Analysis of Technostress on the Academic Engagement of Economics Students of Usmanu Danfodiyo University, Sokoto, Nigeria

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Abstract
This study analyzed technostress on the academic engagement of Economics students of Usmanu Danfodiyo University, Sokoto, Nigeria. three research objectives and corresponding research questions were formulated while three hypotheses were tested. The study adopted a descriptive cross-sectional survey design. The population of the study comprised 570 undergraduate students from the Department of Economics, Usmanu Danfodiyo University Sokoto, from UG I to UG IV. A total of 217 participants (167 males and 50 females) were selected using a multistage sampling technique. The instrument used for data collection was termed the 'Technostress and Academic Engagement Questionnaire' (TSAEQ) and data collected were analyzed using Statistical Package for Social Sciences (SPSS). A Cronbach Alpha reliability index of 0.82 was obtained. Descriptive statistics of frequency, percentage and means were used to answer all the research questions while Spearman Rho and Chi-square were used to test the hypotheses. The findings of the study revealed among others, that technostress has negative impact on the academic engagement of participants. Therefore, the researcher concluded that technostress has negative impact on the academic engagement of Economics students of Usmanu Danfodiyo University Sokoto. Given this, it was recommended among other things that since most students were reported to be 'daily' users of digital technologies, therefore, the university management in collaboration with the various departments should intensify efforts towards sensitizing students on how to cope with techcnostress so as to avoid or reduce to the barest minimum its negative impacts on their academic engagements.

Keywords: *Technostress, Academic engagement, economics students.*

Introduction

The educational system, before the 21st century, was dominated by traditional teacher-centered methods which were focused on repetition learning and memorization. Although the main concern

of these traditional methods of teaching was to convey to the next generation those skills, facts, and standards of moral and social behaviour that people presuppose to be essential for the next generation's social and material success. Beck (2009) argues that those methods do not allow students to think for themselves. They were also place and time-bound as students were expected to attend classes at a predetermined time and place, sit quietly and dutifully accept and believe these fixed answers coming from their teachers. In the traditional method of education, teachers are the sole tools by which knowledge is transferred and standards of behaviour imposed. It is also linked to much stronger features of compulsion than is permissible now in most cultures. For instance, the traditional method of teaching and learning most times employ the use of corporal punishment to uphold classroom discipline or to punish errors; teaching the dominant religion and language; splitting students according to gender, race, and social class, as well as teaching different subjects to girls and boys. When it comes to the curriculum, there seems to have been a high level of attention paid to traditional academic knowledge.

According to Tularam (2018), the traditional approach does not provide students with valuable skills as it leads to a student not retaining knowledge post-exams and having little or no recall of the body of knowledge learnt beyond the end of a semester. De (2018) added that the traditional method of teaching and learning does not promote career development. For instance, people who are already in employment may find it difficult or impossible to abandon their job to attend classes. Also, many employees may be tired after their work and consequently find it difficult to attend regular classes. Another backdrop of the traditional method of instruction is that shy students who find it hard to speak in public are not able to benefit as they cannot ask questions or share their views or misconceptions in the conventional classes and at the same time, have no other means of clarifying their misconceptions.

Employees use technologies of various kinds for work-related purposes such as communication and collaborative technologies, like instant messaging, voicemails, video conferencing and so on, to ease working with other people in different destinations; to facilitate error-free access to information for deciding; and to automate work-related actions. On the individual level, people of all ages use a wide range of technology to advance their quality of life (Niehaves & Plattfaut, 2013). Facilitated by the present technologies, individuals' work and their life have become more convenient, efficient and n flexible (Wright & Brown, 2004) For example, people use technology to gain access to e-mails or social networking sites (SNS) using mobile devices, to communicate with friends; have fun; or be connected to other people; shop or make financial transactions; and so on.

