UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING AND INFORMATICS

MSC ITM

CIT 599: PROJECT

PROJECT REPORT

TECHNO CHARACTERISTICS AND STRESSORS LEADING TO BEHAVIOURAL STRAINS ASSOCIATED WITH TECHNOSTRESS AMONGST YOUNG PEOPLE IN KENYA

SUBMITTED TO DR. ROBERT OBOKO
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DECLARATION:

I wish to declare that this project titled Techno Characteristics and Stressors leading to Behavioural Strains associated with Technostress amongst young people in Kenya is submitted to my supervisor Dr. Robert Oboko of the University of Nairobi in partial fulfillment of the requirements for the award of the degree of Master of Information Technology Management. The results embodied in this thesis have not been submitted to any other university or Institute for the award of degree or Diploma.

ABSTRACT

The development and advancement of Information and Communication Technology (ICT) in Kenya has had considerable effects on people's lives, affecting how they work, how they communicate, and even how they interact. The evolutions in technology and popularization of different devices and applications have implied rapid changes in the exposure profiles of the population at work, school, at home, and in leisure over only a few decades. It is therefore, important to examine those potential health effects of this exposure. This research focuses on possible negative effects associated with ICT use by young adults in Kenya. The research specifically focuses on characteristics of ICT and ICT stressors that lead behavioural strains associated with Technostress.

Person-Environment fit model is mainly used as a theoretical lens to explain Technostress among young people in this study. Other works by Technostress researchers are also considered. The research proposes that characteristics of technology such as usability, complexity of use, constant connectivity anonymity, mobility as well as dynamism contribute largely in creating behavioural strains leading to Technostress. The survey also proposes that stressors such as work intensification and overload, information overload, techno invasion, techno complexity, techno uncertainty and work, social, home or school conflict are also contributing factors that create behavioural strains in individuals using ICTs which associates with Technostress.

Survey design methodology was used to test the proposed research model. Field data from 112 students in the age bracket of 18 to 30 years were obtained from eight institutions in Nairobi, Kenya. The results indicate that behavioural strains associated with Technostress are prevalent. The results from this study have implications for both research and practice. It opens up additional avenues for research by showing that ICTs are a growing source of Technostress in developing countries such as Kenya. The study also mentions a number of inhibitors that can be further explored as possible remedial measures for Technostress.

DEDICATION

This work is dedicated to my family, friends and colleagues who gave me innumerable support in the course of my studies

ACKNOWLEDMENTS

I wish to acknowledge and thank my supervisor Dr. Robert Oboko who took time to mentor me in the course of this research. I also wish to recognize the encouragement of my classmates during the study.

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List of abbreviations

ICT – Information Communication Technologies

IT – Information Technology

MSD – Muscoskeletal Disorders

CAK – Communications Authority of Kenya

SPSS - Statistical package for social sciences

Apps- Applications

WBS – Work break down structure

ICTs – Information Communication Technologies

Key Terminologies

Terminology	**Meaning**
Stress	The general response to a threat by an individual
Stressors	The stimuli encountered by a person
Strain	Strenuous force exerted on a person
Outcomes	The consequences of the strenuous force exerted to a person
Epidemiology	The branch of medicine that deals with the study of the causes, distribution, and control of disease in populations.
Technostress	Psychosomatic illness caused by working with computer technology on a daily basis

CHAPTER 1

1.0 INTRODUCTION

The development and advancement of information and communication technology (ICT) in Kenya has had considerable effects on our lives, affecting how we work, how we communicate, and even how we interact. The term ICT in this context mainly refers to the use of computers, internet and mobile phones.

According to a report titled " Lifting barriers to internet development in Africa" presented in February 2015 by Liquid Telkom, Kenya has the highest bandwidth per person in Africa, the fastest speeds and one of the lowest internet rates.

Data from the Communications Authority of Kenya (CAK) circulated in January 2016 indicates that internet use in Kenya is at 52.3 per cent, placing it in the lead board in the region. Further statistics indicate that at least 82 per cent of Kenyans owned a mobile phone as at July 2014 and this this uptake of mobile telephony continues to rise steadily. Business Daily reports that in 2011, Kenya held 61 per cent of new computer purchases in East Africa.

The rapid advances in technology and popularization of different devices and applications have implied rapid changes in the exposure profiles in the population at work, school, at home, and in leisure over only a few decades. It is therefore, important to examine those potential health effects of this exposure. This research focuses on possible negative effects of ICT use on mental health in young adults in Kenya.

1.1 Technostress Terminology

The term Stress has a broad definition that can refer to the stimuli, process, as well as outcomes. As an outcome variable, stress is divided into sub-scales such as state of mind (measuring anxiety-depression), confidence level (measuring worry) and energy level (measuring exhaustion). Yan et al, (2013).Stress research is a major stream that is rooted in various research domains such as psychology, organizational management and ergonomics.

The term Technostress was introduced by clinical psychologist, Craig Brod, and is defined as a a disease of the recent times caused by a lack of ability to manage new technologies in a healthy way (Brod, 1984). Technostress is thus one kind of stress that is brought about by ICTs and reflects the negative cognition of users when they are unable to adapt towards ICTs (Tu et al., 2008).

Table 1: Description of stress related concepts in this study.

Terminology	Meaning
Stress	The general response to a threat by an individual
Stressors	The stimuli encountered by a person
Strain	Strenuous force exerted on a person
Outcomes	The consequences of the strenuous force exerted to a person

1.2 ICT Extent of ICT adoption and use among the youth in Kenya

Information and Communications Technology has become an indispensable part of the daily life of many people in modernized communities and in an unprecedented way. In the last fifteen years ICT has driven global development. Technological advances, infrastructural deployment, and dropping prices of ICT equipment have improved connectivity to people around the world.

In the last decade Kenya has emerged as an African ICT hub. Since 2000, the Kenyan ICT sector has had a 20 percent growth each year, outperforming every other sector by a wide margin . The ICT sector has been driving the growth of the Kenyan economy. Without ICT, the economy would have seen lackluster growth of 2.8 percent (barely enough to keep up with population growth). World Bank report, (2016).

ICT plays a significant role in our day-to-day lives, addressing challenges facing Kenyans in general. Particular sectors such as finance, health, education, agriculture and the government are quickly embracing technology for dissemination of information, enhancement of service delivery and to reach their customers more effectively and efficiently

Consumer Insight, released research findings from a survey they conducted with 1,301 Kenyan Youth in February 2013 in seven major cities in Kenya and the outcome had the following realizations:

- 93% of Youth in Kenya desire to have a Smartphone as their next phone.
- Social media dominates Internet consumption between the ages of 7 and 25, peaking at 87% ahead of downloading music, research and email.
- TV and radio are the most consumed medias overall by Kenyan Youngsters but as they get older Internet consumption increases substantially.
- Computer usage at home is dominated by Internet usage.
- Where Kenyan Youth are concerned, Internet usage increases from pre-teens, through the teens and is most popular with post-teens.
- Youth in Kenya typically access the Internet around 4 times a week on average and this increase with teens and post-teens.
- Internet access is dominated via mobile devices in Kenya at over 90% on average across all age categories.
- 2 out of 3 Youth in Kenya now either own a mobile device or have access to one.

From this review it is evident that ICT is being increasingly used in Kenyan business, schools and even homes and especially so amongst the younger generation. It is also evident that a significant shift in people's lives is the development and widespread use of the Internet.

1.3 PROBLEM STATEMENT

Claude Bernard (1865/1961) argues that the preservation of life depends on keeping our internal situation constant in the face of a dynamic environment. Cannon (1929) called this "homeostasis." Selye (1956) used the term "stress" to characterize the effects of anything that is potentially harmful to homeostasis. The real or perceived threat to an organism is referred to as the "stressor" and the rejoinder to the stressor is called the "stress response." Although stress responses change as adaptive processes, Selye observed that prolonged stress responses might lead to tissue damage and disease.

According to Schneiderman et al (2005), Stressors have a significant influence upon mood, our behavior, sense of well-being and health. Acute stress responses in healthy individuals may be adaptive and normally do not impose a health burden. However, if the threat is unremitting, especially in older or sickly individuals, the long-term effects of stressors can impair health. The authors further add that the relationship between psychosocial stressors and disease is affected by the nature, number, and persistence of the stressors as well as by the individual's biological vulnerability (i.e., genetics, constitutional factors), psychosocial resources, and learned patterns of coping. Psychosocial interventions have proven helpful for treating stress-related disorders and may affect the course of chronic diseases.

ICT has had a considerable impact on the Kenyan Society especially on the younger generation. For young people, access to information means better access to finances, business opportunities and prospects needed to pursue a career or studies; increased participation in political processes, and recognition of youth as responsible citizens in today's society. Business opportunities for the youth which is facilitated by access to technology, the internet and information – is fast being positioned as an alternative solution for youth employment. (United Nations Report (2012 report).

Further great benefits have been realized through mobile money transfer, laptop project to schools by the Kenyan government, adoption of Mobile commerce by the agricultural and health

sectors and the opening up of Huduma centers and other e-government initiatives that has had significant bearing in improving the lives of the Kenyan people.

Despite the benefits realized, use of ICT involves both physical and psychosocial exposure that can have effects on health. Physically, computers and mobile phones can be seen as separate, but they also have several psychosocial aspects in common. Ito, Mizuko et al. (2008).

ICTs penetrate virtually all areas of life in modern societies; have become an essential part of both leisure and working time. Many researchers have undertaken efforts to study the psychological effects associated with ICT use. Some researchers arguet that these changes are harmful, while others assert that changes are beneficial.

Ninaus K, Diehl S, Terlutter R, Chan K, Huang A (2015), argues that ICTs help to improve work efficiency and to make work life easier. Hence, it can be assumed that ICTs can improve productivity and thus boost the morale of people.

Conversely, addition research suggests that using ICT helps boost brain. Emerging technologies may have physiological effects and probable benefits as it keeps complicated brain activity, which may exercise and improve brain function.(Chivas, T., 2009).

Balsa, A (2010) asserts that an Internet-based intervention can empower patients by providing them with information and supportive tools that can help them improve their health-related decision making and ultimately increase their quality of life and wellbeing.

In a report by the Warwick medical school, (2015), benefits to services of young people using ICT – include their wide availability and accessibility; potential cost savings; and the benefit of having more informed service users.

There is however a concern that this widespread use of ICT could have an adverse upon impact upon individuals and social processes in everyday life. (Gustafsson, E, 2009). Work really

changes and technical innovation takes place, leading to an employment shift towards services with no clear separation between working time and leisure time.

U- OSHA, (2010) argues that despite all kinds of opportunities and productivity gains of ICT, ICT use possibly results in poor work-life balance inactivity, static postures and repetitive movements. This argument asserts that combined exposure to a mixture of environmental stressors that multiplicatively increase the risks of musculoskeletal disorders [MSDs], the leading cause of sickness absence and work disability.

In Kenya cases of mental and psychological cases associated with ICT - also known as techno stress or techno depression, have just begun to be realized (Khasakhala et al,2014). This emerging phenomenon in Kenya is rapidly rising especially amongst the young populace. There is a need therefore, to understand causal mechanisms and devise ways of monitoring and managing this challenge.

As little research has been conducted in Kenya, particularly research revolving the social context of the Kenyan populace, the justification of this research will therefore to study possible associations of high ICT use and behavioural strains among young adults in Kenya in order to pave way for further research on possible pathways that can be tested epidemiologically. (The branch of medicine that deals with the study of the causes, distribution, and control of disease in populations).

1.4 RESEARCH OBJECTIVES

The objective of the research is to study likely associations between ICT use and behavioural health indications among young adults in Kenya and develop a conceptual and empirical understanding of Technology characteristics, stressors and strains leading to techno stress.

Specific aims:

1. To examine if the combination of intensive mobile phone, computer and internet uses are risk factors for increased behavioural strains among young adults.
2. To have a theoretical and practical understanding of technology characteristics leading techno stress
3. To have a theoretical and practical understanding of stressors contributing to techno stress.
4. To understand the relationship between technology characteristics, stressors and behavioural strains associated with Technostress.
5. To provide a foundation in which future studies on Technostress can be leveraged on in Kenya.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 General Concept of Stress

Stress is a common element in the lives of every person, regardless of ethnic group or cultural background (Garrett, 2001). In the last few decades, there has been significant studies conducted on the issues of stress and stress management as elaborated by Dziegielewski et al., (2004).

Selye (1974) argues that stress is a "nonspecific response of the body to any demands made upon it".As demands are made on a person, the body tries to adapt to the situation in order to reestablish normalcy. The author further states that there is a series of physiological reactions which develops in response to environmental demands. The author also adds that some of the familiar reactions to demands made on the body include rapid heart rate, respiratory rate, blood pressure and adjusted level of blood glucose.

According to Nathan (2002), these reactions occur to enable the muscles and vital organs have an ample supply of oxygen, nutrients and energy to handle the difficult situation. He further notes that prolonged stress may be psychologically harmful in that it may hinder a person's ability to engage in normal behavior.

Another opinion of the consequence of stress on the body is that stress is not only just a response to environmental demands, but is also related to personal discernment. Lazarus et al (1984). The authors also argue that if a person perceives a situation to be stressful, then it is certainly stressful and that if an individual is vulnerable to the negative effects of stressors, the situation may present a threat or could be harmful to the individual. Generally, when many demands are made on an individual, they usually experience increased feelings of stress. Dziegielewski et al., (2004).

2.2 The Phenomenon of techno stress

Dubiel, (2013), defines Technostress as psychosomatic illness caused by working with computer technology on a daily basis.

Technostress describes a set of constructs and relations between technology characteristics and human well-being that reflect a possible "dark side" of IT usage. Maier, (2014).

Work related stress influences morale in the work environment and home. At work, health issues arise from techno stress resulting in high rates of absenteeism, thereby affecting retention of good employees. Netterstrom et al, (2010). Techno stress is a relatively new topic according to studies of stress concerning the employment sectors . Tarafdar et al, (2010).

From the definitions it is evident that there is a negative correlation between the use of ICTs and the behavioural health aspects of users of ICTs.

