pandemic.

Conclusion

It can be concluded that OBC has managed to create a constructive online learning environment and implemented the UK government policies satisfactorily during the pandemic, which led students to appreciate digital education, get easy access to learning assistance and maintain a positive sense of well-being. Similar findings have been reported by Poots and Cassidy (2020), who found support to be a positive predictor of well-being and a significant negative relationship between academic stress and support. However, since OBC and many other HEIs have lately adopted various strategies to update digitalised facilities, it is still advisable for colleges and universities in the UK and other countries to identify and implement approaches to control the tenacious negative impact of COVID-19 including modification in the prevailing practices and interventions at extra-curriculum level (Yamada and Victor, 2012; Maybury, 2013; Kareem and Bing, 2014; Mokgele and Rothman, 2014) and at the university-wide level (Mahatmya et al., 2018).

In addition, academic institutions should identify more relevant and interpretable intangible or intrinsic factors that explain the pandemic's impact on student well-being, aiming to sustain the healthy life habits of university students and their wellness in general.

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About the Authors

Dr Fayyaz Hussain Qureshi, Head of Research, BA, (Economics and Journalism), BSc (Botany, Zoology and Chemistry), MA (English Literature), MBA (Marketing), MBA (Finance), MSc (Internet Technologies), Doctorate in Marketing, PGD (Organisations Knowledge), Oxford Business College, 65 George Street, Oxford, United Kingdom.
Doctoral Supervisor, University of Wales Trinity Saint David (UWTSD)

Sarwar Khawaja, Chairman Business Development, MBA, LLM; Chairman Business Development, Oxford Business College, 65 George Street, Oxford, United Kingdom.

Tayyaba Zia, Research Associate and Business Lecturer, BA (Psychology and Sociology) EDSML, MSc (Marketing) FHEA (PhD Scholar), Oxford Business College (OBC) 65 George Street, Oxford, United Kingdom.

Dr Ruqaiya Javed, Research Associate at Oxford Business College (Psychology) Post-Doctoral Fellow (PDF), Psychology, Indian Council of Social Science Research (ICSSR), PhD. (Psychology), M.A. (Psychology), BA Hons. (Psychology).

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APPENDIX

Table2: *Multi-Nominal Distribution of Improved Model: Coefficients*

Question no. and Categories		Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Intercept		*-0.545*	*-0.310*	*-4.496*	*-2.760*
Q1	Males	0.092	0.059	0.616	0.400
Q3	Yes	-0.146	-0.381	1.157	1.127
Q4	Part-time	0.118	-0.109	-0.123	0.305
	Furlough	0.104	0.346	-0.647	0.378
	Unemployed	0.973	0.769	0.946	1.089
	Self-employed	-0.068	-0.283	0.503	0.976
Q7	Maybe	0.295	0.758	-0.089	-1.207
	Yes	0.118	-0.201	-0.098	-1.150
Q8	Good	0.360	0.221	0.386	-1.320
	Average	0.013	0.120	0.205	-0.960
	Poor	-2.036	-1.800	-1.074	-9.707
	Very Poor	-7.774	-6.936	-8.569	-10.534
Q9	Yes	0.554	0.052	1.361	1.379
Q13	Disagree	-2.069	-1.504	-1.808	-2.048
	Neither Agree nor Disagree	-1.381	0.120	0.424	-2.493
	Agree	-1.703	-0.444	-0.064	-1.814
	Strongly Agree	-2.786	-1.137	-0.358	-2.073
Q14	Disagree	1.022	-1.005	-0.577	-1.251
	Neither Agree nor Disagree	1.586	-0.357	-1.059	0.365
	Agree	1.129	-0.493	-0.166	-0.357
	Strongly Agree	2.132	0.403	-0.266	0.692
Q25	2	2.317	1.012	2.800	7.304
	3	1.219	1.736	2.821	5.751
	4	0.854	1.069	3.211	5.855
	5 (most important)	-0.079	0.587	2.461	7.860
Q26	2	-0.107	-0.122	-0.545	-17.099
	3	-1.550	0.058	-0.465	-15.026
	4	-0.523	-0.835	0.910	-4.071
	5 (most important)	-1.278	-1.222	-1.118	-4.078

Outcome Base Category: Strongly Disagree; *Predictor's Base Categories:* Q1-Females, Q3-No, Q4-Full-time, Q7-No, Q8-Very Good, Q9- No, Q13-Strongly Disagree, Q14- Strongly Disagree, Q25-1(least important) and Q26-1(least important)

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