For educational institutions, technology has lowered international barriers and expanded the potential reach of colleges and universities in the sense that with sophisticated communication technologies, institutions of higher education are no longer limited to student markets or educational resources in their geographical regions. Also with technology, institutions of higher learning can provide lifelong learning opportunities to individuals who seek alternatives to traditional real-time, campus-based instruction to keep pace with socio-economic changes.

For educators (teachers and lecturers), technology has been of tremendous benefit, for instance, Qian (2016), postulates that instead of using class time with students to disseminate information through lectures and follow-up discussions, educators can use technological gadgets like computers, especially web-based resources to disseminate information and instructional resources more efficiently and at little or no cost; teachers and lecturers do not need to go through the hassle of marking thousands of exam/test papers anymore as they can use the new iPad application ''Markup'' which turns all students exams into electrical papers and mark these exam

papers with an iPad/Tablets. Educators can also use technology to discover resources and go to virtual expert improvement courses and conferences. They can likewise make personal learning networks (PLN) with Ning, Twitter, and different resources to discover and share thoughts and resources and get support from their peers. In addition, appropriate use of technology applications can help instructors to structure more active learning opportunities. This includes presenting information to students in a variety of formats, twenty-four hours per day.

In a bid towards organizing their private lives and maintaining social connections in addition to carrying out their academic responsibilities, students have had to rely heavily on technological tools (Niehaves & Plattfaut, 2013; Wright & Brown, 2004). This over-reliance/dependence on these technology tools, however, breeds technology-related stress (Technostress) on the users (students) of these devices consciously or unconsciously, be it physically, psychologically, behaviorally, or emotionally. The type of technology-related stress experienced by individual students varies depending on the individuals' technological skills, frequency of use of these tools, availability and accessibility of these technological tools, and individual perception, orientation, and belief about technology (personality). Also, because individuals differ, Ayyagari (2011), asserts that the level of technostress a person may experience will also vary.

Statement of the Problem

It is common knowledge that technology or ICT have become essential for students in carrying out their daily learning activities both within and outside the school premises as it offers a lot of positive impact and beneficial advantages. This fact, in addition to the advancement in technology, has made it possible for students to incorporate it into their daily learning activities (education). Costly (2014), is of the opinion that technology has positive impact on student learning as it enables students become more engaged; consequently, students often retain more information. Due to the arrival of new technologies speedily occurring universally, technology is relevant to the students as it affords them meaningful learning experiences.

However, according to organizational behaviour researchers (Tarafdar, *et al*, 2007; 2008; 2011; Mawhinney, 2014), information and communication technologies were related to job strain, low job satisfaction, burnout, decreased academic engagement and an increased students' technology-related stress such as inability to navigate the web, inability to operate some technological devices, irritability, loss of temper, high state of anxiety when separated from technological gadgets, using computer terms in non-computer conversations, jealousy produced by technological competency, demotivation due to prolonged periods of any technological activity among others. According to Qian (2016), recent stress research (Pusey, 2013; Ayyagari, 2011; & Tarafdar, 2007), identified an increasing trend of technostress that individuals experienced in universities which increased by 50% in 2009 and by 88-96% in 2013. Because individuals differ in many ways, the individual differences in education, work experience and technological skills might affect the level of technostress one would experience.

Because technology can be detrimental to individuals' physical and psychological health in different ways, there is the need to not only find out what proportions of students make use of these technologies and the technostress factor(s) that affect them the most but also to determine what perceived impacts technostress have on students' academic engagement. Based on the foregoing, this study is poised to analyze technostress on the academic engagement of economics students of Usmanu Danfodiyo University, Sokoto.

Research Objectives

1. Find out the frequency of usage of technologies among Economics students of Usmanu Danfodiyo University Sokoto
2. Find out the impact(s) (if any) of technostress on the academic engagement of Economics students of Usmanu Danfodiyo University Sokoto.
3. Identify technostress factors that mostly affect the academic engagement of Economics Students of Usmanu Danfodiyo University Sokoto.

