



Assessing the influence of technostress on the academic performance of adult learners in Zimbabwe

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Abstract

The purpose of the study was to assess the influence of technostress on the academic performance of adult learners. A closed-ended questionnaire was self-administered to a total of 105 adult learners constituting 80% of the target population. Field survey data were presented using descriptive statistics of mean, mode and standard deviation and percentiles in tables. Stata11 data software was used for data analysis. The regression analysis was adopted to examine relationships between variables by extrapolation of the model's p-value, R squared, adjusted R squared and regression model coefficient. The findings of the study indicated that there are statistical relationships between theoretical framework, techno stressors and the level of student sense of pressure due to educational technologies usage by adult learners. The study concluded that technology adoption as teaching and learning tools affects student performance through increased work pressure. Recommendations of the study indicate that adult learners should be effectively trained on how to utilise new teaching and learning technologies to reduce workload pressure. The study also recommends that technology acquisition strategies be proposed by the University to help the students acquire technology gadgets so that they are able to access teaching and learning materials. The study also recommended training and counseling of adult learners during their first year's first semester so that they are able to balance work-home and school responsibilities.

Keywords:

Academic performance
Adult learner
Educational technology
Techno stressors
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1. Background of the Study

Technology plays an important role in human life. In every element of human existence, technology provides its benefits and drawbacks. We have observed that since the onset of the COVID-19 pandemic, tertiary institutions have had to make a lot of adjustments. One such notable adjustment was the shift from brick-and-mortar face-to-face learning to online learning. Online learning was introduced at all levels of learning from primary to tertiary education although it was more pronounced and widely used in higher and tertiary institutions. Integrating technology in the classroom is believed to improve the teaching and learning process (Mirzajani, Mahmud, Fauzi Mohd Ayub, & Wong, 2016; Upadhyaya, 2021). Morris (2010) also discovered that using technology-driven assessment in the classroom improves students' academic achievement.

On the other hand, technology-enhanced learning (TEL) causes fatigue, diminished interest in learning, subpar academic performance, and intention to drop out, according to a study by Jena (2015) among students at Indian universities. Tacy (2016), in addition to Jena (2015), claimed that technology is pervasive and can lead to feelings of irritation, overload, and stress. Similar to this, Jena (2015) and Qi (2019) supported the idea that university students who study using TEL may experience technostress as a result of issues including burnout, decreased learning engagement, poor performance, and inclinations to leave the field.

In Zimbabwe's tertiary education sector, technology-induced stress is a relatively new subject matter that was influenced more by the advent of the Coronavirus in early year of 2020. As of the beginning of 2020, there were 20 universities in Zimbabwe with a total enrolment of 116 324 students (Zimbabwe National Statistics Agency (Zimstat), 2021). All these higher and tertiary education enrolled students were exposed to technology-induced stress as they were all forced to adopt modern-day online-based learning platforms such as, google classroom, moodle, and zoom in a rather swim-or-sink scenario.

2. Objectives of the Study

- To assess the influence of technostress on student performance.
- To establish the technostress challenges faced by adult learners due to the adoption of educational technology.
- To recommend strategies that will be used to reduce technostress on student performance.

3. Hypotheses

H₁: Techno overload has a positive influence on technostress.

H₂: Techno invasion has a positive influence on technostress.

H₃: Techno complexity has a positive influence on technostress.

H₄: Techno insecurity has a positive relationship with technostress.

H₅: Techno uncertainty has a positive relationship with technostress.

H₆: Perceived usefulness has a positive relationship with technostress.

H₇: Perceived ease of use has a positive relationship with technostress.

4. Literature Review

4.1. Technology Acceptance Model (TAM)

The most popular hypothesis to explain a person's acceptance of an information system is the Technology Acceptance Model (TAM) by Davis (1989) and Priyanka (2012). According to TAM theory, perceived usefulness and perceived ease of use are the two elements that affect whether potential users will adopt a computer system.

