Effects of digital devices on noise levels in an academic library

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Effects of digital devices on noise levels in an academic library

Abstract

Purpose – Proliferation of digital devices amongst patrons implies that libraries are faced with the challenge of providing conducive study spaces to patrons. This study was therefore undertaken to establish effect of digital devices on noise levels in the Mzuzu University Library, and measures that have been taken to curb it.

Design/methodology/approach – The study was anchored by the Technology Advancement Model. The mixed methodological design was used, and involved use of qualitative and quantitative techniques. Questionnaires were used to collect data from a sample of 110 students whilst an interview was conducted with 1 librarian responsible for managing service. SPSS was used to analyse quantitative data whilst qualitative data was presented by following order of the themes.

Findings – Findings revealed that students owned a number of digital devices that included smartphones, laptops and AR/VR headsets which they deployed for a variety of uses. Findings further indicated that use of digital devices in the library have resulted in an upsurge in noise levels. Measures taken by students and library staff to tackle the problem have had limited success.

Practical implications – The prevalence of mobile digital devices has resulted in high levels of noise in academic libraries. However, this has not diminished users' desire for quiet study place. This paper, therefore, offers some insights of how libraries can combat the problem of noise to ensure that libraries remain attract to all groups of users.

Social implications – Besides transforming the way people do business and interact with others, digital devices have also negatively impacted people and society in form of increased road traffic accidents due to misuse. Promoting responsible use of digital devices in the library may have spillover effects in that library patrons may become more disciplined in their usage of the digital devices elsewhere thereby help eradicate the ills that have come about due to their wanton use.

Originality/value – Some studies that have been done have pointed to a high prevalence rate of digital devices at Mzuzu University. However, none of them have investigated the impact the existing digital devices have had on noise levels in the library. This study is one of the first studies to be done on the topic not only at Mzuzu University but also academic libraries in Malawi. It is further hoped that action taken based on the recommendations made would lead to reduced noise levels in the library that will lead to creation of a conducive place for study.

Key words digital devices, ownership rates, uses, noise levels, academic library
Paper type Case study

Introduction

Digital devices are defined as equipment that contains a computer or microcontroller that includes toys, game consoles, digital cameras, media players and smartphones as well as handheld, laptop or desktop computers (Palaiologou, 2016). Majority of these devices are portable hence capable of being used in a number of places including academic libraries. Statistics show that ownership and use of digital devices amongst millennials that constitute the largest demographic group in many universities that include Mzuzu University is on the upward spiral. The ECAR (2017) study of undergraduate students and information technology in the USA higher education institutions revealed that 97% of students owned a smartphone, 95% owned a laptop whilst 50% owned a tablet. These findings signify that multiple device ownership amongst the students was a trend. Although students in this study reported owning other digital devices such as desktop computers, the authors of this report (Brooks and Pomerantz, 2017) concluded that student ownership of digital technologies was converging on two devices: laptops and smartphones, with the former predominantly used for academic purposes than the latter.

Library users, students in particular, have deployed digital devices in a variety of ways. Use of technology-enhanced learning, for instance, has not only resulted in laptop computers being used for group discussion sessions in libraries but also facilitated the sharing and downloading of multimedia clips through email and social networking sites such as YouTube (McCaffrey and Breen, 2016). Besides communication, laptop and tablet computers, including smartphones, are increasingly deployed by students to livestream videos, play music and games. Nyasulu and Chawinga (2019) discovered that ICT and Land Management students at Mzuzu University deployed their smartphones to access WhatsApp which was in turn used for communication and academic purposes. These findings imply that students deployed mobile phones for a variety of uses, attesting to the advanced technological disposition of millennials.

The proliferation of digital devices is a positive development for librarians as it helps in the delivery of library and information services anytime and anywhere (Malik and Mahmood, 2013).

However, it is feared that digital devices could also have a profound impact on noise levels in academic libraries. Lever and Katz (2007), for instance, observed that noise from mobile phone ringer tones has proven to be problematic to library patrons who desire to have quiet study places. Similarly, Yelinek and Bressler (2013) have argued that the use of mobile phones in the library lead to increases in noise levels. Although studies have pointed to a high prevalence rate of digital devices at Mzuzu University (Nyasulu and Chawinga, 2019; Chaputula and Mutula, 2018), none of them have investigated the impact the existing digital devices have had on noise levels in the library. However, the researcher who works at the same institution has seen sign posts pasted in strategic areas of the library asking patrons to switch off their mobile phones. This has made the researcher to suspect that noise resulting from use of mobile phones could be a problem in the library. The researcher has further observed isolated incidents of noise in form of music playing from laptop computers, mobile phone ringing tones and SMS alerts, all of which are met by disapproving gazes of seemingly unhappy library patrons. These incidents compelled the researcher to investigate the gravity of noise generated by use of digital devices in the library to establish its effect on clients and staff alike. Specifically, the study addressed the following objectives:

1. Examine ownership rates of digital devices among students at Mzuzu University, and establish how they are used.
2. Explore and establish the effect(s) digital devices have had on noise levels in the library.
3. Determine the measures that Mzuzu University Library has put in place to combat the problem of noise caused by use of digital devices in the library; and assess their effectiveness.

Digital devices are part and parcel of the modern student. Their use has benefitted many students in their social and academic life (Brooks and Pomerantz, 2017). Nevertheless, libraries feel duty bound to create a conducive atmosphere for study (Franks and Asher, 2014). It is, therefore, critical that libraries should strive to strike a balance between the two competing principles. The study, thus, hopes to make recommendations that will ensure that digital devices are used in a manner that will not interfere with efficient and effective delivery of library services.