Research Questions

For the achievement of the stated objectives, the following research questions guided the study:

1. What is the frequency of usage of technologies among Economics students of Usmanu Danfodiyo University Sokoto?
2. What is the impact(s) (if any) of technostress on the academic engagement of Economics students of Usmanu Danfodiyo University Sokoto?
3. What technostress factors have the most effect on the academic engagement of Economics students of Usmanu Danfodiyo University Sokoto?

Research Hypotheses

1. There is no significant relationship between technostress and the academic engagement of Economics Students of Usmanu Danfodiyo University, Sokoto.
2. There is no significant difference between the technostress levels of male and female Economics students of Usmanu Danfodiyo University, Sokoto.

Review of Related Literature

The term 'Technology' is particularly a broad and not-so-clearly defined one due to the dynamic nature surrounding it, which has led to the existence of numerous definitions and conceptions of the term by authors. Understanding the concept of technology is vital in getting a clearer picture of the nature of technology and what it entails. Past studies have shown that defining the concept of technology is not easy (Wahab & Osman, 2012); therefore, technology has been conceptualized from diverse standpoints. For instance, Hughes (2004), viewed technology as 'a creativity process involving human ingenuity'. He went further to define technology as the effort to organize the world for problem solving so that goods and services can be invented, developed, produced, and used. According to Friedel (2007), technology is the knowledge and instruments that humans use to accomplish the purpose of life. Similarly, Arthur (2011), defined technology to fulfil a human purpose. This definition entails that technology is a method, process or device which may either be complicated or material and used to carry out activities geared towards the satisfying of human needs and wants.

Delcker, Honal and Ifenthaler (2016), asserts that the utilization of technological devices by higher education students has been on the rise for years. These technological devices used by students are mostly portable hence they are referred to as mobile devices or mobile technologies. They do not only allow students to access learning material while they are away from the institution but can also be added to their practice time at work and for authentic learning situations (Gikas & Grant, 2013). Although an assembly of mobile devices have been developed over the years, students are mostly using laptops, smartphones, E-Readers, and Tablets (Dahlstrom, *et al*. 2015), in conjunction with Apps and Websites.

According to Fink (2010), Hans Selye (also known as the "father of stress") proposed the most generic definition of stress, stating that stress is the non-specific response of the body to any demand. Similarly, Slyers (2011), defined stress as a general response that the human body makes to any demand on it. It is a worry that is physical, physiological, psychological, and sociological and may result from not meeting certain demands at the workplace, school or elsewhere. Anyanwu, Ezenwaji, Okenjom and Enyi, (2015), defined stress as a process in which environmental events or forces, known as stressors, threaten an organism's existence and well-being and how the individual responds to such threat. It could also be understood as a change in mood which occurs when an individual's working or living conditions or circumstances make demands past the individual's capability to handle such situation emotionally or physically. Yahaya, Amadi and Tiamiyu, (2017), noted that stress is a state of tension that occurs when some demands and pressures task an individual's ability to adjust.

Charpman (2015), opined that stress is the psychological and physical reaction to certain events or situations (called stressors) in one's life. This definition can be quite easily segregated into two parts: Stressor which refers to physical and psychological reactions and Strain which means certain events or situations. In Psychology, stress is well-defined by Cohen *et al.* (2007) as when a person recognizes that environmental demands tax or exceeds his or her adaptive capacity leading to psychological problems like loss of appetite, memory loss, absent-mindedness, depression, frustration, nervousness, and high blood pressure. The HSE (2013), classified stress as: "The adverse reaction people have to excessive pressures or other types of demand placed on them at work" while in medicine, stress is defined as: "An organism's total response to environmental demands or pressures".