2.3 Conceptual Foundations and Frameworks for the present study

Broad theoretical paradigms shed light on stress. The first paradigm – an epidemiological perspective (Fox et al., 1993) connects job related circumstances such as the amount of workload to emergence of diseases such as heart disorders among individuals. The angle of how such stressors are taken seriously by individuals has largely not been focused on by researchers. Researchers such as Ayyagari (2007) however argue for the use of objective measures to measure stressors and their effects.

The other hypothesis is seen as a rational standpoint (Fox et al., 1993). The point in this opinion is that stressful consequences are determined by how individuals interpret the environment demands especially in relation to psychological outcomes. The emphasis on undertaking both person and environment factors in understanding the stress phenomenon makes the selection of person environment (P-E) fit model appropriate. Ayyagari (2007).

The person-environment fit model is one of the most recognized view on stress as it acknowledges the individual as well as circumstantial factors. The basic principle of person-environment fit is often referenced in many models of stress. Cooper et al, (2001).

In reference to this study, stressors arising from ICTs are differentiated from stressors due to other reasons. This study mainly focuses on stressors experienced through use of ICTs.

2.3.1 Person – Environment (P-E) fit model as extended to the ICT environment

The P-E fit model takes on the principle that attitudes, behaviour and other individual traits occurs not from the environment or person separately, but to a certain extent, the relationship between the two. It proposes that when the relationship between the person and the environment Is out of balance, it ends in strain as shown in figure 1.

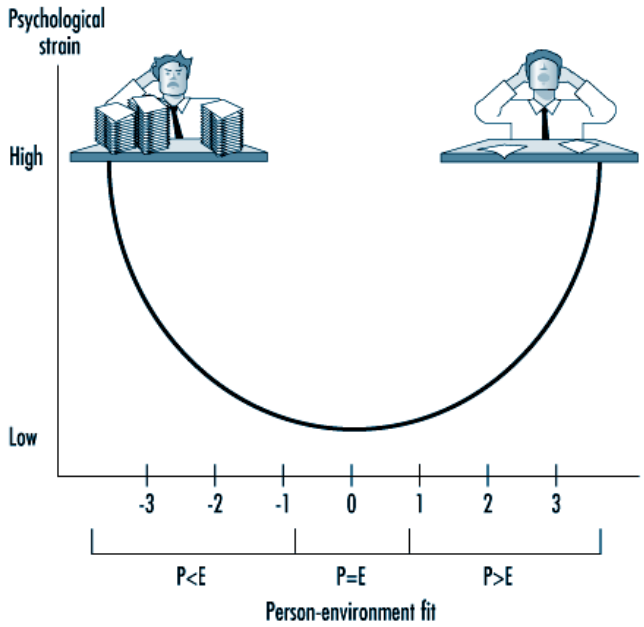


Figure 1: Diagram of Environment (P-E) fit model

This concept of P-E fit can be mapped onto the ICT environment, as shown in figure 2:

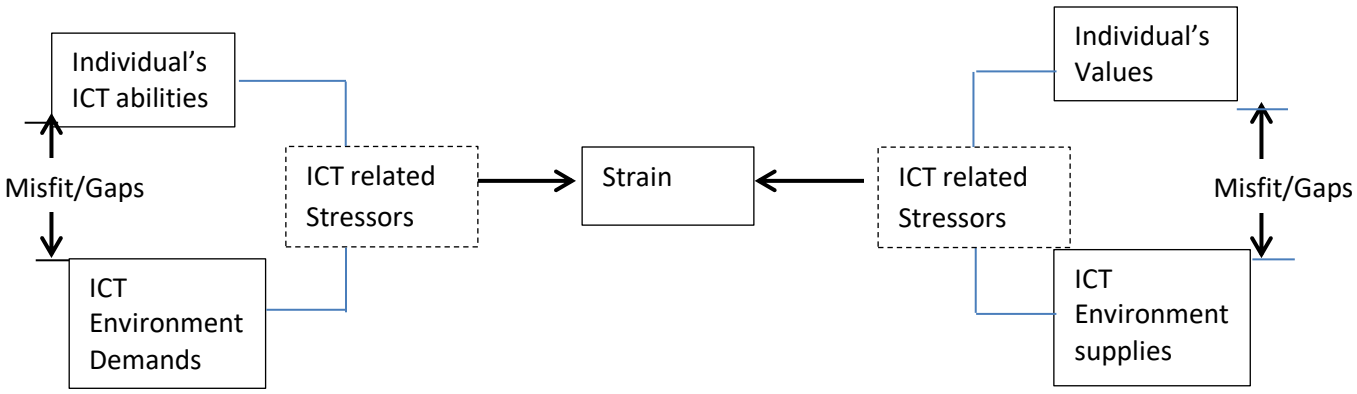


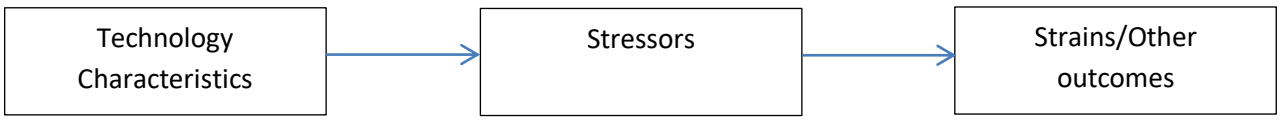
Figure 2: Diagram of Environment (P-E) fit model projected on to the ICT environment

In the modified version of the P-E fit model, an individual's ICT abilities, ICT environment demands, individual's values and ICT environment supplies contribute to ICT related strains which may include mental and behavioural strains.

2.3.2 Ayyagari Techno stress model

This study also bases research on the Ayyagari (2007) techno stress model. Unlike previous models, the Ayyagari (2007) model makes reference to the technology characteristics as stressors and provides suggestions how technology creates stress. This is shown in figure 3.

Figure 3: Diagram of Ayyagari (2007) Stress Mode



2.3.3 Ragu et al Technostress Model

Further the study bases framework on the Ragu et al (2011) model which is based on the Transaction Theory of stress. This theory suggests that a person experiences stress because of Stress inducing factors and that stress manifests in adverse outcomes for the individual with stress reducing mechanisms.

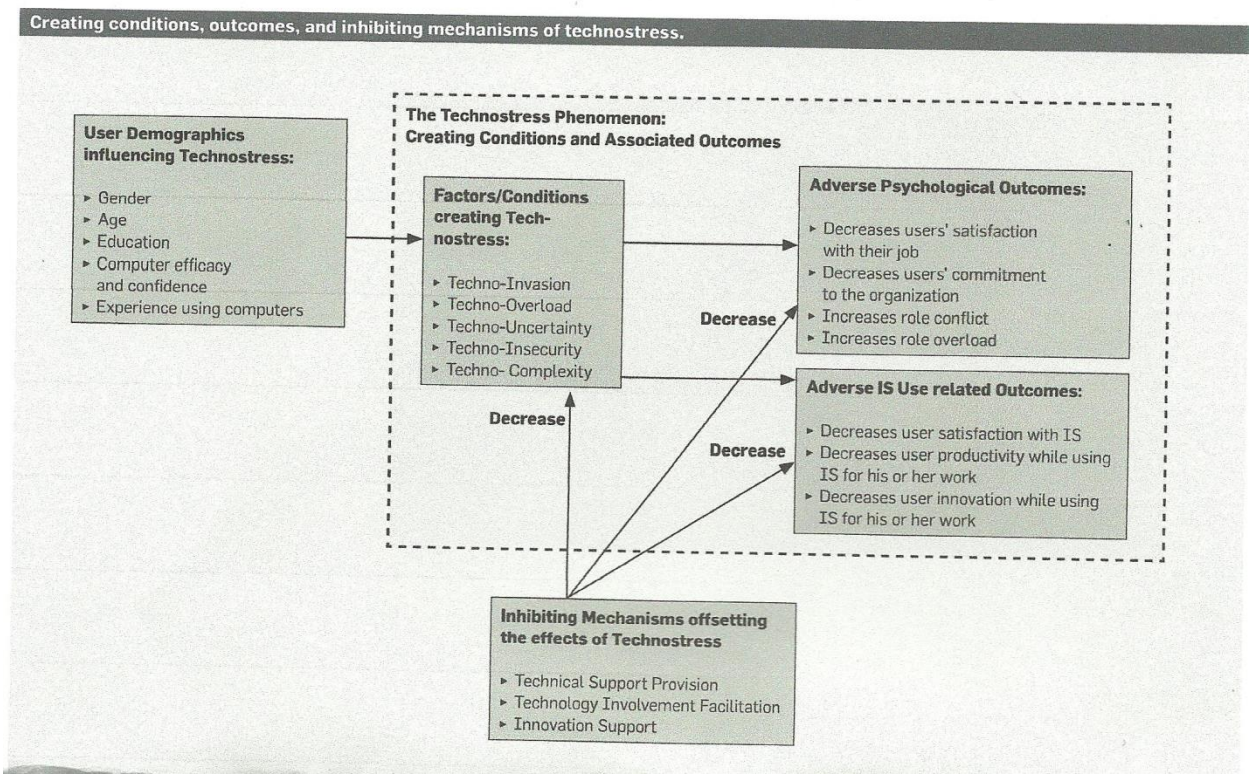


Figure 4: Diagram of Ragu et al (2011) framework

This study therefore maps the P-E fit model to the behavioural effects arising from adoption and use of ICT by young adults in the Kenyan context. The figure 5 portrayed below outlines the coverage of this study and how it relates to the stress model as provided by Ayyagari (2007).

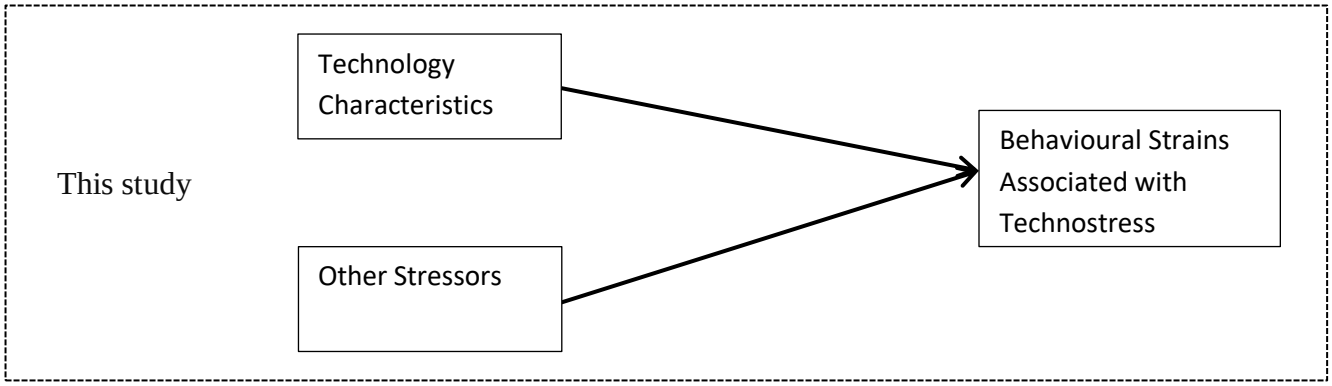


Figure 5: Scope of current study

2.4 Literature on Techno Stress Inhibitors

2.4.1 Technical Support to Users

To describing techno stress inhibitors, we study theoretical literature and experiences of practitioners that propose social and organizational mechanisms from which negative effects of technology use can be reduced significantly and especially those that can be mapped onto the Kenyan context. Among some of these proposals is the availability of technical support for end users.

Tarafdar et al (2011) describes provision of technical support as aid provided to employees in their use of Information Systems (IS) .The authors further indicate that this kind of support can decrease techno-complexity or techno uncertainty by solving their IS-related queries and problems. They add that a receptive support desk can provide assistance to users in acquainting and using IS thus boosting their satisfaction. This is also effective for tasks and applications where technical problems and errors can upset critical processes. Technical support is therefore significant in minimizing such interruptions and reducing decreased efficiency.

2.4.2 End User Involvement

Another means of easing strains from Technostress is to ensure that people are involved at the planning stages of a system as well as at the implementation phase (Ragu-Nathan et al 1984). This inhibitor can be especially useful in a work related environment. The authors further indicate that incorporating user views on uses of new applications during development and fitting their requirements into the design of the system enables them to own the applications from the beginning, hence a decrease on the effect of stressful circumstances in the course of usage of the system.

Tarafdar et al (2011) adds that being able to influence adoption of a new IS prevents users from perceiving system changes as a disruption hence reduced experiencing of techno uncertainty. The users are also more likely to provide suggestions on desired system features increasing usefulness of the system.

2.4.3 Technological Self Efficacy

According to Ayyagari (2007), some of the inhibitors to Technostress has a lot to do with individual self-value perspectives as well as the aggressive nature of an individual. According to the author people who tend to be less competitive or less aggressive and generally more open minded and relaxed towards a task or undertaking are likely to experience less metal or psychological strains compared to those who are not. The author also argues that those who are more confident in their abilities develop mechanism that act as a buffer from stressful situations. The author goes on to state that self-efficacy in this situation can be considered as an inhibiting mechanism towards Technostress.

2.4.4 Technology centrality

Literature on Technology centrality focus on the perception held by many that technology are a key component to accomplishment of work related tasks. The degree to which ICTs are seen to be mandatory condition to achievement of work related activities may attenuate the stressful conditions arising from technostress. Technology characteristics such as presenteesim or constant connectivity may be seen by many users for example, as being critical components for accomplishing tasks and they may thereby have low perceptions of the stressful impacts of the characteristics.