Literature Review

Digital device ownership and use

A number of studies exist that tend to shed light on digital device ownership at Mzuzu University (Nyasulu and Chawinga, 2019; Chaputula, 2016). These studies have shown an upsurge in digital device ownership amongst students of Mzuzu University which is comparable to global trends. However, the studies have mainly focused on mobile phone (feature phones and smartphones) and tablet ownership and use (Chaputula, 2016), and smartphone ownership and use (Nyasulu and Chawinga, 2019), leaving out other digital technological devices such as e-readers, laptop computers, gaming devices, and AR/VR headsets which are known to exist amongst the student community.

Chaputula (2016) deployed a mixed methods approach to study the eReadiness status of public university libraries in Malawi to use mobile phones in the provision of library and information services. The study which covered three public universities of Malawi that included Mzuzu University, established that 99.7% of the students owned a mobile phone with over 30% of them owning two mobile phones. Another notable finding of the study was that 94.9% of the students owned mobile phones with Internet capabilities and 21% owned tablets. Chaputula (2016) concluded that the high prevalence rate of internet-capable phones pointed to a high prevalence rate of smartphones. Majority of the students (85.5%) further reported that they used their phones either frequently or very frequently. Students also reported to use their mobile phones heavily for calling, sending SMSs, connecting to social media sites such as Facebook, Twitter, and WhatsApp, and to check time, surfing Internet, checking emails, listening to music and radio, taking pictures and setting alarms and other reminders.

In a more recent study, Nyasulu and Chawinga (2019) used the decomposed theory of planned behavior to understand university students' adoption of WhatsApp in learning at Mzuzu University. The study collected both qualitative and quantitative data on a sample of 60 students studying ICT and land management program. Findings of this study revealed that 51 (92.7%) students own smartphones. Findings further indicated that students used WhatsApp to communicate with fellow students (52, 95%) and communicate with lecturers (29, 53%), sharing pictures (46, 84%), sharing audio files (43, 78%), sharing videos (45, 82%) and sharing current affairs (46, 84%) and sharing academic information (50, 91%). Although the focus of this study

was largely different to that of Chaputula (2016), their findings were closely related in that both point to high prevalence rate of phones, and usage tilting to the communicative and social function.

EDUCAUSE Center for Analysis and Research (Ecar) carries out yearly surveys whose aim is to study undergraduate students' information technology trends in the United States of America. A similar study was undertaken in 2018 covering 130 US and international institutions drawing a sample of more than 64,000 students. Results indicated that smartphones (95%) and laptops (91%) are the leading digital devices owed by students (Galanek, Gierdowski and Brooks, 2018). More results from this study indicated that tablets (40%), gaming device (38%), and streaming media device (30%) were the other digital devices with some moderate presence whilst few students reported owning AR and VR headsets (4%) and 3D printers (3%) (Galanek, Gierdowski and Brooks, 2018). Additionally, majority of the students reported using laptops (98%) and smartphones (94%) heavily for academic purposes. The majority of these devices have inbuilt media players, and are also capable of being used for making video and audio calls including being used for texting. All these activities if used in the library irresponsibly could lead to outbreaks of noise that may inconvenience patrons.

Effect of digital devices on noise levels in the library

A number of scholars have carried out studies relating to the problem of noise in academic libraries, and documented the measures that have been put in place to combat the vice. Nevertheless, only few of these studies have specifically linked noise to digital devices. Therefore, much of the literature reviewed in this section discusses the measures that have been taken to address the problem in general.

Chaputula (2016) used a mixed methods approach to study the eReadiness status of public university libraries in Malawi to use mobile phones in the provision of library and information services. The study, among others, interviewed librarians of the public universities that included Mzuzu University. Some of the findings of this study were that librarians were wary of the impact mobile phones could have on noise levels in their libraries, and had taken steps to control it. Among the measures taken included encouraging responsible use of mobile phones by, among others, advising patrons to take their calls outside the library and put their phones on silent mode.

Lever and Katz (2007) carried out a survey of 150 colleges and universities in the United States to examine how libraries within the institutions have dealt with the influx of patron mobile telephone use. The survey revealed that the study institutions have used different approaches to deal with the problem. Whilst some aggressively tackled the problem, others used the laisez faire approach in dealing with the problem. Libraries that endeavored to take action, among others, posted guidelines on the library website to guide patrons on mobile phone use, displayed signs in strategic places of the library barring cell phone use, and used signage that provides patrons with a list of areas in which use of mobile phones is permitted. The study further established that several libraries did not have any policy guidance on mobile phone use and instead assumed that all patrons will behave in a proper way.

Franks and Asher (2014) used a multi-case study approach to determine measures used by four university libraries in South Florida in the USA to satisfy both individual and collaborative study needs of their students with the aim tackling the problem of noise in their respective institutions. The study found that current learning methods emphasize group study which has the potential to generate noise in libraries. The study recommended that libraries should provide for both quite study areas and group study areas to ensure that the needs of all patrons are met. The study further recommended that library designs should be done in a way that makes noise management easy.

Theoretical framework

This study was supported by the Technology Acceptance Model (TAM). TAM was introduced by Davis in the late 1980s (Akman and Mishra, 2015), and is built on two main elements of perceived usefulness (PU) and perceived ease of use (PEOU). PU and PEOU both directly influence the user's attitude toward using new information technology which in turn leads to the user's behavioral intention (BI) to use (Bradley, 2012). Besides directly influencing attitude, PU also influences BI which leads to computer usage. According to Davis *et al.* (1989, p. 986), the PU-BI relationship is based on the idea that "within organisational settings, people form intentions towards behaviors they believe will increase their job performance, over and above whatever positive or negative feelings may be evoked towards the behavior per se." This is so because enhanced performance is instrumental to achieving various rewards that are extrinsic to the content

of the work, such as pay increments and promotions. TAM further posits that PEOU has an effect on PU but not the other way round.