Like the term "stress", "technostress" has been defined differently, sometimes by the same authors and its usage as a concept is in doubt. Technostress is a feeling of anxiety or mental pressure from overexposure or involvement with technology (Okonoda, Tagurum, Imo, Nwachukwu, Okoli, & James, 2017). According to Ahmad *et al*, 2012; and Okolo *et al.* (2018), Technostress originated from Brod (who was a psychological therapist) in 1984, who defined Technostress as a modern disease of adaptation caused by the inability to cope with the new computer technologies healthily. He used the term Technostress to describe the type of stress peoples experience when applying new technological devices and programmes to their working environment. According to these researchers (Ahmad, 2012; and Okolo, *et al*., 2018), Brod conceptualized Technostress as feeling that manifest as fear and panic experienced by users of new technology in performing their work. Similarly, Rolon (2014), defined Technostress as the feeling experienced by individuals in any technological environment.

In the view of Fischer, and Riedl (2015), technostress has been defined as "any negative impact on attitudes, thoughts, behaviors, or body physiology that is caused either directly or indirectly by technology". Researchers (Embi, 2007; Mustaffa, 2007; Ahmad *et al.*, 2009) demonstrate that there are other terms that were previously used to refer to Technostress and these include technophobia, computer stress, computer-phobia, computer anxiety, digital depression. In this digital dispensation, the use of technology in everyday life is essential, causing an extension in the definition of Technostress. According to Rolon (2014), the term technostress, has been widened in today's world to comprise elements such as incapacity to adapt, negative attitudes, stress, anxiety, significant mood changes, and other inhibitions. For instance, Gendreau (2007), defined Technostress as the reaction (mental or psychological state) of people when they are expected to apply technology in their daily work activities. Similarly, Brillharet (2004), had defined technostress as the negative (direct or indirect) effect which individuals feel and how they

respond to the influence of technology. The definitions for technostress can be abridged as an image of an individual's fear, discomfort, anxiety, and nervousness brought about by direct or indirect application of computer and related technologies.

One of the latest definitions of Technostress described Technostress as a collection of interrelated psychosocial constructs that negatively impact individuals (Mawhinney, 2014). They also describe technostress as any physical, behavioral, and psychological strain in response to the information and communication technology-dependence, the increasing technological complexity, and changes. From the numerous definitions of technostress offered by scholars, is can be understood that technostress is a state of physical, psychological, and emotional pressure experienced by individuals as a result of inability to adjust to certain conditions related to technology and its usage.

One definition of engagement is being involved with something to understand it (Hornby & Turnbull, 2010). This could translate to students' engagement meaning that 'students being involved or engaged with their academic work in order to obtain knowledge'. However, it is important to understand what it entails for students to be 'involved or engaged with their academic work'. Therefore, students' engagement is seen as a complex construct influenced by multiple factors which makes it challenging to define. Researchers (Fredricks *et al.,* 2004; Ashwin & McVitty, 2015; Delcker *et al*, 2016; Victoria State Government, 2018; Field, 2018;), have tried to offer a consensus description for the concept of students' engagement.

Among the most popular conceptualizations of the term is that of Fredricks, *et al* (2004), who offered a three-part definition for engagement to include behavioral, emotional, and cognitive factors. The behavioral factor refers to more concrete, observable elements such as participation in school-related activities including the academic, social, and extracurricular activities of the school. The emotional factor encompasses affective experiences such as a sense of identification with or belonging or connectedness to the school. The cognitive factor refers to the mental effort that students put forth when actively engaged in academic activities, such as concentration, investment, and perseverance. This meta-analysis provided a comprehensive and inclusive definition for the concept of engagement, but rarely have researchers used this definition comprehensively in practice.

Trowler (2010), who attempted to summarize various definitions of students' engagement in the literature, stated that: "Students' engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimize the students' experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution". Kuh, Kinzie, Buckley, Bridges, and Hayek (2011), defined student engagement as "participation in educationally effective practices, both inside and outside the classroom, which leads to a range of measurable outcomes".

Methodology

Research Design

This study adopted a descriptive cross-sectional survey design. This is because it describes a population, situation or phenomenon that is being studied. Because of the nature of the study, the descriptive research design was used as it allowed the researcher to reach out to the study population in their various locations. Also, a descriptive survey design was adopted because the study was only interested in describing certain variables related to the population. The researcher deemed it suitable to adopt this design since the study assessed the impact of technostress on the academic engagement of economics students of Usmanu Danfodiyo University Sokoto.