The Stress-Strain Outcome Model (SSO), on the other hand, is supported by technological overload, invasion, complexity, insecurity, and uncertainty (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007). By merging SSO and TAM models, the theoretical framework of the current study aims to carry out a thorough evaluation of the effect of technology stress and its management on student performance. The study will therefore be supported by the following variables: perceived utility, perceived ease of use, technological overload, technological invasion, technological complexity, technological insecurity, and technological uncertainty.

4.2. Technostress Variables Affecting Academic Performance of Learners

Figure 1 displays the key technology-based stressors that negatively affect academic performance of long-life learners. As can be seen from the framework technology stress affecting academic performance is caused by perceived usefulness, perceived ease of use, techno overload, techno invasion, techno complexity, techno insecurity and techno uncertainty.

Technostress and student performance framework

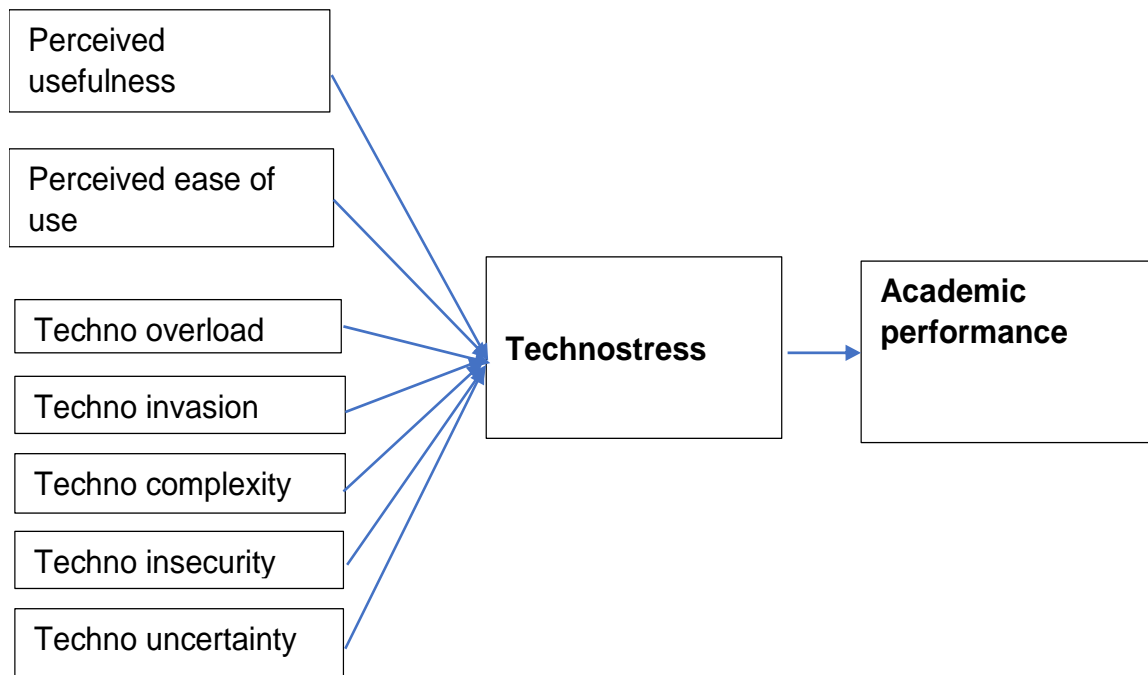


Figure 1. Technostressors affecting student performance.

4.3. Technooverload

Role overload happens when a person's workload or difficulty demands are more than their capacity (Tarafdar et al., 2007). In addition, Tarafdar et al. (2007) claim that all ancillary tasks, such as installing or changing software, organizing files, adjusting formats, or experimenting with new features, increase workload and neglect one's primary duties, leading to role overload and stress. According to Hoq and Mostak (2014), researchers and ordinary information users are very concerned about information overload. The term "technooverload" refers to the situation in which university students are pressured to study more material in a shorter amount of time due to higher learning demands in technology-enhanced learning or even numerous tasks that must be completed to meet the demands of employing technology in a classroom. People are experiencing a "information glut," which makes it challenging for them to quickly and conveniently find the necessary information from various print, electronic, and online sources, as a result of the rapid acceleration of information production brought on by new technological innovations (Hoq & Mostak, 2014).