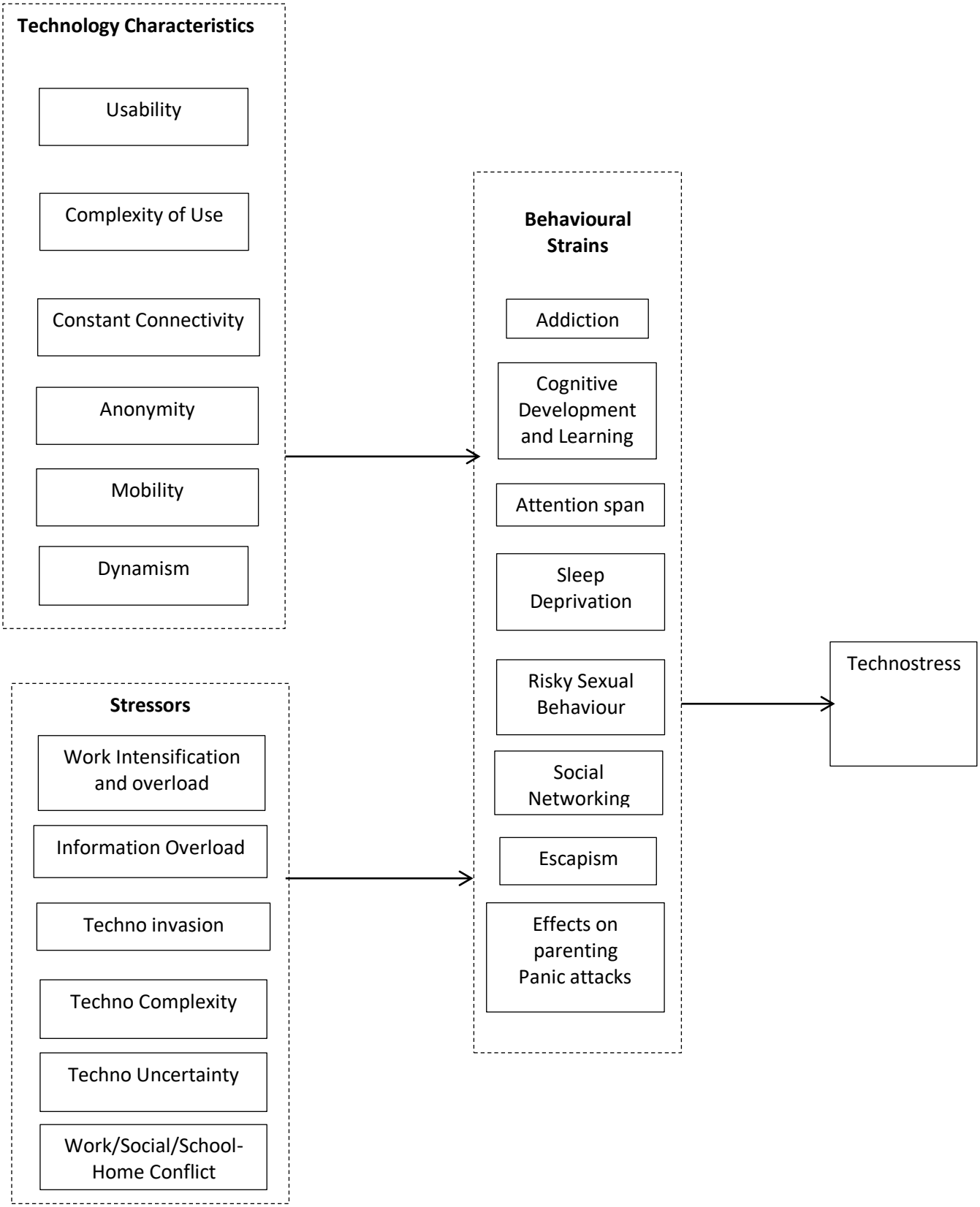
2.5 Proposed Research Model

A number of different streams of the techno stress literature, including the P-E fit model, psychology, behavioral and IS research models (Ayyagari et al, 2011; Cavanaugh et al, ,2000; Tarafdar et al, 2007 and Ragu et al Technostress Model, 2011) were studied and a list derived of characteristics that cause ICT stressors that have been generally investigated (information overload, high demands of workload, work/home balance, techno insecurity, techno invasion, techno uncertainty, and techno complexity).

Most research models base on the person environment fit models which proposes that some technology characteristics such as usability (effectiveness, difficulty, and consistency), invasiveness (presenteeism, privacy and pace of change)-have a relation to stressors (work burden, role opacity, lack of privacy, home-work borderline conflict, and job uncertainty).Ayyagari et al, (2011).

A critical view of these frame works however is that that the focus is on techno stress arising from work related environments with particular focus on study of behavioural effects of technostress on adults. As much as this study adopts the theoretical lens of the researchers the particular focus is on the behavioural and mental strains from social adoption and use of Technology of youngsters in the Kenyan context. The proposed research model is therefore as indicated on figure 6.

Figure 6: Proposed research Model



2.6 Technology Characteristics and behavioural strain

A general model of technology characteristics is a challenge to come by since the impact of ICTs is studied in multiple areas. In this study various areas of research and literature identified from ICT adoption and use were considered in an effort to identify some of the common characteristics.

2.6.1 Usability- Effectiveness, Efficiency and reliability and behavioural strain

Usability focuses on designing an ICT product that is effective, efficient and satisfies the user's needs. Usability means making systems easier to utilize, and fitting them more closely to user requirements. The international standard, ISO 9241-11, gives a guide on usability and describes it as the degree to which a product can be employed by particular users to achieve specified goals with satisfaction, proficiency and effectiveness. Usability concerns

- Effectiveness - are users able to complete their tasks, accomplish ends with the product, meaning what are they targeting to do?
- Efficiency – what effort is needed by users to achieve their intended goals within a specified time frame?
- Satisfaction – Do the users appreciate ease of use?

Factors affecting usability include:

- Users of the systems/devices – the people using, their training level or their experience
- Goals of users - what users are aiming to achieve with the product and if it supports what the users intend to achieve.
- The usage situation (or 'context of use') - where and how is the product being used?

It should be clarified that usability is primarily concerned with the functionalities and characteristics of the product.

Whitenton, (2013) says that cognitive load imposed by a user interface for example is the amount of mental resources that is required to operate the system. The author further says the term cognitive load was originally coined by psychologists to describe the mental effort required to learn new information. and that when a computer can't handle our processing demands, we can simply upgrade to a newer, more powerful machine. But to date there's no way to increase the

actual processing power of our brains. Instead, designers must understand and accommodate these limits.

2.6.2 Complexity of Use and behavioural strain

Technical capacities and jargon associated with ICTs have continued to be more and more complicated. It takes time to learn and master use of new products or applications and training through tutorials and manuals can be daunting to many users. Research on interactive mannerisms of users indicates that users may portray some indication of aversion when they are required to utilize seemingly complex technologies. (Ragu-Nathan et al, 2011).

Techno complexity compels users to spend a significant amount of time and exertion in learning and understanding how to use the latest applications or hardware. Even as pressure from frequent releases continue to be released at a fast pace, technical abilities become more complex. Users can therefore find the variety of hardware, applications, and terminologies, daunting and difficult to understand, and therefore feel stressed. (Ragu-Nathan et al, 2011).

2.6.3 Constant Connectivity

The characteristic of continuous connectivity provides the basis of extension of the regular working period leading to enhancement of work overload and role ambiguity particularly for employed individuals. (Ayyagri, 2011). Employees may be required to work beyond normal hours. Secondly they can be reached at any time and people may get the impression of being coerced to respond. This kind of continual exposure makes people to feel that they are not free and that their personal time and personal space have been raided. (Ragu-Nathan et al 2008). In this aspect it is also evident that personal "space" is invaded hence invasion of individuals' privacy.

Even as this characteristic is of benefit for some users, others perceive it to obscure the work-life balance. Many see this characteristic to be robbing people of quality time particularly with their families thus inducing the problem of work-home conflict. Ayyagari (2011).

ICTs also constantly demand for user attention. Ayyagari further argues that more often than not,

People have irresistible urge to keep referring to their emails on their phones or email platforms and this robs them the time required for other tasks. The author also argues that the demands created from this characteristic create ambiguities on the task to be performed due to the multi-tasking abilities of technology.

Constant connectivity means that users are exposed to the dynamic environment of ICTs. The dynamism of the ICT environment requires users to keep up with changing technologies. This places pressure on the pace of uptake of learning and adaptation to the new environment hence causing strains of uncertainty amongst users.

2.6.4. Anonymity and behavioural strain

Anonymity in this study focuses on the negative aspects associated with anonymous use of ICTs. Use of ICTs allow for the possibilities of anonymity which may reduce users accountability for their activities.

Despite the fact that most ICTs were not designed for anonymity, the processes of tracing and actually verifying actual executors is still largely a challenge. The prevalence of cyber bullying is often attributed to relative Internet anonymity, due to the fact that potential offenders are able to mask their identities and prevent themselves from being caught.

The advances in technologies such as closed cameras used for monitoring, makes it easy to trail actions of people and made it possible for companies to monitor peoples' actions which leads to a feeling invasion of privacy.

2.6.5 Dynamism – Pace of Change of ICT and behavioral strain

Dynamism characteristic of ICT can be described as the overall process of invention, innovation and diffusion of technology or processes via research and development to producing emerging technologies for diffusion throughout industry or society. The breathtaking pace of penetration and uptake of mobile telephony and broadband Internet is supporting many new possibilities, products, and services; providing breakthrough ideas in agriculture, health, education, and access to finance; and helping local and international trade. It also provides new ways of communicating and lobbying, which transcends international borders.

To keep pace in a changing environment requires a new type of user — one that's nimble, adaptable and highly knowledgeable. These users must be capable of innovation, not only through the development of new products and services but also by acquiring new skills and experience. Burfoot (2016). The speed of technology change means increased work intensification and may also lead to information overload as people are pressured to embrace and adapt to technological change to manage workload and techno complexities, Ayyagari (2016) argues that as people have to keep updating themselves and this creates a feeling of ambiguity, incompetence or results in a form of technology fatique.

The dynamism ICTs especially those in mobile telephone handset sectors has also redefined the aspects of social class. There was a time when rich people tend to use their appearance, communication skills and car models to differentiate them from others. Now the inclusion of mobile phone handsets in that list has only increased the distance between different classes. This aspect may generate feelings of inferiority for those with supposedly inferior gadgets leading to division of our society on larger scale thus contributing to the social stressors.

2.6.6 Mobility and behavioural strain

ICT has rendered the world a global village without boundaries. Use of smart portable and mobility tools and technologies such as e-commerce, e-learning, teleworking and cloud computing means that one can virtually transact virtually from anywhere. This means that organisations may expect their employees to work from any location including from their homes or even while on holiday increasing strains and work load and placing strains on the Social-Home balance.

Laptops, Smartphone apps and game gadgets due to their portable nature are somehow making the social distances larger. As people remain busy with these gadgets, they ignore the social contract hence breaking the social bond considered a health element in the wellbeing of a person.

Baron (2010) observes that although use of mobile phones has risks of social infelicities and physical safety, mobile phone use continues to increase. The author says that contributing factors to these risks are that standards of social acceptability have changed and that notions of appropriateness have shifted with other communication technologies.

The site teenik.com mentions that rampant forms of cheating has been enhanced by the use of mobile solutions such as mobile phone which can lead people to depression, eating disorders, make people feel bad about themselves, and to even become suicidal.

2.7 Techno stressors and behavioural Strains

From a general point of view, techno stress research particularly studies how and which techno-stressors cause psychological and behavioral strain. In this process, stressors are events or burdens perceived by an individual, so techno-stressors are technology-induced stimuli, events or demands (Ayyagari et al. 2011).

The Ayyagari model (Ayyagari et al. 2012) states that the technology that is used by an individual determines how techno-stressors are perceived. The author argues that the kind of technology used by an individual to accomplish a task creates a relationship that determines the level of strain experienced by the person. The author goes on to state that if the technology used is a misfit there will be a heighted level of vexation and decline in the value of performance which creates greater level of stress.

2.7.1 Work intensification and Overload and behavioural strain

Globally, work intensification and high demands at work has led to increased demand from workers who are exposed to are quantitative [high speed, no time to finish work in regular working hours], qualitative [increased complexity], emotional [emotional load or a need to be friendly due to direct contact with customers i.e. service relationship situations], and often physical loads as well. Joling et al (2008).

Joling et al (2008) further argues that the development in technology use can be classified as mechanisation, automation or computerisation, and for each one of them human activities are substituted by machines leaving them with monotonous vigilance tasks. They also add that on the use of computers and smart phones with internet which provides easy access to all kinds of information but also the expectation from colleagues, supervisor and clients is that one is always available, always reads e-mail and can always be contacted. This impacts on students and workers behavioural characteristics. According to the authors, some of the risk factors associated with ICT at work are:

- Symptoms of stress evolving from long working hours, increased workload and increasing intricacy of tasks or segregation of home worker;

- Stress from having to continuously upgrade skills;
- Human relationships substituted by virtual links and
- Physical injuries such as repetitive strain injuries and other ergonomial disorders arising from postural effects.

2.7.2 Information Overload and behavioural strains

Sarah Thomee (2010) argues that a number of factors contribute to overload of information and this includes high quantitative and qualitative uses of ICTs, pressures of time, mental strain and neglect of personal activities and social life. The author observes that positive uses of ICTs have been recorded as well.

2.7.3 Techno-invasion and behavioural strains

Techno-invasion describes being "always exposed" which explains the fact that people can be reached regardless of time or location. Walz, K (2012) says that work eats into family time including holiday time leading to stress.

Techno invasion also encompasses some element of cyber bullying through on the Internet, cyber bullying takes various forms. According to the website Netsmartz411, cyber bullying includes sending odious messages or even issuing death threats to young users, defaming them online, mockery of their social networking profiles, or creating a website to bash their looks or to tarnish reputations. The challenge with cyber bullying is that teachers or parents cannot intervene on the Internet. Also cyber bullies do not see their victims' reactions, the way they could if they insulted people to their faces which may make it easier for them to continue.
The advisory group to the Department of Health, the Government Hong Kong, (2014) agrees that the characteristics of the current ICT invasion make cyber-bullying happen more easily and has a more damaging effect. This observation therefore indicates that the association of the serious psychosocial consequences among young victims of cyber-bullying exists and is a concern.

2.7. 4 Techno-complexity and behavioural strains

Techno Complexity associates the behavioural strains arising from use of complicated hardware or software which compels users to place more effort in learning and mastering their use. The effort required learning this hardware or software induces stress in people.