Population of the Study

The study population consisted of 570 Undergraduate Students of the Department of Economics in Usmanu Danfodiyo University Sokoto, spread across the four basic levels of UG I, UG II, UG III and UG IV. The population is made up of both male and female students whose ages range from 18 to 40 years.

Sample and Sampling Technique

Using the Research Advisor (2006) as a guide, a total number of 217 Economics Students was selected using a multistage sampling technique (stratified random and proportionate sampling techniques). The study population was firstly stratified based on students' level and gender to allow equity representation from all levels. Thereafter, a sample size of 217 participants was selected across students' levels employing random proportionate sampling.

Method of Data Analysis

Frequency counts, percentages and mean were used to analyze the data gathered in section A. Frequency counts and percentages was used to analyse the data generated in response to research question 1 while the descriptive statistics of mean was used to analyse the data generated in respect of research questions 2, and 3. Also, frequency counts, percentages and descriptive statistics of mean were used in part to analyse the data generated. Spearman Rho was used to test hypothesis 1 while Chi-square was used to test hypotheses 2 using SPSS (Statistical Package for Social Sciences) software version 20.0.

Results

4.3 Demographic Characteristics of Participants

Table 4: Participants' characteristics based on gender and level of study

Gender	Level				
	UG I	**UG II**	**UG III**	**UG IV**	**TOTAL**
Male	23 (69.70%)	28 (65.12%)	24 (68.57%)	78 (78.79%)	**153 (72.86%)**
Female	10 (30.30%)	15 (34.88%)	11 (31.43)	21 (21.21%)	**57 (27.14%)**
Total	**33(15.7%)**	**43 (20.5%)**	**35 (16.7%)**	**99 (47.1%)**	**210 (100%)**

Source: Field Survey (2021).

Table 4 shows that of all the participants, 153 representing 72.86% of the total respondents made up of 23(69.70%) from UG I, 28(65.12%) from UG II, 24(68.57%) from UG III, 78(78.79%) from UG IV are all males while 57 representing (72.86%) made up of 10(30.30%) from UG I, 15 (34.88%) from UG II, 11 (31.43%) from UG III, 21 (21.21%) from UG IV are all females. This indicated that the majority of the participants are males, in other words, there are more male than female participants. Of the 210 participants, 33 represented (15.7%), 43 represented (20.5%), 35 represented (16.7%) and 99 represented (47.1%) were from UG I, UGII, UG III and UG IV respectively. This indicated that UG IV has the highest number of participants followed by UG II and then UG III and lastly UG I.

Table 5: Participants' Age Distribution

Age	Frequency	Percentage
18 – 25	150	**71.4**
26 -40	60	**28.6**
Total	**210**	**100**

Source: Field Survey (2021).

Table 5 shows that of all the participants, 150 representing 71.4% belong to the younger age group of 18 – 25 years while 60 representing 28.6% of the total belong to the older age group of 26 – 40 years. This indicated that the majority of the participants were young.

4.4 Descriptive Analysis

The descriptive analysis was done by way of answering research questions as follows:

Research question one: What is the frequency of usage of digital technology among Economics Students of Usmanu Danfodiyo University Sokoto?

The question was responded to using simple frequency counts and percentages as shown in Table 6.

Table 6: Analysis of participants' level of technology usage

Usage	Frequency	Percentage
Daily	174	82.9
Weekly	24	11.4
Bi-weekly	4	1.9
Never	8	3.8
Total	**210**	**100**

Source: Field Survey (2021).

Table 6 shows that of the total respondents, 174 representing 82.9% were daily users of digital technologies, 24 representing 11.4% were weekly users, 4 representing 1.9% were bi-weekly users and 8 representing 3.8% never made use of any digital technologies. This shows that the majority of the respondents representing 96.2% who were users of digital technology outnumbered those who never made use of any digital technologies representing 3.8%, thus, the majority of respondents use digital technology on daily basis.