4.4. Technoinvasion

Technoinvasion can be defined as "constant connectivity," in which people can be reached at any time and from any location, facilitated by technology's invasive effect (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2011). Technoinvasion is a term used to describe a situation in which the integration of digital technology in educational settings forces university students to be constantly connected and reachable at all times, invading their personal lives (Tarafdar et al., 2011; Weil & Rosen, 1997). The feeling of always being available, exposed, and needing to be connected to work-related issues is what technoinvasion is all about. It can also prevent employees from being connected to real-time events and allow them to focus on creative or analytical thinking. Technoinvasion can result in less family time and conflict within families, as work will take time and attention away from family and friends (Gaudio, Turel, & Galimberti, 2017; Nagarajah, 2017).

4.5. Technocomplexity

Technocomplexity is the uncomfortable perception that new technology is difficult to understand and necessitates a great deal of work (Tarafdar et al., 2007). Technocomplexity also refers to circumstances in which a person feels that they need to spend more time learning about various parts of technology because they find it to be too complicated to utilize and that their abilities are insufficient. In the education systems, technology functions within institutional structures as well as the social system encompassing the lecturer and the student. The interaction between all the variables in the educational system can define the user perception of educational technology complexity. The level of technical support given to the lecturer and the student by the institution and the levels of support that the lecturer provides to the learners can define technology

complexity. Failure to provide adequate technical support makes users view the technology as complex and thereby leading to user resistance and high-stress levels.

4.6. Technoinsecurity / Role Ambiguity

Techno-insecurity is the term used to describe situations in which people worry that new technologies for learning and teaching, practices, or other people with greater technological aptitude will take their jobs (Jena, 2015). When students experience technological insecurity, they worry that technology-enhanced learning will disrupt their existing study patterns and force them to constantly learn new abilities in order to keep up with the evolving demands of this type of learning. ICT-related issues and a student's academic studies may collide as a result of the use of educational technologies. When a student's computer breaks down, it is his or her responsibility to ensure that it is fixed while still making sure that academic work is done. Workplace stress is the cause of fatigue, tension, and hopelessness for all types of enterprises and sectors (Khattak, Urooj, Khattak, & Iqbal, 2011). Due to the introduction of educational technologies, students in the higher and tertiary education sectors are also impacted by study-related stress.

4.7. Technouncertainty

Technology uncertainty is described by Tarafdar et al. (2007) as perceived instability brought on by the ongoing evolution of the task, its accompanying processes, and the technologies themselves. Due to the ongoing changes, it forces users to constantly educate themselves about the newest information and technological features, which keeps users emotionally uneasy and apprehensive. Because of how quickly technology is changing and how quickly people's skills and knowledge become outdated, technological uncertainty is a source of stress for users (Jena, 2015; Tarafdar et al., 2007). Technouncertainty is the term used to describe a situation where frequent technological changes and upgrades leave pupils unsure (Abd Aziz, Kader, & Ab Halim, 2021).

4.8. Perceived Usefulness

Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). Educational technologies can act in 3 broad classifications: Technology as a tutor, technology as a teaching tool and technology as a hearing tool (Budhwar, 2017). These broad classifications are all related to each other as they can be simultaneously applied in the learning process by students. Thus, it is imperative at each given moment that all 3 technologies are accessible to learners for them to be useful. Some studies demonstrated that perceived usefulness was positively related to behavioural intention to use a system (Davis, 1989; Gefen & Straub, 1997; Taylor & Todd, 1995; Venkatesh & Davis, 2000).