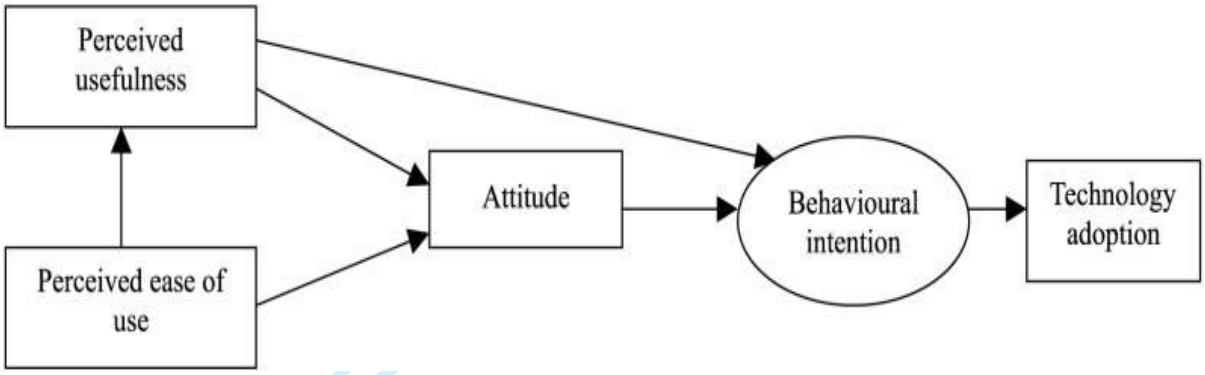

Figure 1: The Technology Acceptance Model (TAM) (Source: Davis et al., 1989).

TAM has proven to be a powerful model in explaining usage behavior. A studies by Legris *et al.* (2003) and Meister and Compeau (2002) revealed that TAM is able to explain up to 40% of usage intentions and 30% of system usage. Moreover, TAM has proven to have reliable and valid constructs (Chin and Todd, 1995), and is an adequate model in predicting students' IT usage and learning satisfaction (Cheng *et al.,* 2015). However, TAM has its own weaknesses. Venkatesh (2000), for instance, argued that the application of the TAM beyond the workplace raises problems because its core constructs do not fully reflect the variety of task environments and how well the technology meets the requirements of that task. In spite of the weaknesses discussed, TAM was used in this study to understand ownership and use of digital devices amongst the students. This was done after noting that its strengths outweigh its weaknesses. The model has also been used in related studies. Chen *et al.,* (2016) used the theory in the study of digital library services at the Taiwan Digital Meta-Library. In another study, Johnston *et al.,* (2015) used TAM in the study of students' acceptance and use of e-textbooks in higher education.

Methodology

The study investigated the effect of digital devices on noise levels at Mzuzu University Library. The study population comprised thirty-two (32) level 2 Master of Education students, twenty-eight (28) level 3 Bachelor of Library and Information Science students, twenty-one (21) Bachelor of

Science (Forestry) students, thirty (30) BSc Renewable Energy Technologies students and one assistant librarian responsible for Reader Services. The four student groups were selected on the basis of easy accessibility; and to provide a basis for comparison of the issues investigated by the study. The combined student population for the study was 111. A census of the 111 students was taken because the population was deemed small. Israel (2013) sampling table recommends that all respondents should be sampled if the population does not exceed 200.

The Assistant Librarian (Reader Services) was purposively sampled to take part in the study because he was considered to be in a position to provide information that would address the study objectives because he is responsible for operational issues hence interacting more with patrons.

A mixed methodological approach was used to collect data. Quantitative data was collected through self-completed questionnaires administered to a sample of 111 students. Qualitative data was collected through an interview conducted with the Assistant Librarian (Reader Services). The questionnaires were pretested on a sample of 10 level 3 ICT students. Similarly, the interview guide was circulated to two other librarians who commented on its suitability. Feedback received from the two exercises were used to amend the instruments to enhance their effectiveness before they were used.

Research ethics were adhered to by soliciting gate keepers' permission before entering the study site, and seeking participants' informed consent before administering the questionnaires and conducting the interviews. Data was collected in June 2019. Quantitative data was analyzed using the Statistical Package for the Social Sciences (SPSS) Version 19 to generate descriptive statistics which have been presented in a form of tables and graphs. Conversely, qualitative data was presented by following order of the themes.

Data Analysis and Discussion

Response rate and demographic characteristics of respondents A total of 70 questionnaires were returned. This shows that the survey achieved an overall response rate of 63% which is considered to be good enough for surveys (Dillman *et al.,* 2009).

Ownership and usage rates of digital devices among Mzuzu University Students

Data obtained from the interview conducted with the Assistant Librarian indicated that laptops, cellphones (mobile phones) and personal digital assistants (PDAs) as some of the digital devices students owned. Findings from the survey presented in Figure 2 indicate that although students owned a number of digital devices (as revealed by the Assistant Librarian), ownership largely centered around laptops 64 (91.4%) and smartphones 61 (87.1%). Other notable findings from the survey are that AR/VR headsets 17 (24.3%) were taking root although actual penetration level was still low while tablets 9 (12.9%), feature phones 7 (10%) and gaming devices 2 (2.9%) had limited adoption rate.