2.7.5 Techno insecurity and behavioural strains

Techno-insecurity has to do with circumstances in which people feel incapacitated by their lack of adequate knowledge and thereby stand to lose their positions to people with better skills of the latest technologies. Walz, K (2012) discusses techno-insecurity as being an aspect of where it is common to find newer, often younger persons who come equipped with better skills. Existing professionals may thus feel insecure or cynical about this leading to pressure and stress.

2.7.6 Techno-uncertainty and behavioural strains

Tarafdar et al (2007), discusses Techno-uncertainty as a stressor which where continuous changes and improvements do not give people time to grasp mastery of software or hardware because their skill or knowledge is rendered obsolete within a short period of time. This leads to a discouraged feeling as their knowledge is irrelevant rapidly and they have to keep updating their skills.

2.7.7 Work/School – Home Conflict and behavioural strains

When look at from the P-E fit model, the Work/School – Home conflict creates an ambiguous boundary between work or school and at home. This creates strains among family members which in turn creates stress for the user. This stressor is aggravated by characteristics of ICTs that enables people to work from anywhere at any time. Ayyagari (2007) argues that people may display personality traits at work and home creating tensions that lead to technostress.

2.8 Behavioural Strains and Technostress

2.8.1 Addiction

Use of computers by children and youngsters at home and school is now common in many countries. The level of exposure of the child to the ICT gadgets varies with the age, ease of accessibility to the gadgets or the model of parenting adopted by the parents. Internet addiction conditions are now increasingly common among youngsters. This refers to excessive computer use which interferes with daily life.

Natural systems theory assumes that the development of a child results from the consequence of ongoing reciprocal and increasing interactions between the child and his/her microsystem (immediate home, school, and community environments). The increasing presence of digital technologies in children's immediate environments suggests the need for the proposed notional "techno-microsystem". Johnson (2010).

As much as there are wide ranging positive effects of computer use by children, the advisory group to the Department of Health, the Government Hong Kong, (2014) reports that, the increasing time spent by children and youth on Internet and electronic screen products is a concern. The Advisory Group further considers that it is more important to prevent children from spending excessive amount of time on Internet and electronic screen products that would affect their other more important tasks or daily routine.

Other potential negative effects include exposure to hazardous content or physical and materials that lead to addiction and psychological problems. Straker, et al (2009).

2.8.*2 Cognitive development and learning*

The Advisory Group further considers that use of Internet and electronic screen products may have other adverse effects on health and development, especially for children and young adults using these products without proper guidance or supervision. To help them have a healthy whole person development and enjoy the benefits brought by the new technology, the Advisory Group recommends parents to provide appropriate guidance and supervision.

The group notes the concern that spending too much time on Internet and electronic screen products may hinder the social skill development of children and young adults. While more research and evidence are needed on this aspect, the group considers that it is more important for parents to facilitate the age appropriate social skill development of children e.g. cultivate more quality time and family activities involving face to face interaction, encourage and facilitate more participation in cooperative group activities.

2.8.3 Attention Span

Many scientists say that balancing e-mail, telephone calls and other incoming information can change how people think and behave. Richtel, (2010) in an article for New York Times says that people's concentration is being destabilized by surges of information. The author further indicates that the ensuing distractions can have terrible consequences, as when cellphone-wielding cause accidents. He further says these urges can inflict dents on creativity and deep thought, interrupting work and family life.

2.8.4 Sleep deprivation

The youth who particularly make heavy use of mobile phones and computers run a greater risk of sleep troubles, stress and symptoms of psychological health Thomee, (2012). The author asserts that excessive use of smartphones and electronic screen products relates to sleep deprivation which affects growth and development in children and adolescents. She lists some of the possible remedies include a sleeping guide that should be advised including establishment of a bedtime routine, suggested sleeping time for different age groups, parenting skills and setting up of stimulation-free and comfortable sleeping environment.

2.8.5 Risky Sexual behaviour

The internet provides access vulnerable and naïve young people to interact with virtual strangers - even people they would normally avoid in real life. While this concern has not been widely reported in Kenya, many cases have been reported in development countries. According to a feature in the webMD website by Katherine Kam, the National Center for Missing and Exploited Children in Alexandria, Virginia. One in seven kids have been sexually solicited online.

The site further states that while sexual marauders have targeted children in chat rooms, they migrate to cyber spaces favoured by young people and that more and more predators are now scouring social networking sites because these sites have centralized so much information and are common meeting areas for youngsters.

This finding shows that the increasing popularity of Internet use opens up easy access to pornographic materials which makes it easy for adolescents to engage in online sexual risky behaviour, especially the vulnerable ones with psychosocial risk factors. Such behaviour may be associated with other adverse psychosocial or mental health problems.

2.8.6 Social Networking and Behavioural strain

Morozov (2012) says that social networking poses a danger to users. He argues that it enables people to be more complacent and risk averse. The author further notes that because of the anonymity of modern technology, people act differently than usual to protect a certain image or perception.

In Kenya, camera phones, webcams and digital cameras are everywhere these days. Most Kenyan youth ascribe to social websites where they post pictures and videos online. The WebMD site states that many young people put up provocative photos of themselves or are posted by their friends which later lead to damaged reputations and thus depressive episodes for those exposed.

Wikipedia reports that networking on the internet is virtual therefore enabling people to hide behind their virtual masks and most in unstrained manner. The site further reports that people who have problems socializing physically are likely to enter into cyber relations or are more likely to adopt electronic communication which makes them more susceptible to cyber predators.

2.8.7 Escapism

The free encyclopedia defines escapism as a term to define the actions people take to relieve tenacious feelings of depression or general sadness.

This indication shows that the internet can be used as a means of diversion from a situation that is perceived as being unfriendly or unpleasant by an individual.

2.8.8 Effects on Parenting

From time to time, people have been circulating pictures on the internet depicting parents who are so much engrossed in their ICT gadgets at the expense of minding their children or even babies. Aric (2010), says that the effects of parenting can be affected by a parents dependence on technology.

2.8.9 Panic Attacks

Tiemo and Ofua (2010) argue that technostress can be accompanied by symptoms of panic attack can which can have a damaging impact on the psychological state of a person .Hartley (2009) says that use of mobile phone caused 45 suicide cases (22 succeeded and 13 were unsuccessful) in France due to too much stress from responding to overwhelming volumes of emails and messages.

2.9 Conclusion

ICTs have had an important influence on the social life of young people. They have easily adopted to the advantages of technology. Similarly, ICTs often force youngsters to access trending topics, complete their work in a shorter period of time, communicate easily, and affect relationships with their peers and the society at large. In Kenya ICTs continue to phenomenally change our jobs, interests, education, social life and eventually our mannerisms.

Technostress literature is now opening doors for research on behavioural mannerisms of individuals using ICTs. It is important to understand the impact of ICT use in the country in order to paint a picture on their social influence in the community.

This research enables the exploration of possible associations between ICT use and behavioural health symptoms among young adults in Kenya and develop a conceptual and empirical understanding of technology characteristics and stressors leading to negative mental health. It is believed that the definitions and relationships realized in this study can be used for future studies of this concept.

CHAPTER 3

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter the emphasis was on the research design, study population, sample size, sampling techniques, research instrument, data collection, methods of data analysis and detailed operationalization of the variables.

3.2 RESEARCH PHILOSOPHY

The research in this study adopted a positivist philosophy approach that encompasses building a bridge between the ICT use and mental and behavioural strains among young adults in Kenya. This results in a conceptual and empirical understanding of technology characteristics and stressors leading to techno stress and its outcomes.

Why is this important? Technology and innovation are emerging as ubiquitous in organizations in Kenya today. These innovations are creating various social effects across the society numerous domains of society, and decision makers are being compelled to act on a wide range of consequences ranging from economic productivity to social adjustments.

An emerging concept thereof as Konsbruck (2009) suggests is that through ICTs People are spending a significant portion of their time taking in irrelevant information just because it is available and they think they should know about it. This points out that there is need therefore to study and develop social systems to help users to manage nefarious aspects of ICTs which include technostress.

Weil et al (1997) assert that the growing dependence on technology affects people negatively as they count on machines to do so much that when something goes wrong with their technology they are thrown into a tailspin. The authors' further argue that people allow themselves to be sucked into this technological abyss, and in doing so they become more machine-oriented and less sensitive to their own needs and the needs of others, with some people becoming so immersed in technology that they risk losing their own identities.

Altogether, this suggests a need for a human-centered understanding of the effects of techno stress and possible counter active measures to address this phenomenon. The goal of this study also aims to provide valuable insight for a model suitable to the Kenyan environment of possible pathways that can be further advanced and tested epidemiologically.

3.3 RESEARCH DESIGN

The study employed descriptive survey research design which examined the relationship between the independent variables (technology characteristics, stressors and strains) and dependent variable (Technostress) among young people in Kenya. Survey methodology is considered for use as it the most widely used methodology for stress studies (Ayyagari 2007).

The survey type of research allows for a representation to be obtained from a sample which is then mapped on the actual population. Meir (2006). It is therefore important that a proper representation of the sample is obtained in order to model the population under study.

During the survey, previous studies were considered as a benchmark for the determination of appropriate variables. The data was then collected and analyzed in order to understand how the variables related.

As the exploratory type of research methodology is mainly used to have a better insight to a particular problem, this study did not infer to this classification as examination and correlation between observed variables would not be feasible.

This study made use of explanatory research which uses more formal and structured questions to test the correlation between behavioral strains arising from use of ICTs and the concept of Technostress.

Even though causal research is used to prove that there is a relationship between observed variables, it may not be useful in evaluating respondents who have never experienced the Technostress phenomena. This study therefore focused on descriptive type of research that has the ability to model the variables and also provide a grouping model of the population under study.

The cross-sectional type of research approach that enables data collection to be performed once in the course of a research was considered. This type of approach was considered because of time constrains of the study as opposed to the longitudinal study which requires that data be

sampled at a time interval from the same group of the population. Longitudinal type of research also provides a challenge in maintaining consistency of data being collected over time.

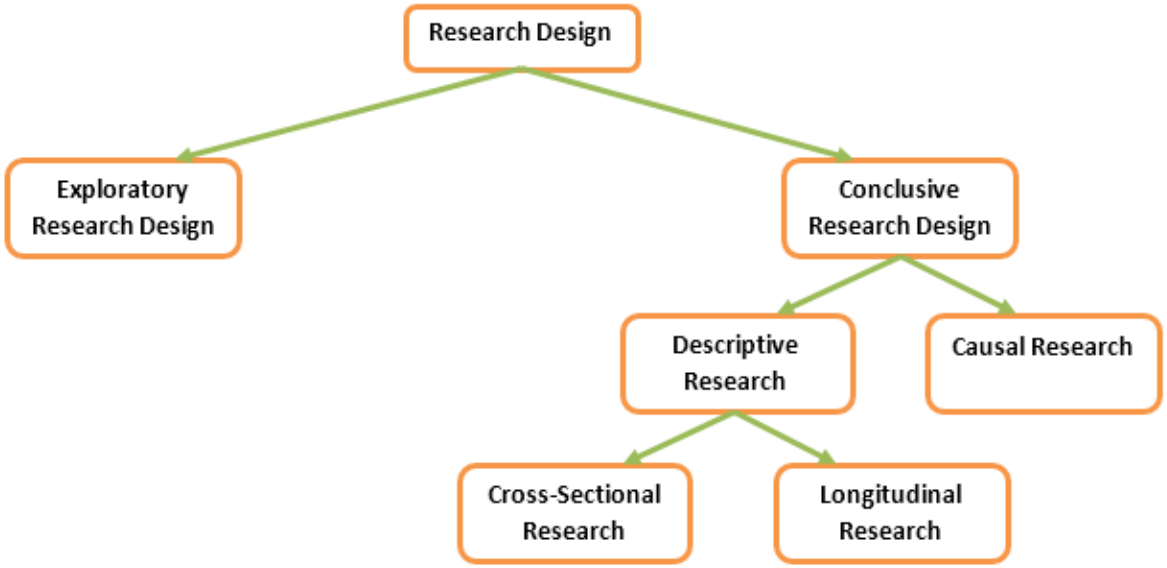


FIGURE 7: Research Design Methods source: researchdesignmethods.com

3.3.1 Unit of Analysis

Since this study is generalized to study the possibility of Technostress on only a much narrower population of the young populace in Kenya, the unit of analysis was therefore individuals.

3.4 SAMPLE DESIGN

Sample design involves three parts – sample population , sample selection process and sample size.

3.4.1 Population Sample

Most of the previous technostress researchers have used samples from particular professions or occupations such as nurses, IS/IT professionals or even technicians. Also majority of the previous studies have focused on the study of technostress on adults with majority of the studies undertaken out of the African Context. This research studied the impact of ICTs on young Kenyan individuals between the ages of 15 to 24 years.

A number of key attributes of the population were considered including access to ICTs by individuals, these mainly being the internet, mobile phone, tablets and computer and their associated technologies at any given time. Therefore, the population selected for this study was the young adult population in the defined age bracket who are random users of ICTs.

3.4.2 Sample Selection

Data obtained from the Kenya demographic and health survey 2014, indicates that there are 15.7 million youth of age bracket 19-30 in Kenya. 8.1 million of these youth live in urban areas. Most youngsters in Kenyan colleges and universities fall within this age bracket and are therefore considered for this study because of easy access to the population selected. Young people in Public and private universities and colleges in Nairobi were therefore the focus for this study for ease of access to the target population. There are 135 tertiary colleges and universities within Nairobi according to the website studyinkenya.co.ke.

The administration of the study on the required sample population was obtained by distributing physical questionnaires.

3.4.3 Sample Size

For calculation of the sample size the following aspects (http://www.qualtrics.com/) was in use:

1. Margin of Error (Confidence Interval**)** —the normal margin of error of +/- 5% was considered in the study.
2. Confidence Level —a confidence intervals 95% confident was employed for this study.
3. Standard of Deviation — a 0.5 standard deviation is was considered.
4. For 95% confidence level – the proposition (z) score = 1.96
   Sample Size was calculated as:
   Necessary Sample Size = (Z-score)² * StdDev*(1-StdDev) / (margin of error)²
   = 135

Sample size for this study was therefore **135** respondents distributed as follows:

Location	**Area**	**Tertiary Colleges**	**Number**	**Universities**	**Number**	**Total**
Nairobi	Town Center	4	68	4	68	136
Total						**136**

Table 2: Distribution of sampled respondents

136 students from four universities and colleges in Nairobi, selected randomly were studied.