Research question two: What is the impact(s) (if any) of Technostress on the academic engagement of Economics Students of Usmanu Danfodiyo University Sokoto?

The question was responded to using the mean score for each item as indicated by the scale and presented in table 7.

Table 7: Analysis of participants' Mean for Impact of Technostress on the Academic Engagement

S/N	ITEM	SD	D	A	SA	Total	Mean	Remark
1	Most times I wake up late because I spent half the night on social media	46	118	219	128	511	2.43	Negative impact
2	Most times during lectures or group study, I find myself scrolling through my phone for updates and notifications	37	142	225	108	512	2.44	Negative impact
3	Whenever I forget my phone at home or elsewhere, I find it hard to concentrate in class	41	144	195	128	508	2.42	Negative impact
4	I will rather use my phone to google my assignments than use the school library	10	102	231	288	631	3.00	Negative impact
5	Whenever I sleep in class, it is because I spent the night on one form of technology or another	50	174	147	96	467	2.22	Negative impact
6	I most times wake up with a headache because of sleep deprivation caused by technology	45	168	147	128	488	2.32	Negative impact
7	I prefer to socialize with friends online than engage in extracurricular activities	39	160	162	148	509	2.42	Negative impact
8	Because my friends are more technologically skilled than I am, I at most times depend on them for my assignments	82	142	126	60	410	1.95	No negative impact

Scale: up to 2.00 = No negative impact; 2.01 - above = Negative impact
Source: Field Survey (2021).

With regards to the impact of technostress on the academic engagement of Economics students of Usmanu Danfodiyo University, Sokoto, table 7 shows that items 1,2,3, 4,5,6 and 7 had the mean scores of 2.43, 2.44, 2.42, 3.00, 2.22, 2.32 and 2.42 respectively. When compared against the scale, the mean scores of all the items are morethan 2.00 and as such considered to have negative impact. Whereas only item 8 was found to have a mean score of 1.92 which is within the 'no negative impact' range i.e., up to 2.00 and therefore considered to have no negative impact. This indicated that technostress has many negative impacts on the academic engagement of respondents.

Research question three: What Technostress factors have the most effect on the academic engagement of Economics Students of Usmanu Danfodiyo University Sokoto?

The question was answered using mean scores of the technostress factor as indicated by the scale (as per the adapted instrument) and presented in Table 8.

Table 8: Analysis of Participants' Mean for Technostress Factors that has the most effect on the Academic Engagement

S/N	ITEM	SD	D	A	SA	TOTAL	
	TECHNO-OVERLOAD						
1	I condition myself to study regularly	22	50	363	168	603	2.87
2	I force myself to study ahead of time	19	66	306	224	615	2.93
3	I can do my assignments within a very short	12	68	318	232	630	3.00
4	I am forced to modify my study habits to	25	84	279	200	588	2.80
5	I peep into my mobile device (phone) during	50	114	192	156	516	2.44
							2.81
	TECHNO-INVASION						
6	I give less attention to my friends and	74	158	117	72	421	2.00
7	I always stay in touch with my studies and	17	70	285	252	624	2.97
8	I spend my resting/leisure time on social	24	104	258	192	578	2.75
9	I always try out new technologies to stay	10	48	327	268	653	3.11
10	I feel my personal life is being invaded by	42	112	225	148	527	2.51
							2.67
	TECHNO-COMPLEXITY						
11	I have little knowledge about modern	42	126	207	144	519	2.47
12	It takes me a longer time than usual to learn	54	178	144	76	452	2.15
13	I have little time to study and upgrade my	34	126	243	128	531	2.53
14	I learn more about computers and the latest	23	90	300	168	581	2.77
15	I feel that my technology insufficiency	54	164	141	108	467	2.22
							2.43
	TECHNO-INSECURITY						
16	I feel a constant threat to my academic work	48	160	156	120	484	2.30
17	I see the need to regularly update my technology skills to avoid being left behind in	10	54	285	312	661	3.15
18	I think that those who are technologically	25	100	273	176	574	2.73
19	I feel like I am missing out whenever I am	27	84	285	184	580	2.76
20	A lack of technology skills can hinder	16	58	270	300	644	3.07
							2.80
	TECHNO-UNCERTAINTY						
21	Technologies always come with new things	5	26	276	400	707	3.37
22	As a student, I need to always update my	4	34	315	340	693	3.28
23	One cannot predict what future technologies	9	44	270	356	679	3.23
24	There are frequent upgrades in technologies or computer software required to enable a	10	24	357	276	667	3.18
25	There are so many search engines and educational Applications that one cannot say	15	54	345	212	626	2.98
							3.21