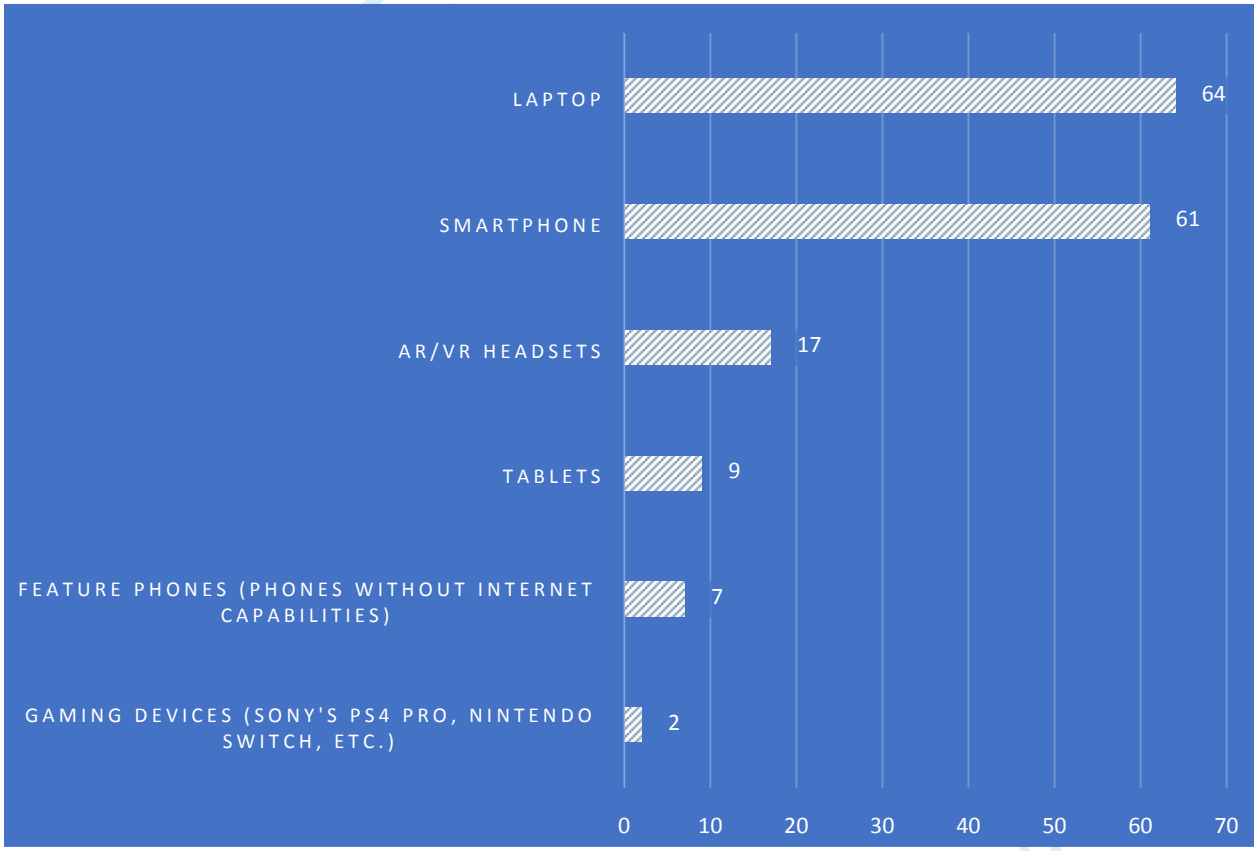

Figure 2: Digital device ownership among Mzuzu University students

These findings correspond with those made in a study by Scott (2012) that showed that laptops were becoming popular among university students in Malawi. However, the findings differ slightly with those made in two other studies. For instance, an Ecar (2018) study of digital device

ownership among USA higher education students showed that (95%) of the students owned smartphones and (91%) owned laptops% (Galanek, Gierdowski and Brooks 2018, 7). Both smartphone and laptop ownership in the Ecar (2018) study was higher when compared to the current study. Moreover, students in the current study owned slightly more laptops than smartphones which is the opposite to what was obtaining in the Ecar (2018) study. Another study conducted by Nyasulu and Chawinga (2019) at Mzuzu University indicated that 51 (92.7%) students own smartphones. Ownership rates of smartphones are evidently higher to those obtained in the current study.

Other notable findings from the present study are that AR/VR headsets 17 (24.3%) were taking root although actual penetration level was still low while tablets 9 (12.9%), feature phones 7 (10%) and gaming devices 2 (2.9%) had very limited adoption rate. These results again differ with those obtained in the Ecar (2018) student study. Adoption rates of AR/VR headsets in the Ecar study (4%) was lower to what was obtained in the present study. On the contrary, tablets (40%) and gaming devices (38%) had a higher adoption rate among USA undergraduate students as opposed to Mzuzu University Students.

Findings presented in Table 1 show that the respondents used their digital devices mainly for writing assignments, calling, sending SMS, surfing Internet, checking emails, connecting to social media (Facebook, twitter or WhatsApp), taking pictures, to check time, setting alarms and other reminder, and to listen to music and radio but less to play games and for multimedia service (MMS). Findings made from the interview with the Assistant Librarian also showed that students deployed digital devices for a variety of uses. The Librarian stated:

'laptops are used for accessing information in the library. Cell phones for communication and PDAs (portable digital assistants) for writing.'

The findings revealed that although the students owned a wide range of digital devices, they used smartphones and laptops more heavily than the other digital devices. In spite of this, the study noted that students used laptops a little more than smartphones. Findings further indicated that students differed in the way they used laptops and smartphones. Whilst the former was used more

for academic purposes such as accessing information and writing assignments, the latter was used mainly for communication. Findings of Chaputula (2016) doctoral study are similar to those made in the present study. The only notable difference between the two studies is that digital devices were utilized for writing assignments in the present study. This is possibly because laptops were part of the digital devices covered by the present study unlike the other study that only covered mobile phones. Overall, findings show that there has not been a major shift in usage trends of digital devices in the period covered by the two studies.