3.5 DATA COLLECTION

The research instrument employed for this study was the questionnaire. Questionnaires are mainly managed through oral and written interviews, telephone conversations, online tools, or through mail. Because of time constraints in this study telephone conversations could not be used during the data collection.

The Internet research tools can further be used for survey research. Internet-based surveys can be conducted by through of interactive online interviews or by questionnaires constructed for self-completion. Wyatt et al (2002). Internet tools and written interviews were therefore employed for this study.

3.5.1 Description of the Questionnaire

Because of time limitations in this study a closed ended questionnaire was administered to the respondents. This type of questionnaire is ideal for quantitative research as it is time-efficient; and responses are easy to code and interpret.

The questionnaire would be divided into six distinct sections.

Section A: Demographic factor scale

Section B: Technology Characteristics

Section C: Stressors

Section D: Behavioural Strains

Section E: Technostress inhibitors

Section F: Technology Use Scale

Each section is described in the operationalization of the variable.

3.6 DATA ANALYSIS

Quantitative data analysis was used to compare and contrast findings when interpreting the study. This type of data analysis was selected because it is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population. Quantitative Research uses measurable data to formulate facts and uncover patterns in research. The data analysis plan follows a three phase approach as shown in figure 8.

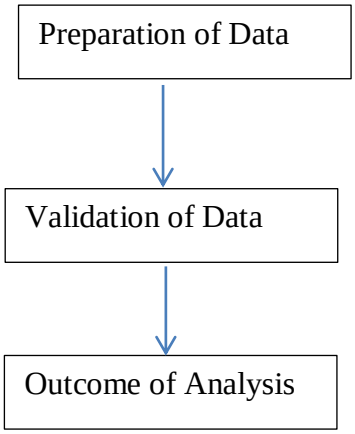


Figure 8: Data Analysis Plan

The preparation phase mainly deals with all the analysis performed before the main data collection to minimize errors. This includes going through many iterations of the survey tool to ensure its objectivity. This includes evaluating the structure of the questionnaire, validity and reliability of individual questions, assessing wording and general clarity of the questionnaire.

Further, undeclared pretest of the questionnaire was undertaken to determine the strengths and weaknesses of the survey tool. Converse et al (1986) argue that if research resources are adequate then participatory pre-test method can be used in the initial and undeclared test employed thereafter.

Although participatory pre-test would be preferred, the undeclared pretest was applied due to time constraints in the study. Care was however be taken to ensure that the tool is simple and easy understood by the respondents.

The validation phase mainly deals with analyses that provide confidence in the results obtained. This includes establishing the reliability of measures used in the study mainly through the use of internal consistency reliability measured with Cronbach's Alpha value. Validity of measures both convergent and discriminant was used to measure the constructs.

Statistical tools to be used included tools such as frequency tables to describe the dependent and independent variables in the data, Cross tabulations to forms two-way and multiway tables thus providing a variety of tests and measures of association such as Pearson chi-square.

Analysis techniques involved use of Bivariate and Partial Correlations to measure how variables or rank orders are related and to measure linear relations respectively. This clarified if indeed the combinations of intensive mobile phone, computer and internet uses are risk factors for increased behavioural strains among young adults. Use of correlations further clarified the relationship between the technology characteristics, stressors, strains and Technostress.

Other analysis techniques involved use of graphs, cluster analysis and regressions to model the relationships of the variables and relevant tools.

In the outcome phase, the proposed hypotheses were tested.

The Statistical Package or Social Sciences – (SPSS) application was employed for data analysis.

3.7 OPERATIONALIZATION OF THE RESEARCH VARIABLES

Many of the scales used to measure variables in this study were borrowed from the literature works of Technostress researchers. Definition and measures for the variables used in the present study is as follows:

3.7.1 Section A: Demographic Factor Scale

The demographic factor scale is a self-constructed scale specifically designed to elicit information from respondents on various demographic variables of interest to this study. The variables of interest include school, location, age, gender, education, career status, and marital status.

3.7.2 Section B: Technology Characteristics

For this section a combination of the Likert (1932) scale, (a five or seven point scale used to measure attitudes or opinions) and Computer hassles scale were considered. Computer hassles scale is selected because severity of hassles scores have been shown to correlate with reports of somatic complaints and anxiety reactions amongst users of technology which is an indication that that the person is experiencing a high level of technostress. Hudiburg (1996).
Variables in the study were measured as follows:

Dynamism

Dynamism or pace of change is the level at which a person feels that technology changes at a high rate. Ayyagari, (2007). The dynamism characteristic query was detailed as follows:
Table 3: Dynamism

1	My opinion is that characteristics of ICTs change frequently.
2	My opinion is that the capabilities of ICTs change often.
3	My opinion is that the frequency of changes of ICT features is high
4	I don't not see any changes in ICT

Usability

Usability focuses on effectiveness, efficiency and reliability of ICTs. The severity scale is as indicated: The characteristic was detailed as follows:

Table 4: Usability

1	Use of ICTs enhances efficiency
2	Use of ICTs is reliable for my work or studies
3	I find use of ICTs to be reliable for my work or studies
4	Use of ICTs enables me to improve the quality of my work or studies

Complexity of Use

This is defined as the level of effort exerted in the use of the ICTs. The characteristic was detailed as follows:

Table 5: Complexity of use

1	ICTs are very easy to use for me
2	I find learning of ICT to be simple
3	New developments in ICTs do not scare me
4	I achieve results from use of ICTs

Constant Connectivity

This is defined as the degree to which users have access to resources/information through ICT . The characteristic was detailed as follows:

Table 6: Constant Connectivity

1	I can access other users quite easily through ICTs
2	Others easily access me through use of ICTs
3	I can easily access information through use of ICTs
4	I can communicate or access information any time I want through ICTs

Anonymity

It is defined as the level at which Use of ICTs is or is not easily identifiable.

Pinsonneault et al, (1997). The characteristic was detailed as follows:

Table 7: Anonymity

1	I can easily hide my identity when using ICTs
2	How I use ICTs can easily be hidden from others
3	My use of ICTs cannot be easily tracked.
4	It is not easy for people to know how I use my ICTs

Mobility

This is defined as degree to which mobility and portability of ICTs could be exploited. The characteristic was detailed as follows:

Table 8: Mobility

1	My use of ICTS transcends physical boundaries
2	I can use ICTS anytime and from anywhere
3	I can easily move around with my ICT gadgets
4	I can easily access information through ICTs from any location
5	I can easily communicate through ICTs from any location
6	Use of ICTs has reduced my travel expenditure

3.7.3 Section C: Stressors

For this section the adopted measurement of stressors is a combination of Likert scale and the Moore, (2000) model which reflects mainly on the stressors leading to mental and physical exhaustion. Variables of stressors were measured as follows:

:

Work intensification and overload

It is defined as the degree of work intensification that is realized from use of ICTs. The stressor was detailed as follows:

Table 9: Work intensification and overload

1	ICTs have created more demands on my studies or work than expected.
2	I feel that use of ICTs does not let me fulfill my studies or tasks
3	I feel experience pressure from use of ICTs
4	I am busy all the time due to ICTs

Information Overload

It is defined as the degree of mental overload realized from use of ICTs. The stressor was detailed as follows:

Table 10: Information overload

1	I feel overwhelmed by the information I access through ICTs
2	I feel I neglect other activities in my life by accessing available information through Use of ICTS
3	I feel tired every time I access information through ICTs
4	I feel pressure from the magnitude of information accessible through ICTs

Techno Invasion

Techno invasion is the perception that an individuals' privacy has been compromised through ICTs. The stressor was detailed as follows:

Table 11: Techno Invasion

1	I feel my privacy is vulnerable from use of ICTs
2	My privacy is easily intruded through use of ICTs
3	I feel my exposure through ICTs makes it easier for cyber attackers to reach me
4	I feel I cannot safely transact through ICTs
5	I do not trust people I transact with in cyberspace

Techno Complexity

Techno Complexity describes perception where the frequency of new releases of hardware and software requires persistent upgrade of skills in order to adapt to the changing environment. The stressor was detailed as follows:

Table 12: Techno Complexity

1	I feel I constantly need to learn new skills
2	I feel that use of ICTS is complex
3	I feel ICT jargon is difficult to understand
4	I feel I intimidated by frequent releases of new software and hardware

Techno Uncertainty

Techno Complexity describes the degree to which users are unable to perceive future usage or future trends of ICTs. The characteristic wase detailed as follows:

Table 13: Techno uncertainty

1	I feel unsure of my future ability to use ICTs
2	I feel that other people will be more adept at using ICTs than myself in future
3	I feel that my current ICT skills will be rendered useless in future
4	I am uncertain of my future because of ICTs

Work /Social/School Home Conflict

This is the degree to which ICTs negatively impact on Work, Social life, school and family. The stressor was detailed as follows:

Table 14: Work /Social/School Home Conflict

1	I feel my work is frequently interrupted by the need to use ICTs
2	I feel that use of ICTS has robbed me of my social life
3	I feel that ICTs interferes with my school work
4	I am unable to give full attention to my family because of ICTs.
5	I cannot do without using my ICTs
6	I do not feel settled when I don't have my ICTS with me

3.7.4 Section D: Behavioural Strains

For this section the adopted measurement of behavioural Strains is also a combination of Likert scale and the Moore, (2000) model which reflects mainly on the behavioural strains leading to Technostress. Variables of behavioural strains were measured as follows:

1	I get overly irritated and I am completely uneasy without ICT gadgets
2	I am completely unable to study independently without using ICT tools
3	My attention span is limited whenever i am using or whenever I am in possession of ICT Gadgets.
4	I sleep very little because I am busy with my ICT Gadgets
5	I cannot do without browsing adult materials on the internet or engaging in cyber relationships
6	I cannot sustain myself from visiting social sites
7	I use my ICT gadgets as a way of escaping from my immediate environment
8	I feel I do not concentrate adequately on my parental obligations or family matters because of the time or money I spend on ICT gadgets.
9	I get panic attacks when I do not have my ICT Gadgets with me

Table 15: Behavioural Strains

To avoid evaluating research models for each technology selected as this would be a demanding task, the respondent was required to consider the following ICTs When responding to the questions:

- Mobile Phones and Tablets
- Internet
- Personal Computers and Laptops

Arising from the use of the above ICTs the affiliated technologies listed below were implied:

- Networks (such as Internet, Intranet, VPN)
- Communication tools (such as Email, Skype, Voicemail)
- Application technologies (e.g., Word Processing, Spreadsheet, Presentation, mobile Apps)

- Web and cloud computing technologies (e.g google drive, web 2.0, ecommerce portals)
- Social Media Technologies e.g (Face Book, Whatsup, Twitter, instagram)

3.7.5 Section E: Technology Use Scale

For Technology use the following random scale was in use:

1. Please state average the number of hours spent using ICTs in a week _____
2. Please provide the percentage of time spent on each of the following. overall time spent using should tally to 100%.

Technology Use	**Percentage time used**
Mobile Phone or tablet	
Browsing	
Personal Computer or Laptop	
Associations	
Networks (such as Internet, Intranet, VPN)	
Communication tools (such as Email, Skype, Voicemail)	
Applications (such as Word Processing, Spreadsheet, Presentation, mobile Apps)	
Web and cloud computing technologies (e.g google drive, web 2.0, ecommerce portals)	
Social Media Technologies e.g (Face Book, Whatsup, Twitter, instagram)	
Other (Please Specify)_____	

Table 16: Technology use scale

CHAPTER FOUR

4.0 RESULTS

This chapter describes the results obtained in this research. This is achieved by first discussing the process from the pretest analysis. The statistics of the main sample are then discussed.

4.1 PRETEST

In the previous chapter the effectiveness of the questionnaire using the undeclared pretest was discussed.

Pretesting includes carefully examining the content of the questionnaire and preliminary analysis on representative pilot data. Ayyagri (2007). The data collection instrument as developed after going through several iterations with the help of a classmate. The questionnaire was then printed in hard copy and sent to four other classmates and subsequently the faculty. The scales were adopted from literature of researchers in similar areas of study with careful consideration to the validity of measures. A few changes were made on the wordings to enhance clarity and to avoid complexity and ambiguity for the respondents.

4.2 SAMPLE CHARACTERISTICS

4.2.1 Demographics

As mentioned before, the sample for this study was obtained from students in four universities (Zetetch University, KAG University, Kenya Methodist University and Masai Mara Nairobi Campus) and four tertiary institutions (Vision Institute, Ricatti, Vitech and Dominion) within Nairobi . A total of 140 questionnaires were issued. The target was to obtain 136 students from the sample. Of these only 112 students completed the questionnaires in the correct manner. Thirteen questionnaires were considered as unsuitable as they were either incorrectly filled or not filled at all. 15 questionnaires were not returned.

Most (63.7%) of the students in the sample fall in the age bracket of 19-25 years. There is an almost equal split with respect to the gender of the respondents with 51.8% being male and 48.2 being female. Also most of the respondents were unmarried (68.1%) and are not employed (75%).

Table 17 shows the demographic characteristics of the sample.

Demographics N=112	
Age	Up to 18yrs - 7.3%, 19-25 yrs 63.7%, Above 25 yrs-26.5%
Gender	Male 51.8% Female 48.2%
Marital Status	Single 68.1% Married 27.4%
Career Status	Student 75% Working 25%

4.2.2 Technology use

On technology use (as shown in table 23) , it should be noted that majority of the youth (23.9%) used technologies for over 91 hours a week.