Scale: 1.00 – 2.00 = Low level; 2.01 – 3.00 = Medium level; 3.01 – 4.00 = High level
Source: Field Survey (2021).

Table 8 above shows that of the technostress factors that affect students' academic engagement, Techno-Overload had a total mean score of 2.81, Techno-Invasion had a total mean score of 2.67,

Techno-Complexity had a total mean score of 2.43, Techno-Insecurity had a total mean score of 2.80 and Techno-Uncertainty had a total mean score of 3.21. This result indicated that both Techno-Overload, Techno-Invasion, Techno-Complexity and Techno-Insecurity factors with mean scores of 2.81, 2.67, 2.43 and 2.80 respectively had a medium effect on students' academic engagement because the mean scores of these factors fall between 2.01 and 3.00 (medium level). However, the result further indicated that Techno-Uncertainty with a mean score of 3.21 has the most effect on respondents' academic engagement, hence Techno-Uncertainty has the most effect on academic engagement amongst Economics students of Usmanu Danfodiyo University, Sokoto.

Hypotheses Testing

Null hypothesis 1: There is no significant relationship between Technostress and the academic engagement of economics students of Usmanu Danfodiyo University, Sokoto

The above hypothesis was tested using Spearman Rank-order Correlation to determine relationship.

Table 12: Technostress Levels and Academic Engagement of Economics Students of Usmanu Danfodiyo University, Sokoto.

			Technostress Levels	Academic Engagement	Decision
Spearman's rho	Technostress Levels	Correlation Coefficient	1.000	.351	
		Sig. (2-tailed)		.000	Hypothesis rejected
	Academic Engagement	N	210	210	

The Spearman Rank-order Correlation was run to determine the relationship between technostress levels and academic engagement of economics students of Usmanu Danfodiyo University, Sokoto. An r-value of .351 with a p-value of 0.000 was obtained at a 0.05 level of significance. Therefore, the null hypothesis which states that there is no significant relationship between Technostress and the academic engagement of economics students of Usmanu Danfodiyo University, Sokoto is rejected. This means that there is a statistically significant relationship between Technostress and the academic engagement of economics students of Usmanu Danfodiyo University, Sokoto.

Null hypothesis 2: There is no significant difference between the technostress levels of male and female economics students of Usmanu Danfodiyo University, Sokoto.

The above hypothesis was tested using chi-square statistics to test for the difference.

Table 13: Technostress Levels of Male and Female Economics Students of Usmanu Danfodiyo University, Sokoto

	Gender		Technostress Levels	Decision
	Male	Female		
	153	57		
Chi-Square	43.886		1.414	
Df	1		22	Hypothesis rejected
Asymp. Sig	.000		.000	

Hypothesis 2 was tested using Chi-Square to determine the difference. As shown in Table 13, $\chi(1) = 43.886$, $p = .000$ shows Sig. value (0.000) is less than 0.05. Therefore, the hypothesis which states that there is no significant difference between the technostress levels of male and female economics students of Usmanu Danfodiyo University, Sokoto is rejected. This means that there is a statistically significant difference between the technostress levels of male and female economics students of Usmanu Danfodiyo University, Sokoto.