Table 1: Uses of digital devices by students

Digital device use	Strongly agree	Agree	No opinion	Disagree	Strongly disagree	Total
Calling	34	17	0	2	2	55
SMS	19	27	0	4	1	51
Multimedia service (MMS)	9	7	3	4	4	27
Writing assignments	35	18	1	0	0	54
Surfing Internet	25	21	0	2	0	48
Checking emails	25	23	0	0	0	48
Connecting to social media (Facebook, twitter or WhatsApp)	28	20	1	1	3	53
Taking pictures	13	16	2	2	4	37
Used as a torch	8	16	2	2	7	35
Set alarms and other reminder	13	8	2	4	7	34
To check time	18	18	1	1	1	39
To play games	8	10	5	6	6	35
To listen to music and radio	19	21	1	0	4	45

Effect of digital devices on noise levels in the library

The researcher integrated data collected from the questionnaires administered to students and the interview conducted with the Assistant Librarian to ascertain the effect of noise generated by use of digital devices in the library.

The Assistant Librarian was asked to indicate whether the library faces the problem of noise from use of digital devices to which he answered in the affirmative. He stated that students access YouTube videos from using laptops that result in noise. He further indicated that students use laptops as timers that make noise if left unattended to. He went on to say that 'laptops used with 2 pin plugs cause electricity to trip. When security [personnel] goes looking for the culprits it causes noise.' The Assistant Librarian also stated that the ringing of mobile phones causes noise in the library.

Students were asked to say if they have ever witnessed noise in form of music, ringer tones, message alert tones or other noise from digital devices owned by the students. Findings shown in Figure 3 show that 69 (98.6%) students have witnessed noise coming from smartphones and 52 (74.3%) students have witnessed noise coming from laptops. This signifies that smartphones and laptops are the main sources of noise generated by digital devices in the Mzuzu University Library. Coincidentally, these are the most pervasive digital devices amongst the students (see Figure 2). However, noise generated by smartphones is higher when compared to that generated by laptops although ownership rates of laptops are higher when compared to those of smartphones (see Figure 2). While both devices can be used for communication and entertainment, it is possible that smartphones may have been deployed more for communication purposes hence the difference. Other devices that were discovered to be a source of noise in the library are tablets 30 (42.9%), feature phones 29 (41.4%), AR/VR headsets 22 (31.4%) and gaming devices 5 (7.1%). As already pointed out, the rate at which these digital devices were observed to cause noise were largely proportional to their rate of ownership with smartphones being the only exception.

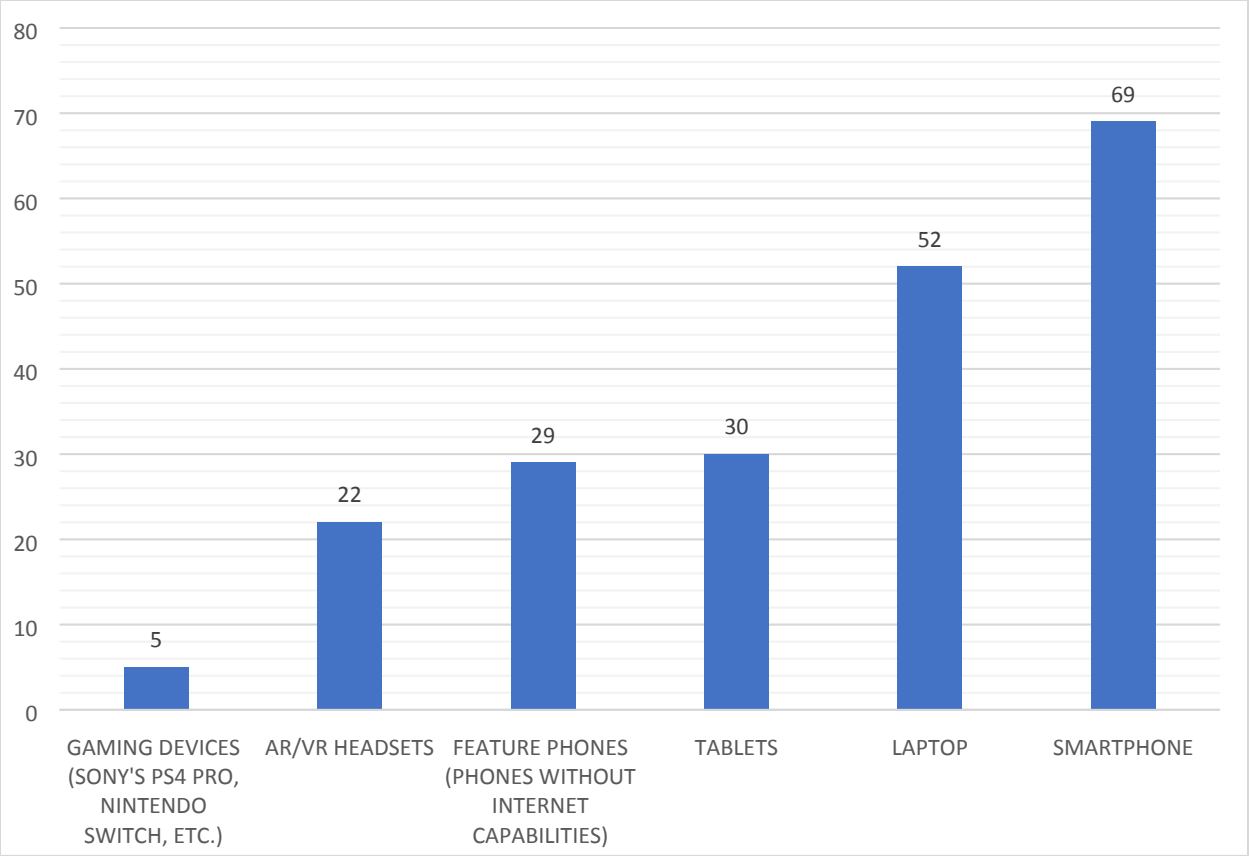

Figure 3: Digital devices that cause noise inside the library

Having established the existence of noise generated by digital devices inside the library, the Assistant Librarian and students were asked to give a rating of the noise levels. The Assistant Librarian revealed that the problem is big, saying:

"Students frequently take calls inside the library, and sometimes they hide in between the book shelves because they fear being caught. Sometimes the tripping of electricity through use of wrong plugs happens frequently, thereby adding to the noise levels."