Table 18: Average numbers of hours spent on ICT in a week

Number of hours		Frequency	Percent
Valid	upto 30 hours	18	15.9
	between 31 and 60 hours	8	7.1
	between 61 and 90 hours	5	4.4
	over 91 hours	27	23.9
	Total	58	51.3
Missing	System	55	48.7
Total		113	100.0

The profile of their use if further illustrated in table 24 below which indicates that on average individuals used the mobile phone or table most (22.30%), followed by social media (19.82%) and internet (14.22%).

Table 19: Technology use

Technology Use	**Mean**	**Std. Deviation**
Mobile Phone or tablet	22.30	13.19
Browsing	14.22	7.62
Personal Computer or Laptop	10.92	5.87
Associations	6.50	4.43
Network technologies	8.87	7.63
Communication technologies	9.11	6.95
Application technologies	10.2	15.99
Web and cloud computing technologies	9.22	7.12
Social Media Technologies)	19.82	11.20
Other (Please Specify)	6.50	6.05

It should be noted that the sum of percentages do not add up to 100% (adds to 117.6%). This is because of on average; respondents had difficulty dividing their time into ten categories that added up to 100%.

4.3 Analysis of Technology Characteristics

Statistics of means and standard deviation for technology characteristics are shown in Table 20.

Table 20: Analysis of Technology Characteristics

Descriptive Statistics

	N	Mean	Std. Deviation
frequent change in characteristics of ICT	106	4.6226	1.17476
frequent capability change of ict	108	4.4074	1.42761
frequent change in ict features	106	4.6226	1.17476
No changes in ICT	108	1.9259	1.69498
usability-ict efficiency	111	4.8919	.65159
usability-ict reliability	110	4.8182	.83701
usability -ict quality	109	4.7064	1.04795
use of icts is easy	110	4.6000	1.20549
use of ict is simple to learn	109	4.3394	1.49208
new development in ict scares	107	4.1776	1.62419
i achieve results through ict	111	4.2793	1.54432
i access other users easily with ict	112	4.6786	1.09227
others access me easily through ict	111	4.9640	.37966
easy access to info through icts	111	4.7838	.90860
easy communication through ict	108	4.7778	.92052
easy hide of identity through ict	110	4.3455	1.48655
easy hide of ict usage	109	3.3119	1.98465
my use of ict cannot be easily tracked	109	2.6147	1.97160
its difficult for others to identify my use	108	2.5926	1.96719
ict transcends physical boundaries’	107	3.2804	1.98957
i can use ict anytime and anywhere	106	4.0189	1.72920
i can move around with ict gadgets	106	4.3208	1.50900
i can access info from any location	107	4.2150	1.59615
i can communicate from any location	106	4.1321	1.65659
ict has reduced my travel expense	105	3.7048	1.88069
Valid N (listwise)	92		

4.3.1 Dynamism of ICT results

Majority of the respondents feel that there is a high rate of change in the characteristics (85%), capabilities (81.4%) and features (85%) of ict as evident in table 26 below.

frequent change in characteristics of ICT					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	10	8.8	9.4	9.4
	strongly agree	96	85.0	90.6	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
frequent capability change of ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	16	14.2	14.8	14.8
	strongly agree	92	81.4	85.2	100.0
	Total	108	95.6	100.0	
Missing	System	5	4.4		
Total		113	100.0		
frequent change in ict features					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	10	8.8	9.4	9.4
	strongly agree	96	85.0	90.6	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
No changes in ICT					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly Disagree	83	73.5	76.9	76.9
	strongly agree	25	22.1	23.1	100.0
	Total	108	95.6	100.0	
Missing	System	5	4.4		
Total		113	100.0		

Table 21: Dynamism of ICTs results

4.3.2 Usability results

Use of ICTS increases efficiency, reliability and quality of work according to 95.6%, 92.9% and 89.4% of the respondents respectively.

Table: 22 Usability results

usability-ict efficiency					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	3	2.7	2.7	2.7
	strongly agree	108	95.6	97.3	100.0
	Total	111	98.2	100.0	
Missing	System	2	1.8		
Total		113	100.0		
usability-ict reliability					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	5	4.4	4.5	4.5
	strongly agree	105	92.9	95.5	100.0
	Total	110	97.3	100.0	
Missing	System	3	2.7		
Total		113	100.0		
usability -ict quality					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	8	7.1	7.3	7.3
	strongly agree	101	89.4	92.7	100.0
	Total	109	96.5	100.0	
Missing	System	4	3.5		
Total		113	100.0		

4.3.3 Complexity of Use results

From the statistics 87.6% of the respondents feel that ICT is easy to use and simple to learn (80.5%) and helps to achieve results. The respondents however concur that ict presents complexity of use with new developments (75.2%)

Table 23: Complexity of use results

use of icts is easy					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	11	9.7	10.0	10.0
	strongly agree	99	87.6	90.0	100.0
	Total	110	97.3	100.0	
Missing	System	3	2.7		
Total		113	100.0		
use of ict is simple to learn					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	18	15.9	16.5	16.5
	strongly agree	91	80.5	83.5	100.0
	Total	109	96.5	100.0	
Missing	System	4	3.5		
Total		113	100.0		
new development in ict scares					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	22	19.5	20.6	20.6
	strongly agree	85	75.2	79.4	100.0
	Total	107	94.7	100.0	
Missing	System	6	5.3		
Total		113	100.0		
i achieve results through ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	20	17.7	18.0	18.0
	strongly agree	91	80.5	82.0	100.0
	Total	111	98.2	100.0	
Missing	System	2	1.8		
Total		113	100.0		

4.3.4 Constant Connectivity results

Majority of the respondents (91.2%) agree that they are able to access others and also access information (92.9%) easily through the use of ICT. A further 90.3% of the respondents agree that ICT eases communication. These results validate the character of constant connectivity of ICT.

i access other users easily with ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	9	8.0	8.0	8.0
	strongly agree	103	91.2	92.0	100.0
	Total	112	99.1	100.0	
Missing	System	1	.9		
Total		113	100.0		
others access me easily through ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	1	.9	.9	.9
	strongly agree	110	97.3	99.1	100.0
	Total	111	98.2	100.0	
Missing	System	2	1.8		
Total		113	100.0		
easy access to info through icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	6	5.3	5.4	5.4
	strongly agree	105	92.9	94.6	100.0
	Total	111	98.2	100.0	
Missing	System	2	1.8		
Total		113	100.0		
easy communication through ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	6	5.3	5.6	5.6
	strongly agree	102	90.3	94.4	100.0
	Total	108	95.6	100.0	
Missing	System	5	4.4		
Total		113	100.0		

Table 24: Constant Connectivity results

4.3.5 Anonymity results

ICT supports user anonymity according to 81.4% of the respondents. It is not however easy to hide ICT usage according to almost half (55.8%) of the respondents.

Table 25 : Anonymity results

easy hide of identity through ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	18	15.9	16.4	16.4
	strongly agree	92	81.4	83.6	100.0
	Total	110	97.3	100.0	
Missing	System	3	2.7		
Total		113	100.0		
easy hide of ict usage					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	46	40.7	42.2	42.2
	strongly agree	63	55.8	57.8	100.0
	Total	109	96.5	100.0	
Missing	System	4	3.5		
Total		113	100.0		

4.3.6 Mobility Results

ICT transcends physical boundaries according to 54% of the respondents. Respondents also strongly feel that ICT enables them to work and communicate from anywhere.

Table 26: Mobility results

ict transcends physical boundaries					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	46	40.7	43.0	43.0
	strongly agree	61	54.0	57.0	100.0
	Total	107	94.7	100.0	
Missing	System	6	5.3		
Total		113	100.0		
i can use icts anytime and anywhere					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	26	23.0	24.5	24.5
	strongly agree	80	70.8	75.5	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
i can communicate from any location					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	23	20.4	21.7	21.7
	strongly agree	83	73.5	78.3	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
ict has reduced my travel expense					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	34	30.1	32.4	32.4
	strongly agree	71	62.8	67.6	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		

4.4 Analysis of Stressors

Analysis of the variable for stressors is shown in Table 27.

Table 27: Analysis of Stressors

Descriptive Statistics			
	N	Mean	Std. Deviation
ict has created more demands from work or school	106	3.4151	1.96574
i feel icts interfere with fulfiling work or studies	106	2.6604	1.98032
i feel pressured or rushed due to icts	107	2.1963	1.84001
i feel busy all the time due to icts	106	2.9623	2.00914
i feel overwhelmed by the info i access	106	3.2642	1.99190
i feel i neglect other activities in my life	107	3.1308	2.00511
i feel tired each time i access info through icts	106	2.2453	1.86093
i feel pressure from magnitude of information	106	2.7358	1.99190
i feel my privacy is vulnerable	105	3.3619	1.97642
i feel its easy to invade my privacy	105	3.5524	1.93143
i feel its easy for cyber attackers to reach me	105	3.5524	1.93143
i feel i cannot transact safely through ict	106	3.1887	2.00054
i feel i cannot trust people in cyberspace	105	3.4381	1.96079
i feel i need to learn new skills	105	4.6571	1.12514
i feel ict use is complex	105	3.0952	2.00731
i feel ict jargon difficult	105	3.1714	2.00220
i feel intimidated by new releases	105	2.7143	1.98898
i feel unsure about future ability to use ict	41	2.5610	1.97546
i feel others will be more adept at usage than i	105	3.0571	2.00877
i feel my current skills will be rendered useless	105	3.0571	2.00877
i feel uncertain of my future because of icts	105	3.0571	2.00877
my work is interrupted by need to use ict	105	3.0190	2.00950
icts have robbed my of y social life	105	2.9429	2.00877
icts interfere school work	105	2.8286	2.00220
unable to provide full attention to family	105	2.9048	2.00731
i cannot do without using my icts	103	3.7573	1.86014
Valid N (listwise)	40		

4.4.1 Work Intensification and overload results

56.6% of the respondents agree that ICT has led to work intensification and overload. The respondents however do not feel that ICT interferes with fulfilling work or studies and neither feel pressure or rushed through use of ICT.

ict has created more demands from work or school					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	42	37.2	39.6	39.6
	strongly agree	64	56.6	60.4	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
i feel icts interfere with fulfilling work or studies					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	62	54.9	58.5	58.5
	strongly agree	44	38.9	41.5	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
i feel pressured or rushed due to icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	75	66.4	70.1	70.1
	strongly agree	32	28.3	29.9	100.0
	Total	107	94.7	100.0	
Missing	System	6	5.3		
Total		113	100.0		
i feel busy all the time due to icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	54	47.8	50.9	50.9
	strongly agree	52	46.0	49.1	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		

Table 28: Work intensification and Overload results

4.4.2 Information overload results

More than half the respondents (53.1%) feel overwhelmed by the magnitude of information accessed through ICTs. A similar number whoever do not feel pressure or fatigue from access to this information.

i feel overwhelmed by the info i access					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	46	40.7	43.4	43.4
	strongly agree	60	53.1	56.6	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
i feel i neglect other activities in my life					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	50	44.2	46.7	46.7
	strongly agree	57	50.4	53.3	100.0
	Total	107	94.7	100.0	
Missing	System	6	5.3		
Total		113	100.0		
i feel tired each time i access info through icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	73	64.6	68.9	68.9
	strongly agree	33	29.2	31.1	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
i feel pressure from magnitude of information					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	60	53.1	56.6	56.6
	strongly agree	46	40.7	43.4	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		

Table 29: Information Overload results

4.4.3 Techno Invasion results

More than half of the respondents feel that technology is invasive and is a potential threat to their privacy and exposes them to potential attacks by cyber criminals. A similar number of the respondents also feel that it is unsafe to transact through ICTs.

i feel my privacy is vulnerable					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	43	38.1	41.0	41.0
	strongly agree	62	54.9	59.0	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel its easy for cyber attackers to reach me					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	38	33.6	36.2	36.2
	strongly agree	67	59.3	63.8	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel i cannot transact safely through ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	48	42.5	45.3	45.3
	strongly agree	58	51.3	54.7	100.0
	Total	106	93.8	100.0	
Missing	System	7	6.2		
Total		113	100.0		
i feel i cannot trust people in cyberspace					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	41	36.3	39.0	39.0
	strongly agree	64	56.6	61.0	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		

Table 30: Techno invasion results

4.4.4 Techno Complexity results

Majority of the respondents (85%) attest to the need to learn new ICT Skills. Most of the respondents do not however feel that ICT presents any complexity in terms of usage and learning and are therefore not intimidated by new releases.

i feel i need to learn new skills					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	9	8.0	8.6	8.6
	strongly agree	96	85.0	91.4	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel ict use is complex					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	50	44.2	47.6	47.6
	strongly agree	55	48.7	52.4	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel ict jargon difficult					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	48	42.5	45.7	45.7
	strongly agree	57	50.4	54.3	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel intimidated by new releases					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	60	53.1	57.1	57.1
	strongly agree	45	39.8	42.9	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		

Table 31: Techno complexity results

4.4.5 Techno Uncertainty results

Respondents were equally split in the perception of their future abilities to adapt to the future trends of ICT, with a slight majority feeling that their current skills would be rendered useless in the future.

i feel unsure about future ability to use ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	25	22.1	61.0	61.0
	strongly agree	16	14.2	39.0	100.0
	Total	41	36.3	100.0	
Missing	System	72	63.7		
Total		113	100.0		
i feel others will be more adept at usage than i					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	51	45.1	48.6	48.6
	strongly agree	54	47.8	51.4	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel my current skills will be rendered useless					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	51	45.1	48.6	48.6
	strongly agree	54	47.8	51.4	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
i feel uncertain of my future because of icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	51	45.1	48.6	48.6
	strongly agree	54	47.8	51.4	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		

Table 32: Techno uncertainty results

4.4.6 Work/Social/School/Home conflict results

Respondents were also equally split with regards to the degree to which ICT have negatively impacted on their work, school, family and social life.Interstingly though 62.8% of the respondents feel that they cannot do without their ICT gadgets and 57.5% feel that they do not feel settled without their ICT gadgets.