4.9. Perceived Ease of Use

It is defined as the degree to which the prospective user expects the target system to be free of effort. It is also "the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). This follows from the definition of "ease"; "freedom from difficulty or great effort." Teo (2009) concurs that if users find technology difficult and/or time-consuming, they attribute less efficiency or productivity to that technology and may avoid using it. When using the ICT platforms, students expect the platform to be easy to use and not to be complicated so as to improve academic performance. The easiness of operating the ICT platforms reduces technostress and it becomes enjoyable to work with technology.

5. Research Methodology

The study used the positivism paradigm. A descriptive research design was adopted in order to analyse and examine the relationship between variables. Survey research was also used to gather large quantities of data on the variables. A total of 199 registered visiting/ block release students were regarded as part of the population surveyed. The sample size adopted for the study was 132 randomly selected registered students. A Closed-ended structured questionnaire was self-administered.

6. Results and Discussion

A total of 132 self-administered survey questionnaires were physically distributed to visiting/block release students and 105 questionnaires were completed and returned by the respondents. The study response rate was 80%.

6.1. Work Overload

A total of 5 Likert scale items were adopted to establish the influence of technology-induced work overload on the students' academic performance. The computed mean score and standard deviation of the 5 Likert scale items were, 3.45 and 1.37 respectively. The study found that there was some level of educational technology-induced stress among adult learners at Midlands State University. Statistical inference through regression analysis obtained that there is a statistical relationship between workload (feeling of pressure) and

student technology stress (forced to do more work) as shown by a low p-value of 0.000, R squared and adjusted R squared sums of 0.8827 and 0.8816 respectively. The model coefficient indicated that single-point increase in students' workload will result in a 0.7594-point increase in their stress levels.

6.2. Techno Invasion Influence on Learner's Technostress

The inquiry on techno invasion-induced stress was carried out with a total of 3 Likert scale items. An average mean score of 3.75 establishes that there is a high level of techno invasion that causes techno stress amongst adult learners that can cause their poor performance. The least ranked Likert scale item was, Using ICTs for school-related responsibilities creates conflicts with my home responsibilities (mean 3.63, mode 5 and standard deviation 1.38). Inferential statistics obtained a p-value of 0.000 and thus reject the null hypothesis in favour of the alternate hypothesis that there is a statistical relationship between feeling pressured and conflicts between school-related work and home responsibilities. Computed R squared and Adjusted R squared were 0.8095 and 0.8077 respectively. The regression model coefficient indicated that a single point increase in school-related responsibilities and home responsibilities conflict would result in a 0.6799 increase in sense of pressure amongst adult learners.

6.3. Techno Insecurity/Role Ambiguity Influence on Learner's Technostress

According to the study's findings, adult learners exhibit a significant level of technological insecurity, as indicated by their high mean score of 3.51 overall. The highest scored Likert scale item was, I can NOT adequately allocate time for my studies since my time spent on ICT-activities such as how to navigate or submit work, which earned a mean score = 3.85, mode 5 and standard deviation of 1.31. I am confused whether I need to deal with ICT issues or with my studies, with a mean score of 2.98, a mode of 4, and a standard deviation of 1.18, was the item with the lowest ranking on the Likert scale. The null hypothesis was rejected in favor of the alternate hypothesis, which claimed that there was a statistical association between technological insecurity and feeling under pressure from adult learners, after additional analysis using inferential statistics yielded a p-value of 0.000. Both the raw and adjusted R squared values for the ANOVA were 0.8094 and 0.8075, respectively.

6.4. Techno Complexity Influence on Learner's Technostress

Techno complexity enquiry was carried out with the assistance of 3 Likert scale items. The highest ranked Likert scale items were, I do not know enough about ICTs to handle my studies satisfactorily, and I need a long time to understand and use new technologies before using them in my studies both had similar mean, mode and standard deviation outputs of 3.65; 5 and 1.38 respectively. Computed inferential statistics indicated a statistical relationship between the feeling of pressure and the amount of time needed to understand ICT usage as supported by a p-value of 0.000. R squared was 0.8827 and the adjusted R squared was 0.8816. The regression coefficient indicated that a single point increase in the time allocated to understanding ICT would result in a 0.7594 reduction in techno complexity stress.