Findings presented in Table 2 show that 35 (50.7%) students believe the noise is minimal, 24 (34.8%) students view the noise as high, 4 (5.8%) students say the noise is very high whilst 5 (7.2%) students say it is extremely high. On the other hand, only 1 (1.4%) student indicated that s/he has never experienced noise.

Much as 50.7% of the students believe the noise levels in the library are minimal, cumulatively 47.9% of the students believe the noise levels are high. The Assistant Librarian further acknowledged that the noise levels are high. These findings signify that the noise levels in the Library high, a situation that may inconvenience some users.

Table 2: Rating of noise levels in the library (N=69)

Rating of noise levels in the library	Frequency	Percentage (%)
Have never experienced it	1	1.4
It is minimal	35	50.7
It is high	24	34.8
It is very high	4	5.8
It is extremely high	5	7.2
Total	**69**	**100**

Every situation elicits a reaction of some kind. It is in this vein that that the researcher sought to find out how the respondents to this study reacted to incidents of noise they experienced in the library. Findings captured in Table 3 show that 22 (30.1%) students felt very irritated by the noise, 21 (28.8%) students indicated that sometimes they are irritated and sometimes they are not, 19 (26%) students specified that they felt irritated by the noise, 9 (12.3%) stated that they just concentrate on what they do hence do not get bothered by the noise in any way, and only 2 (2.7%) students indicated that they are not bothered by such type of noise. These findings show that over 50% or majority of the students feel irritated by the noise generated by use of digital devices inside the library.

Table 3: How students reacted to incidents of noise in the library

Students' reaction to incidents of noise in library	Frequency	Percentage (%)
I felt very irritated by it	22	30.1
I felt irritated by it	19	26.0
Sometimes am irritated sometimes am not	21	28.8
Am not bothered by such type of noise	2	2.7

I just concentrate on what I do hence not bothered by the noise in any way	9	12.3
Total	**73**	**100**

These findings imply that the noise levels in the Library are tipping towards a worrying trend. Considering that majority of users come to the library expecting a quiet study area (Franks and Asher, 2014) means that the library's failure to deliver on that expectation could be a source of discontentment among many. Findings made in the present study correspond to those made in a literature review study conducted by Yelinek and Bressler (2013) who observed that a combination of factors that include use of new technologies, changing librarian roles, and a generation of "digital native" students have led to an increase in noise levels in academic libraries.

The study findings have further shown that majority of the students feel irritated by the noise generated by use of digital devices inside the library. Bell (2008) has argued that patrons stay away from libraries that are noisy. There is no evidence to suggest that this is currently happening at Mzuzu University Library but it emphasizes the need to take action to stop the vice before it starts affecting patronage.

Measures used to combat noise caused by use of digital devices in the library

Students were asked to indicate how they or fellow library users reacted to incidents of noise generated by digital devices inside the library. Multiple responses were accepted for this question. Findings revealed that majority of the students 35 (38.9%) reacted by giving the perpetrator a stern look as a sign of disapproval. Another good percentage of the students 26 (28.9%) disapproved of the noise by murmuring. Furthermore, 16 (17.8%) students indicated that they reacted by telling the perpetrator to switch off device or put it on silent mode whilst 3 (3.3%) students took the bold step of reporting the perpetrator to library staff. The findings further show that only 10 (11.1%) students did not take any action to stop the noise. These findings are presented in Figure 4.

The student respondents were further asked to indicate if the measures taken to stop the noise yielded any meaningful results. Only 68 students responded to this question out of which 30

(44.1%) stated yes whilst 38 (59.9%) said no. This implies that that the measures that the students took were largely not effective.