my work is interrupted by need to use ict					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	52	46.0	49.5	49.5
	strongly agree	53	46.9	50.5	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
icts have robbed my of y social life					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	54	47.8	51.4	51.4
	strongly agree	51	45.1	48.6	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
icts interfere school work					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	57	50.4	54.3	54.3
	strongly agree	48	42.5	45.7	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		
Total		113	100.0		
unable to provide full attention to family					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	55	48.7	52.4	52.4
	strongly agree	50	44.2	47.6	100.0
	Total	105	92.9	100.0	
Missing	System	8	7.1		

Total		113	100.0		
i cannot do without using my icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	32	28.3	31.1	31.1
	strongly agree	71	62.8	68.9	100.0
	Total	103	91.2	100.0	
Missing	System	10	8.8		
Total		113	100.0		
I don't feel settled without my icts					
		Frequency of data	%	Valid %	Cumulative %
Valid	strongly disagree	38	33.6	36.9	36.9
	strongly agree	65	57.5	63.1	100.0
	Total	103	91.2	100.0	
Missing	System	10	8.8		
Total		113	100.0		

Table 33: Work/Social/School/Home conflict results

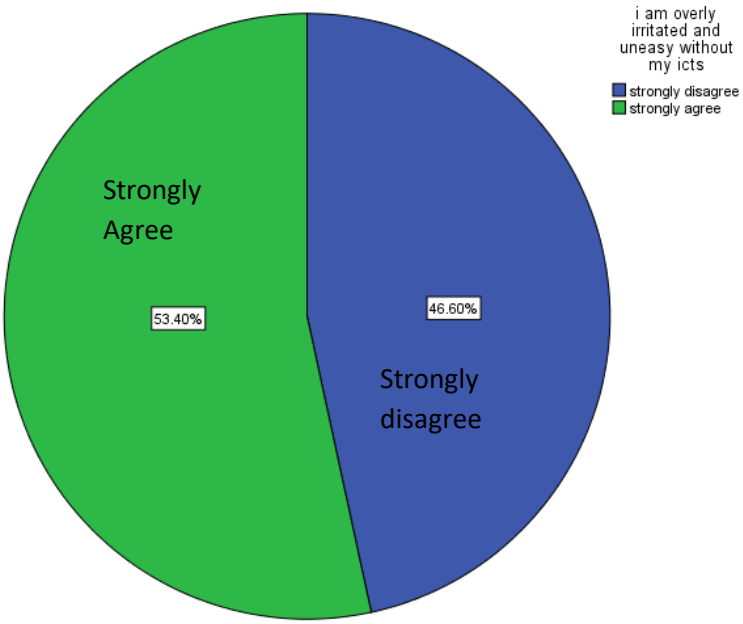
4.5 Analysis of Behavioural Strains

The data for means and standard deviations for the variables is shown in Table 34.

Table 34: Analysis of Behavioural Strains

Descriptive Statistics			
	N	Mean	Std. Deviation
I am overly irritated and uneasy without my icts	103	3.1359	2.00513
I am unable to study independently without icts	103	2.9417	2.00893
my attention span is limited whenever I am using or whenever I am in possession of my icts	101	3.1386	2.00514
I sleep very little because of my icts	103	2.9029	2.00741
I can't do without browsing adult materials or cyber dating	102	2.5686	1.96257
I can't sustain self from social sites	101	3.6139	1.91296
use ict to escape immediate environment	101	3.2178	1.99802
effects on parenting	100	2.2800	1.87530
I get panic attacks when i do not have my ict gadgets	100	2.3600	1.90438
Valid N (listwise)	93		

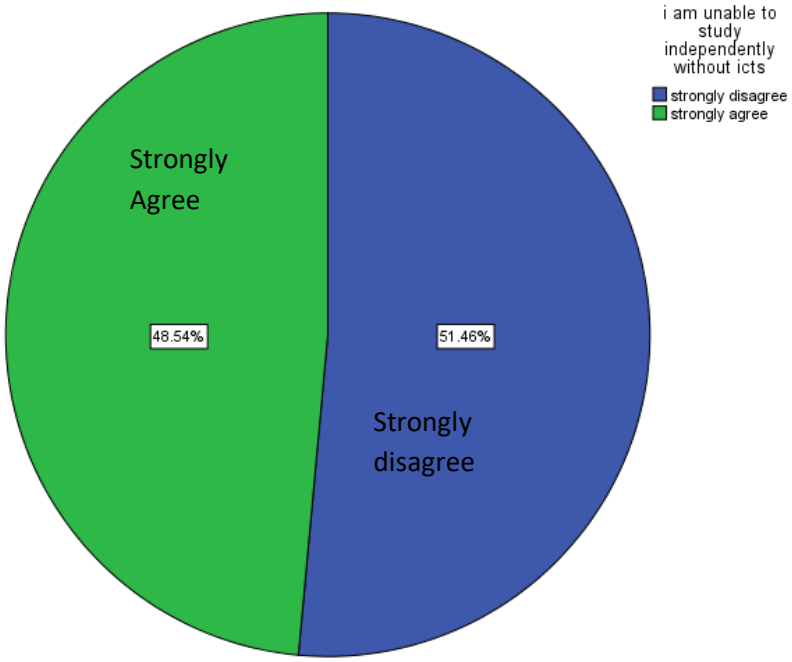
4.5.1 I get overly irritated and uneasy without my icts – Addiction Results



53.4% of the respondents manifest the behavioural symptom of being overly irritated and uneasy without their ICT Gadgets (Addiction).

Graph 1: Addiction

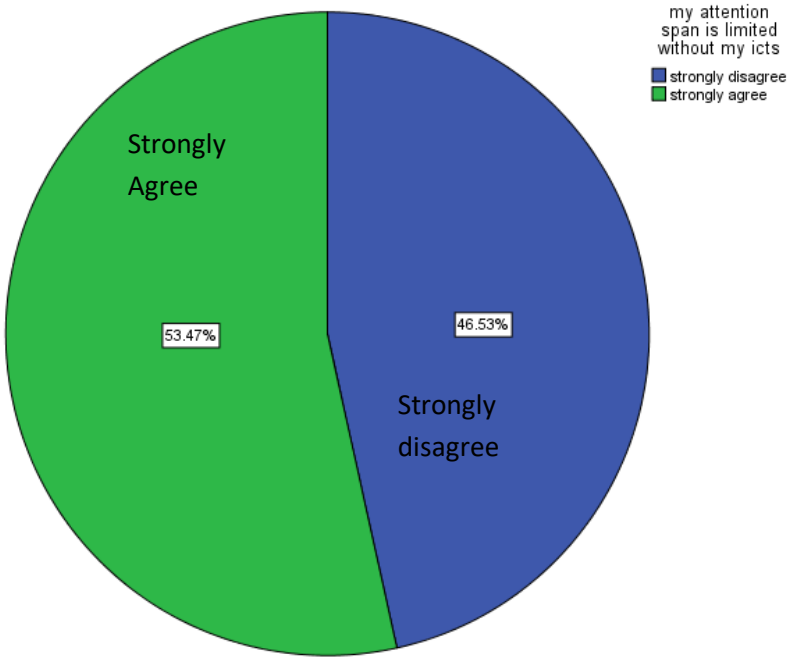
4.5.2 I am completely unable to study independently without using ICT tools – Cognitive development and learning Results



48.54% of the respondents indicate that they are completely unable to study independently without using ICTs. This shows a heavy dependence on ICT for studies among the respondents.

Graph 2: Cognitive development and learning.

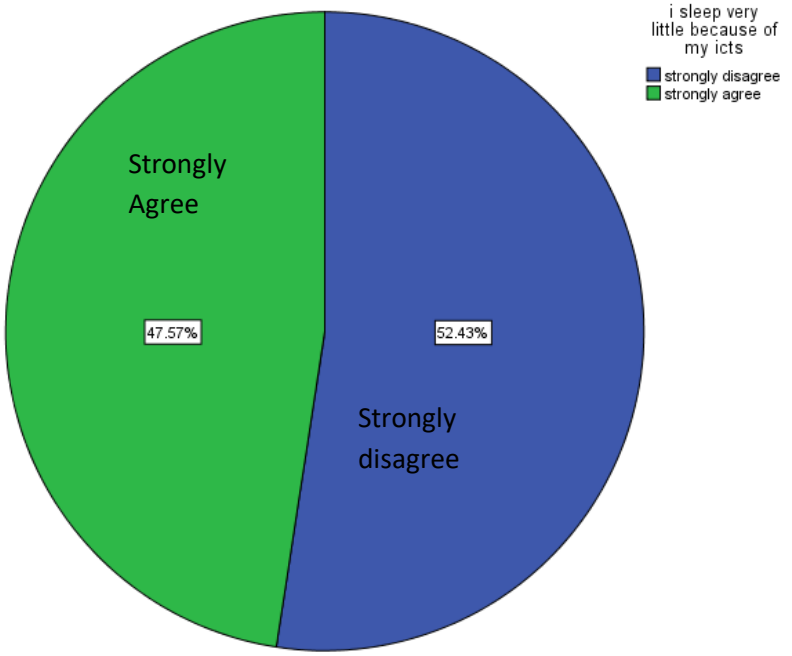
4.5.3 My attention span is limited whenever I am using or whenever I am in possession of my ICT gadgets – Attention span Results



More than half the numbers of respondents (53.4%) attest to having limited attention span when using ICTS or whenever in a possession of the ICT Gadgets.

Graph 3: Attention Span

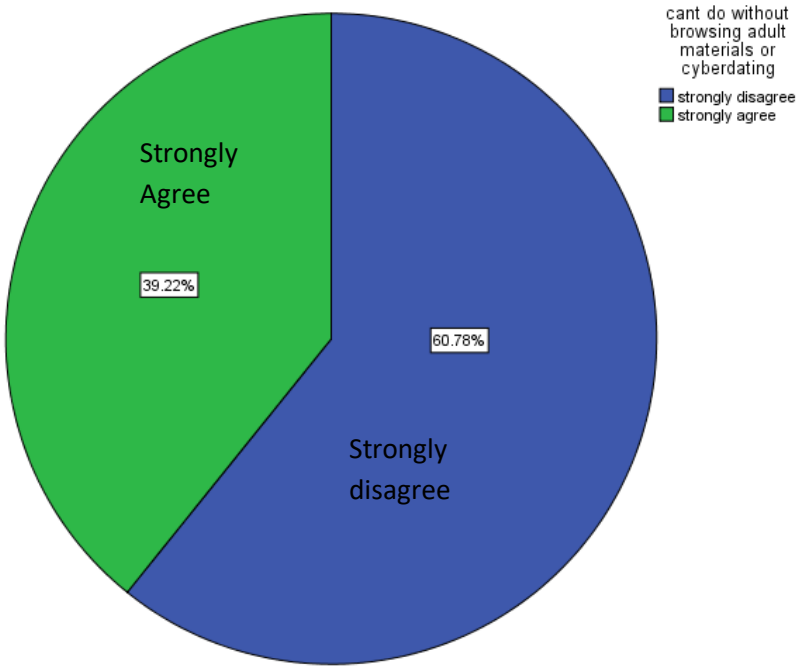
4.5.4 I sleep very little because I am busy with my ICT Gadgets – Sleep deprivation Results



Almost half of the respondents (47.5%) experiences sleep deprivation as a result of ICTS.

Graph 4: Sleep deprivation.

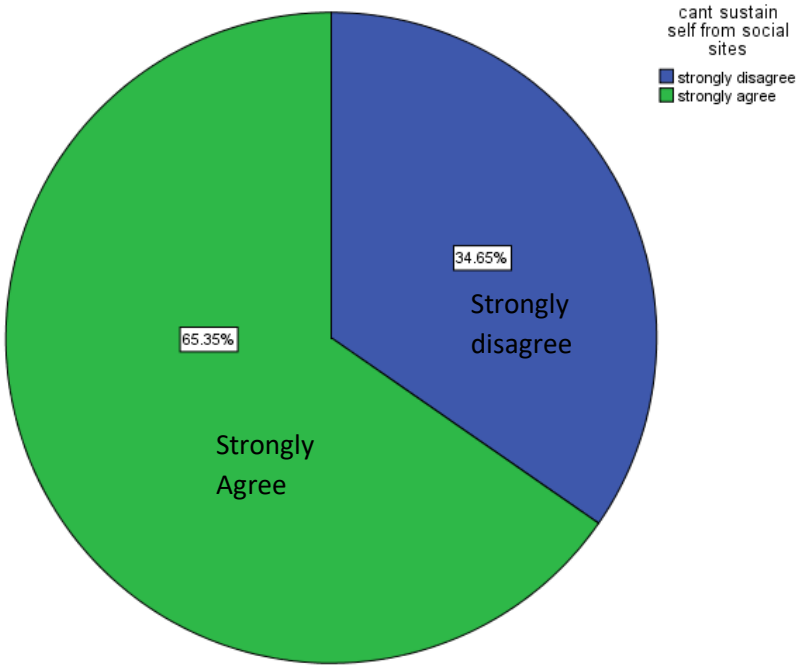
4.5.5 I can't do without browsing adult materials or cyber dating- Risky sexual behavior results



39.2% of the respondents exhibit risky sexual behavior through use of ICTs.

Graph 5:Risky Sexual Behaviour

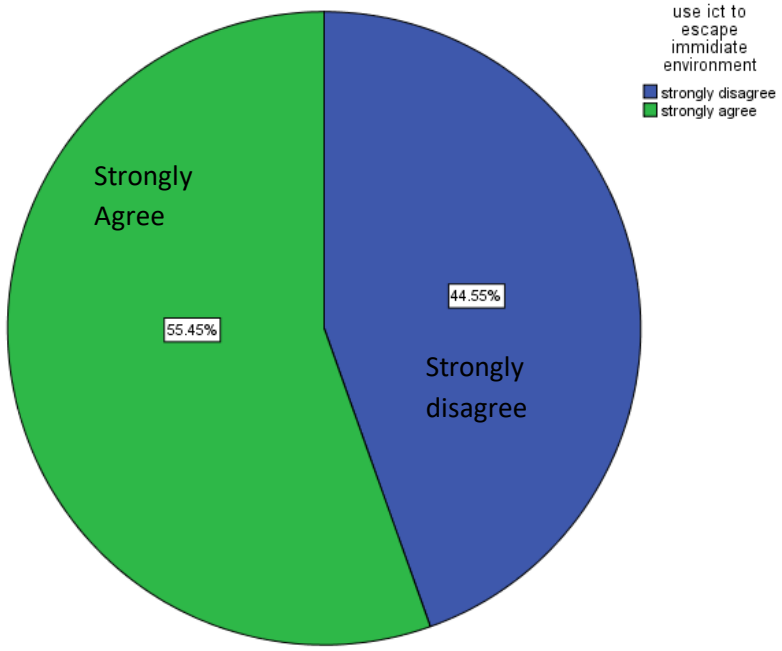
4.5.6 I cannot sustain myself from visiting social sites – Social Networking Results



65.3% of the respondents cannot sustain from visiting social sites which exhibits a significant extent of social networking among the respondents.