Discussion of the Findings

This study analyzed technostress on the academic engagement of Economics students of Usmanu Danfodiyo University, Sokoto, Nigeria. Findings of the study showed that the majority of participants were daily users of digital technology. This means that participants use digital technology frequently. Conspicuous from this outcome is the fact that although the majority of participants were users of technology, the frequency of usage differed among the participants. This may not be unconnected to the availability and excessive use of smartphones, tablets, laptops etc among students and exposure to social media as well as the increased quest for computer literacy/proficiency among university students, particularly in the era of blended learning. This finding conforms to the findings by other researchers such as Jedidah (2017) and Oduwaiye (2017) who separately found access to social media as well as overdependence on smartphones as a related factor leading to compulsive usage of technology by university students. Nowadays smartphones are widely used by university students to access the internet for academic and social purposes.

Findings also revealed that technostress has many negative impact on the academic engagement of participants. This is unconnected with the high frequency of digital technology usage by the participants as indicated in the first finding. This finding contradicts the earlier finding by Jedidah (2017), who reported a positive effect of exposure to social media as a stressor on students' performance among students at the University of Kenyatta, Kenya. It however, agrees with Yu *et al*, (2019), who reported that both technostress and exhaustion have negative effects on students' academic performance. Digital technology has been integrated into the teaching and learning process at various levels of education to enhance the academic engagement of students. WhatsApp, Telegram etc. are used to exchange information between the teacher and students. Digital devices with internet connection such as laptops, tablets, and smartphones aid students' access to Websites, Applications, and software all of which can passively impact academic engagement among university students who use them as learning tools.

Findings of the study also showed that Techno-Uncertainty was found to be the factor that has the most effect on the academic engagement of participants. This indicated that other indicators of technostress such as techno-overload, techno-invasion, techno-complexity, and techno-insecurity affect students' academic engagement moderately. This finding conforms with the

outcome of Bawa, *et al*. (2016), who reported techno-uncertainty as the major technostress indicator affecting teaching and research among lecturers in the university. This outcome is unconnected with the rapid change in the use of technology for both teaching and learning and students' assessment. Recently, the management of the institution approved the use of blended learning by the academic staff which in turn demands technology usage among university students. The introduction of Computer Based Test (CBT) both on university examinations and other external examinations is a driving force for techno-uncertainty among tertiary education students. Yet again, the academic environment is characterized by poor internet connectivity and intermittent power supply all of which can explain the unreliability of technology and subsequent techno-uncertainty as the dominant indicator of technostress.

Conclusion

As a result of the outcome/findings of the study, the researcher concluded that a considerable number of Economics students of Usmanu Danfodiyo University, Sokoto use digital technology on daily basis. The present advocacy for the integration of digital technologies into the education system proved that digital technology has a lot to offer to the present generation of students. For this reason, the students need to have sufficient skills/information on the appropriate use of digital technologies. Several past research as seen in the literature reported a negative impact of technostress on students' academic performance. Also, the present study revealed a negative impact of technostress on students' academic engagement which could be as a result of the increased awareness, acceptance, and utilization of digital technologies in the education sector as witnessed over the past few years. Students' technostress level can be affected by many factors the most dominant of which is techno-uncertainty.

Recommendations

The following recommendations were made by the researcher based on the findings of the research study:

1. Since most students were reported to be 'daily' users of digital technologies, therefore, the management of the institution (UDUS) should encourage lecturers to integrate digital technology into students' academic engagements for maximum benefits via the provision of adequate ICT infrastructures.
2. University management in collaboration with the various departments should intensify efforts towards sensitizing students on how to cope with techcnostress so as to avoid or reduce to the barest minimum its negative impacts on their academic engagements.
3. Departments and faculties should intensify efforts towards sensitization of their students on the factors that affect technostress level, particularly techno-uncertainty, and how best to cope with them.

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