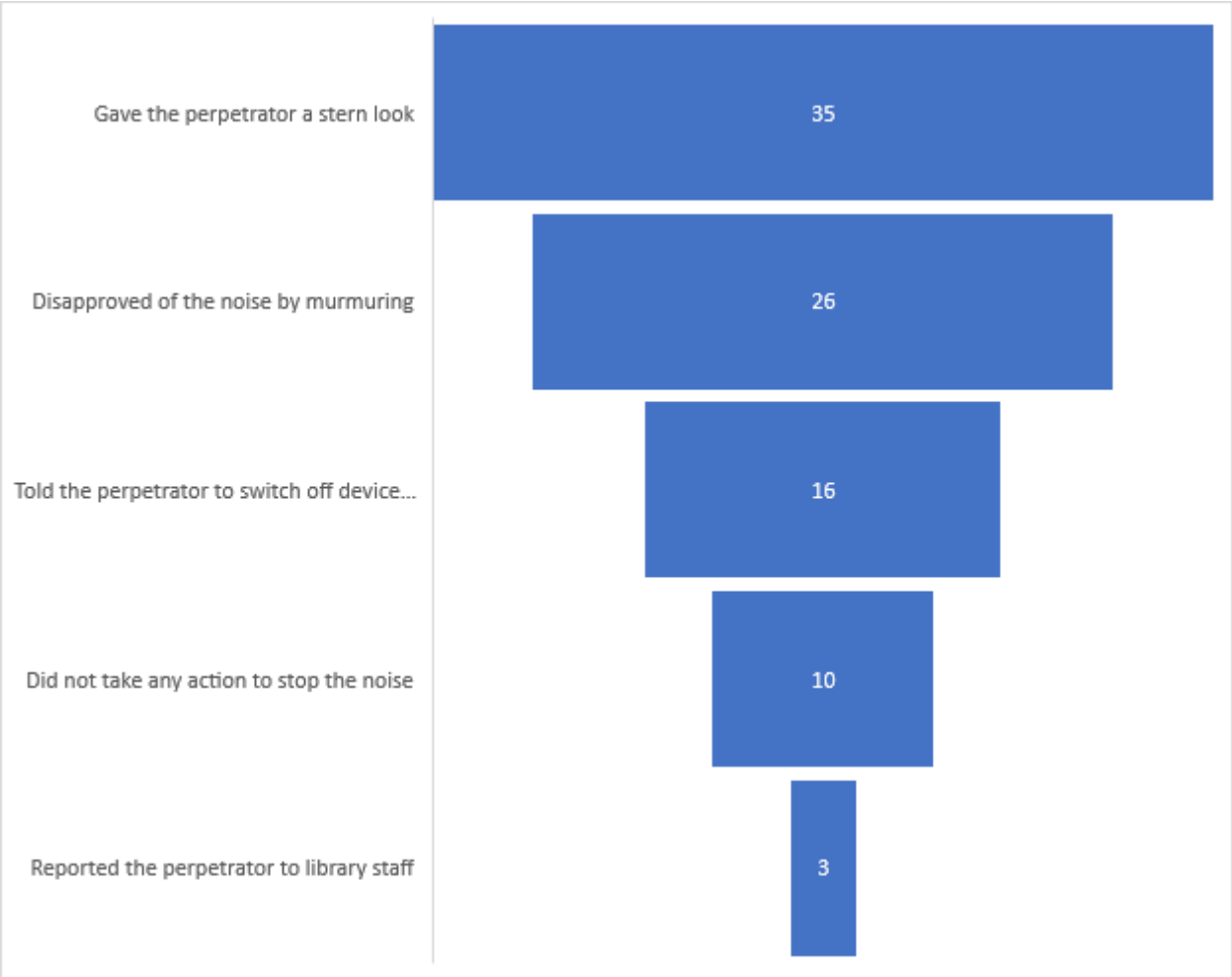

Figure 4: How students reacted to noise generated by digital devices in the library (N=90)

The students were further asked to specify the measures that the library had put in place to curb noise generated by use of digital devices inside the library. An analysis of their responses is given in Table 4. Majority of students (58, 50.4%) observed that the library pasted notices inside the library advising patrons to put phones on silent mode or not make calls inside the library. Another significant number of students (18, 15.7%) indicated that patrons caught taking calls or playing music inside the library are warned and 16 (13.9%) students stated that library staff makes verbal appeals to patrons to put digital devices in use on silent mode. Other findings from the study were that the library takes disciplinary measures against patrons whose digital devices cause noise 9

(7.8%), library has produced guidelines on mobile phone use in the library and posted them on the library website 5 (4.3%), no action is taken against patrons whose digital devices are discovered to be a source of noise 5 (4.3%), and digital devices for the perpetrators have been confiscated 2 (1.7%).

Table 4: Measures the library uses to curb noise generated by digital devices (N=115)

Measures used to curb noise generated by digital devices	Frequency	Percentage (%)
Pasted notices inside the library advising patrons to put phones on silent mode or not make calls inside the library	58	50.4
Library has produced guidelines on mobile phone use in the library and posted them on the library website	5	4.3
Library staff makes verbal appeals to patrons to put digital devices in use on silent mode	16	13.9
Library has designated places where patrons can make calls	1	.9
Patrons caught taking calls or playing music inside the library are warned	18	15.7
Digital devices for the perpetrators have been confiscated	2	1.7
Library takes disciplinary measures against patrons whose digital devices cause noise	9	7.8
No action is taken against patrons whose digital devices are discovered to be source of noise	5	4.3
Other	1	.9
Total	115	100

The Assistant Librarian pointed out that the library has put in place a number of measures that are meant to tackle the problem of noise. Firstly, notices have been put inside the library aimed at

discouraging the behavior. Secondly, the commissionaires (security) go around the library at times reminding students not to make noise. Thirdly, in extreme cases the commissionaires snatch mobile phones from uncooperative students (the phones are given back later). These findings correspond with those that were obtained from the responses provided by students. As was the case with students, the Assistant Librarian further revealed that the measures taken have largely proven to be ineffective. Asked to say why this has been the case, the Assistant Librarian stated:

"it is difficult for us [library] to stop students from bringing cell phones and laptops to the library because the gadgets are used for accessing library services."

The student respondents were further asked to assess the effectiveness of the measures the library took to tackle the problem of noise. The majority of the respondents 47 (74.6%) held the view that the measures did not help to solve the problem whilst a minority 16 (25.4%) indicated that the measures helped to solve the problem. Ineffectiveness of the measures currently being implemented calls for the review of the current measures to see where they are lacking and exploration of how best they can be used to achieve the desired results.

The student respondents were asked to propose other measures that the library could use to solve the problem of noise generated by use of digital devices in the library. Three main issues came up, and these are banning patrons whose devices make noise 26 (54.2%), conducting more awareness sessions 17 (35.4%), and designating places inside the library for taking calls 5 (10.4%). Nonetheless, the respondents suggested other measures for tackling the problem of noise that were not computed. Some of the prominent ones are: Confiscating digital devices of perpetrators for some time, making verbal appeals to patrons at least every one hour to maintain silence, put a billboard at the entrance with the caption "NO NOISE ZONE, PUT PHONES ON SILENCE". The Assistant Librarian, in this regard, suggested that a new library be constructed that should have rooms where students could use their mobile phones (current building does not have this facility).