6.5. Perceived Usefulness Influence on Learner's Technostress

The study sought to establish the link between the perceived usefulness of ICT and technology-related stress. Of the 3 Likert scale items adopted, the highest ranked was; Use of ICTs makes it easier for me to do my assignments, which obtained a mean, mode and standard deviation score of 3.86; 5 and 1.37 respectively. The lowest ranked Likert scale item was; Use of ICTs enables me to accomplish academic tasks more quickly, with a mean score = 3.42, mode = 4 and standard deviation = 1.26. The investigation further obtained a p-value of 0.000 indicative that there is a statistical relationship between work improvement and student feeling of work pressure. Computed R squared and adjusted R squared for the relationship were 0.8095 and 0.8077 respectively. The regression model coefficient indicated that a single point increase in work improvement would result in a 0.6798 decrease in student sense of work pressure due to the usability of ICT.

6.6. Techno Uncertainty Influence on Learner's Technostress

The study sought to establish the link between techno uncertainty and student work pressure. A total of 3 Likert scale items were adopted for the purpose of the enquiry. The highest ranked item was; ICTs behave in a highly consistent way (mean 3.77, mode 4 and standard deviation 1.19), the lowest ranked Likert scale item was; The features provided by ICTs are dependable (mean 3.03, mode 4 and standard deviation 1.89). Using inferential statistics, the study found that there is a statistical relationship between techno reliability and student sense of pressure due to ICT usage. This view is supported by p-value 0.000, R squared 0.8420 and Adjusted R squared 0.8405. Further to that, the computed model coefficient indicates that a single point improvement in ICT consistency would result in a 0.8597 decrease in student sense of pressure.

6.7. Perceived Techno Ease of Use Influence on Learner's Technostress

Three Likert scale items were adopted to explain the link between ICT contribution to collaborative learning and student pressure. The highest ranked Likert scale items were, The use of ICTs enables others to

have access to me (mean score 2.53, mode, 1 and standard deviation, 1.51) and The use of ICTs enables me to be in touch with others, (mean score 2.53, mode, 1 and standard deviation, 1.51). The lowest ranked Likert scale item was; ICTs make me accessible to others, with mean, mode and standard deviation scores of 2.49; 4 and 1.21 respectively. Inferential statistics were adopted to establish the presence of a statistical relationship between student collaboration through ICT and work pressure. The inferential examination obtained a p-value of 0.000, R squared and adjusted R Squared 0.6258 and 0.6222 respectively. The computed model coefficient explains that a single point improvement in student collaboration results in a 0.7292 improvement/decrease in work pressure for adult learners.

7. Recommendations of the Study

- Basing on the findings and conclusions of this study, there is a need for training ICT users. Training on self-leadership is of utmost importance in the study because one of the challenges that cause stress on ICT utilisation is lack of focus.
- There is also a need for training on how to use the technology applications. The researchers noticed that some first-year students were struggling to upload their assignments or even in-class tests on google classroom resulting in a lot of missing marks because the whole process of submission would have not been done properly or completed.
- There is a need for training lecturers because students communicate on an interface with lecturers hence there is a need to train lecturers on how to manage the amount of information they upload on google classroom in a bid to avoid information overload.
- Universities should have student ICT packages to be charged through the fees or buy cheap gadgets (laptops, tablets or mobile phones) so that students can access information.
- Visiting or Block release students are addressed as adult learners who would have spent so many years without experiencing the classroom or university atmosphere. There is a need for training and orientation on what it means to be an adult learner so that they can balance work and school life.

8. Limitations and Areas of Further Study

- The study collected data from a single tertiary education institute in Zimbabwe a third-world country. A country with limited access to the internet, and it remains unclear whether the impact of technostress is similar amongst all students enrolled in tertiary institution. Therefore, further studies should be carried out on other tertiary institutions' learners to ascertain their ability to manage technology.

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