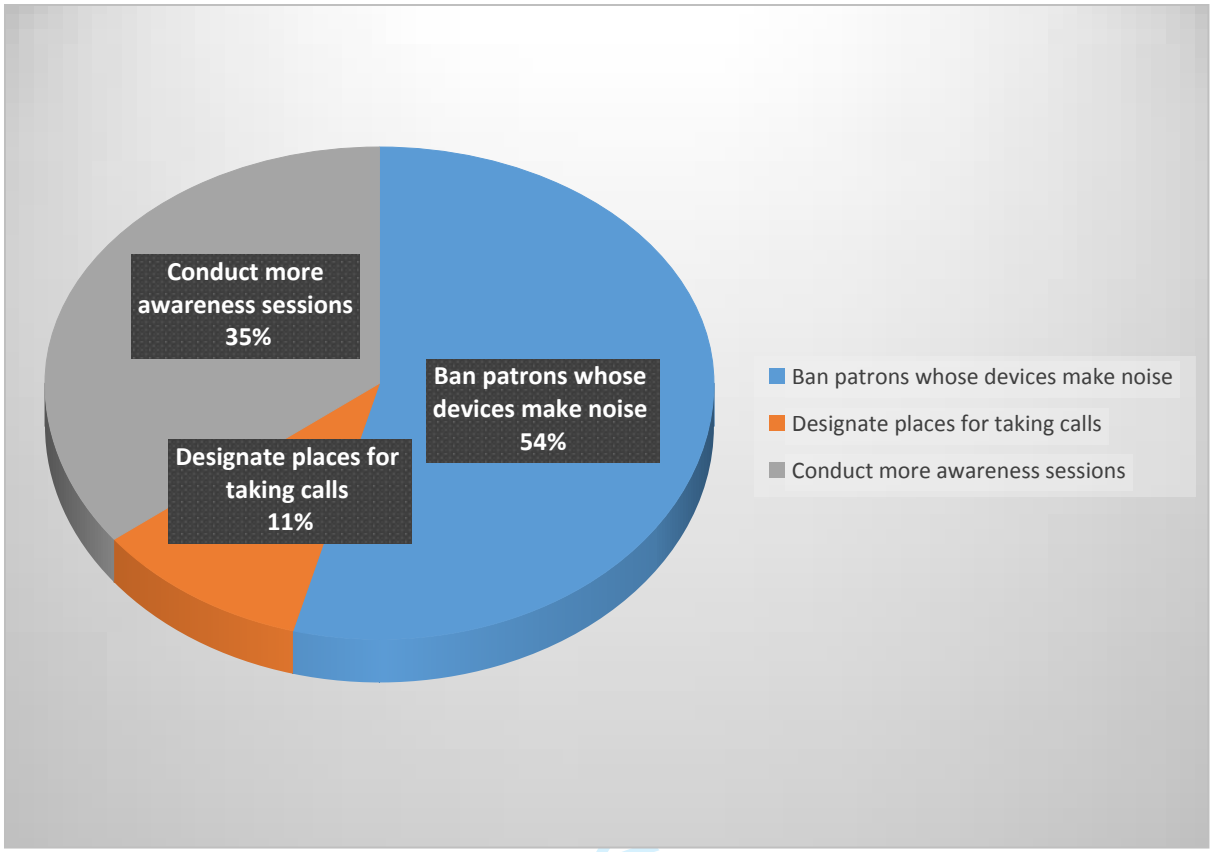

Figure 5: Other measures students suggested be used to curb problem of noise in the library

A number of other studies have shown that noise caused by digital devices is prevalent, and libraries that were facing the problem deployed different methods to tackle the vice. For instance, a survey carried out by Lever and Katz (2007) revealed that institutions have used different approaches to dealing with the problem, with some aggressively tackling the problem, and others opting not to take action. Libraries that opted to take action, among others, posted guidelines on the library website to guide patrons on mobile phone use, displayed signs in strategic places of the library barring cell phone use, and used signage that provides patrons with a list of areas in which use of mobile phones is permitted. Majority of these measures were implemented in the present study albeit with limited success. Another study conducted by Franks and Asher (2014) in the USA aimed at tackling the problem of noise recommended that libraries should provide for both quite study areas and group study areas to ensure that the needs of all patrons are met.

From the foregoing, it is clear that the library has taken concrete steps to tackle the problem of noise inside the library which has been rated as high. However, it is not clear how fervently these measures are implemented. Failure to act would be another means of reinforcing the bad behavior. But it has been noted that the measures taken so far have not yielded the desired results. It is therefore necessary to explore and implement measures that could successfully tackle the problem.

Conclusions and recommendations

This study investigated digital device ownership and use amongst students, and the effects those devices have had on noise levels in the library. Findings revealed that Mzuzu University students owned a number of digital devices with smartphones and laptops having the largest penetration rates. Findings further show that students deployed their digital devices for a variety of uses that included writing assignments, calling, sending SMS, surfing Internet, and connecting to social media sites. The study findings have also shown that use of digital devices by students inside the library has resulted in an upsurge in noise levels with both students and the library staff rating the noise levels as high. A number of measures have been taken to tackle the problem such as issuing of verbal warnings to patrons caught taking calls or playing music inside the library, and making verbal appeals to patrons to put digital devices in use on silent mode. However, the measures have not succeeded in addressing the problem.

Based on these findings, the following recommendations are made. Firstly, librarians should step up sensitisation efforts of patrons on the need to maintain order in the library mainly during orientation of new students. The situation could improve for the better if users appreciated reasons why orderly conduct is promoted. Secondly, library security personnel should intensify patrols inside the library. Greater visibility of security personnel would act as deterrence to would be offenders. Thirdly, library regulations should be reviewed to give more powers to security personnel to discipline offenders that include banning persistent offenders from using the library for periods ranging from 1 day to 2 weeks. Stiffer punishments could act as a preventative measure if well implemented. Fourthly, a mobile phone line should be introduced to enable students to use for sending WhatsApp or SMS text messages to report perpetrators or noise hotspots. The line should be managed by the library security desk, and be used for rapid response to incidents of

noise. Decisive action could help in combating the problem of noise, and help make the library a conducive place for work and study.

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