Graph 6: Social Networking.

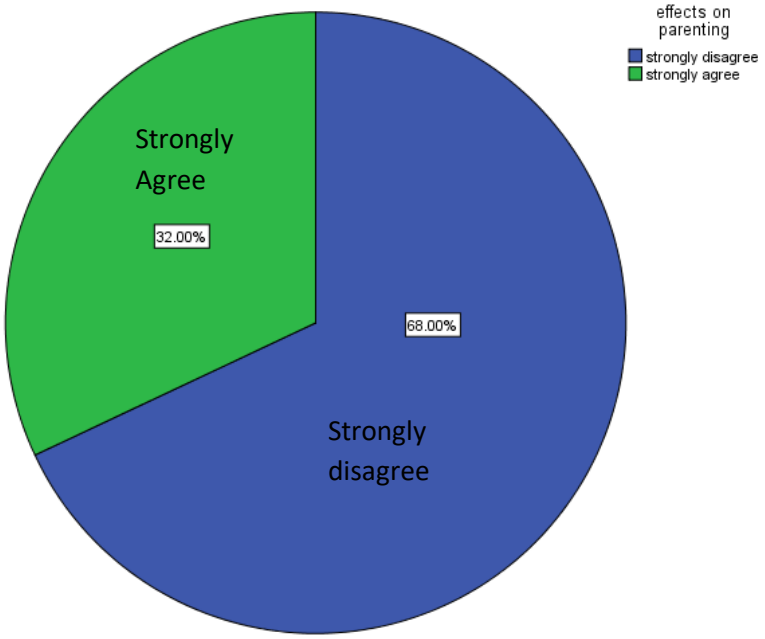
4.5.7 I use my ICT Gadgets as a way of escaping from my immediate environment – Escapism Results



More than half of the respondents (55.4%) use ICT gadgets as a way of escaping from their immediate environment, thus validating escapism behavior.

Graph 7: Escapism

4.5.8 I use my ICT I feel I do not concentrate adequately on my parental obligations or family matters because of the time or money spent on ICT gadgets – Effects on parenting Results



68% of the respondents disagree on neglecting their parental obligations because of the ICT gadgets.

Graph 8: Parental obligations report

4.6 Analysis of inhibitors

The data of means and standard deviations for the variables is shown in Table 35.

Table 35: Analysis of Inhibitors

Descriptive Statistics

	N	Mean	Std. Deviation
i receive adequate technical support	101	4.0495	1.71100
technical support is easily available	102	3.7843	1.84888
technical support is available anytime i want	101	4.0891	2.01047
support available in convenient format	101	4.0891	1.68582
i am involved in the planning of icts	99	2.4141	1.92200
i am involved in the design of icts	99	2.2121	1.84763
i am involved in the development of icts	100	2.5600	1.96083
i am involved in the implementation of icts	99	2.5354	1.95518
i am involved in the review of icts	99	2.3737	1.90909
able to use icts to achieve purpose	100	3.8800	1.80504
able to use icts to achieve purpose with manual	100	3.6400	1.90438
able to use icts to achieve purpose with assistance	101	4.1287	1.65930
unable to fully utilize icts to achieve purpose	100	3.0400	2.00967
use of ict key in my activities	101	3.9703	1.75759
most of activities involve use of icts	101	3.8119	1.83692
without icts i am unable to perform	102	2.4118	1.92098
icts are beneficial to my activities	101	4.4851	1.34621
Valid N (listwise)	99		

4.6.1 Technical support to users-results

Majority of the respondents agree that adequate technical support to the users is readily available and in an inconvenient format.

Statistics					
		i receive adequate technical support	technical support is easily available	technical support is available anytime i want	support available in convenient format
N	Valid	101	102	101	101
	Strongly disagree	28.2	27.4	23	20.4
	Strongly agree	68.1	62.8	64.6	69.0
	Missing	12	11	12	12

Table 36: technical support to users- results

4.6.2 End User involvement-results

From the statistics respondents are not involved in the planning, design, development, implementation and review of the ICTs they use.

Statistics						
		i am involved in the planning of icts	i am involved in the design of icts	i am involved in the development of icts	i am involved in the implementation of icts	i am involved in the review of icts
N	Valid	99	99	100	99	99
	Strongly disagree	56.6	61.1	54	54	57.0
	Strongly agree	31	26.5	34.5	33.6	30.1
	Missing	14	14	13	14	14

Table 37: End user involvement

4.6.3 Technology self-efficacy-results

From the statistics most of the users (58.4%) are able to use ICTS to achieve their purpose but can do even better when using a manual.

Statistics					
		able to use icts to achieve purpose	able to use icts to achieve purpose with manual	able to use icts to achieve purpose with assistance	unable to fully utilize icts to achieve purpose
N	Valid	100	100	101	100
	Strongly disagree	30.1	19.5	43.4	49
	Strongly agree	58.4	69.9	45.1	51
	Missing	13	13	12	13

Table 38: Technology self-efficacy

4.6.4 Technology centrality-results

From the statistics, Use of ICT in activities is key for the majority of the users (66.4%) . Most of their activities also involve use of ICT and that ICT is quite beneficial to their activities. Half the number of users however they can still perform activities without ICTs.

Statistics					
		use of ict key in my activities	most of activities involve use of icts	without icts i am unable to perform	icts are beneficial to my activities
N	Valid	101	101	102	101
	Strongly disagree	23	26.5	58.4	11.5
	Strongly agree	66.4	62.8	31.9	77.9
	Missing	12	12	11	12

Table 39: Technology centrality

4.7 RELATIONSHIPS BETWEEN VARIABLES

To understand the relationship between technology characteristics, stressors, behavioural strains and Technostress, Parson's Correlations was used. According to the website, https://statistics.laerd.com, The Pearson product-moment correlation coefficient (or Pearson correlation coefficient, for short) is a measure of the strength of a linear association between two variables.

Table 40: Relationship between technology characteristics and behavioural strains

Correlations

		Sleep deprivation Behavioural strain - (i sleep very little because of my icts)	Constant connectivity echno characteristics - (easy communication through ict)
Sleep Deprivation behavioural strain (i sleep very little because of my icts)	Pearson Correlation	1	.079
	Sig. (2-tailed)		.434
	N	103	100
constant connectivity techno characteristic (easy communication through ict)	Pearson Correlation	.079	1
	Sig. (2-tailed)	.434	
	N	100	108

Correlation is significant at 0.01 level

The results of Pearson correlation coefficient showed a significant correlation between dimensions of technology characteristics such as constant connectivity and behavioural strain such as sleep deprivation. The Pearson correlation matrix is shown in Table 46 indicating that techno characteristics are significantly correlated with behavioural strains of Technostress.

Table 41: Relationship between Stressors and behavioural strains

Correlations

		Techno complexity Characteristic (i feel i need to learn new skills)	Escapism Behavioural strain (use ict to escape immediate environment)
Techno complexity Characteristic (i feel i need to learn new skills)	Pearson Correlation	1	.073
	Sig. (2-tailed)		.469
	N	105	100
Escapism Behavioural strain (use ict to escape immediate environment)	Pearson Correlation	.073	1
	Sig. (2-tailed)	.469	
	N	100	101

Correlation is significant at 0.01 level

The results of Pearson correlation coefficient also indicated a significant correlation between Stressors such as such as techno complexity and behavioural strain such as escapism. The Pearson correlation matrix is shown in Table 47 therefore indicates stressors variables are significantly correlated with behavioural strains of Technostress.

4.8 Pairwise comparison of variables

4.8.1 Technology Characteristics and Behavioral Strains

Technology Characteristics and Behavioral Strains	*Chi Square Value*	*%*
Usability- Addiction	0.129	53
Usability-Cognitive Development and learning	3.275	47
Usability-Attention Span	2.691	52
Usability-Sleep Deprivation	2.804	49
Usability-Sexual Behaviour	1.994	40
Usability-Social Networking	1.665	63
Usability-Escapism	0.612	56
Usability-Effective on parenting	1.455	32
Complexity of use - Addiction	0.027	52
Complexity of use -Cognitive Development and learning	0.693	46
Complexity of use -Attention Span	2.263	55
Complexity of use -Sleep Deprivation	0.010	48
Complexity of use -Sexual Behaviour	1.852	37
Complexity of use -Social Networking	0.105	65
Complexity of use –Escapism	0.053	56
Complexity of use -Effective on parenting	0.273	31
Constant connectivity – Addiction	1.627	51
Constant connectivity -Cognitive Development and learning	0.007	48
Constant connectivity -Attention Span	0.285	52
Constant connectivity -Sleep Deprivation	0.775	46
Constant connectivity -Sexual Behaviour	2.599	41
Constant connectivity -Social Networking	1.378	63
Constant connectivity –Escapism	0.175	54
Constant connectivity -Effective on parenting	3.717	29
Anonymity – Addiction	0.329	54

Stressors and Behavioral Strains	*Chi Square Value*	*%*
Anonymity -Cognitive Development and learning	3.960	44
Anonymity -Attention Span	0.337	54
Anonymity -Sleep Deprivation	0.002	47
Anonymity -Sexual Behaviour	0.023	39
Anonymity -Social Networking	0.014	65
Anonymity –Escapism	2.282	52
Anonymity -Effective on parenting	1.168	34
Mobility – Addiction	1.253	58
Mobility -Cognitive Development and learning	3.130	41
Mobility -Attention Span	0.114	55
Mobility -Sleep Deprivation	0.698	51
Mobility -Sexual Behaviour	19.623	58
Mobility -Social Networking	4.873	75
Mobility –Escapism	2.310	62
Mobility -Effective on parenting	3.848	40
Dynamism – Addiction	1.624	55
Dynamism -Cognitive Development and learning	0.910	50
Dynamism -Attention Span	0.486	54
Dynamism -Sleep Deprivation	0.407	44
Dynamism -Sexual Behaviour	0.134	38
Dynamism -Social Networking	2.383	63
Dynamism –Escapism	0.486	54
Dynamism -Effective on parenting	6.818	29

Table 42: Pair wise -Technology Characteristics and Behavioral Strains

4.8.2 Stressors and Behavioral Strains

Stressors and Behavioral Strains	*Chi Square Value*	*%*
Work Intensification- Addiction	3.167	60
Work Intensification -Cognitive Development and learning	0.060	47
Work Intensification -Attention Span	3.252	61
Work Intensification -Sleep Deprivation	5.765	57
Work Intensification -Sexual Behaviour	8.573	50
Work Intensification -Social Networking	0.000	65
Work Intensification –Escapism	1.693	60
Work Intensification -Effective on parenting	10.808	44
Information overload – Addiction	2.004	64
Information overload -Cognitive Development and learning	0.017	49
Information overload -Attention Span	1.080	58
Information overload -Sleep Deprivation	2.375	54
Information overload -Sexual Behaviour	2.219	45
Information overload -Social Networking	0.162	66
Information overload –Escapism	3.150	63
Information overload -Effective on parenting	3.105	39
Techno invasion – Addiction	0.068	55
Techno invasion -Cognitive Development and learning	0.027	48
Techno invasion -Attention Span	0.466	56
Techno invasion -Sleep Deprivation	16.793	65
Techno invasion -Sexual Behaviour	6.678	50
Techno invasion -Social Networking	3.380	72
Techno invasion –Escapism	0.331	58
Techno invasion -Effective on parenting	9.208	44
Techno uncertainty – Addiction	0.007	46
Stressors and Behavioral Strains	*Chi Square Value*	*%*

Techno uncertainty -Cognitive Development and learning	0.327	46
Techno uncertainty -Attention Span	0.444	66
Techno uncertainty -Sleep Deprivation	5.227	73
Techno uncertainty -Sexual Behaviour	4.000	60
Techno uncertainty -Social Networking	0.545	75
Techno uncertainty –Escapism	0.007	46
Techno uncertainty -Effective on parenting	4.478	53
Work/social/home/school conflict- Addiction	3.886	63
Work/social/home/school conflict -Cognitive Development and learning	0.989	53
Work/social/home/school conflict -Attention Span	7.724	67
Work/social/home/school conflict -Sleep Deprivation	5.695	61
Work/social/home/school conflict -Sexual Behaviour	5.674	51
Work/social/home/school conflict -Social Networking	0.123	67
Work/social/home/school conflict -Escapism	0.649	60
Work/social/home/school conflict -Effective on parenting	14.430	50

Table 43: Pair wise -Stressors and Behavioral Strains

4.9 TESTING HYPOTHESES

4.9.1 Hypothesis one

Relationship between techno characteristic and behavioural strain relating to technostress

Does Constant Connectivity as a techno characteristic (easy access to information) creates a significant effect on behavioural strain related to cognitive development and learning (unable to study independently)?

Group 1: (5 in the dataset) agree ICT provides easy access to information
Group 2: (1 in the dataset) disagrees ICT provides easy access to information

H_0: Mean number of those unable to study independently in group 1= mean number of those unable to study independently in group 2

Ha: Mean number of those unable to study independently in group 1≠ mean number of those unable to study independently in group 2

Group Statistics

	easy access to info through icts	N	Mean	Std. Deviation	Std. Error Mean
i am unable to study independently without icts	strongly disagree	4	1.0000	.00000	.00000
	strongly agree	99	3.0202	2.01008	.20202

Table 44: Hypothesis testing 1

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
i am unable to study independently without icts	Equal variances assumed	38438.835	.000	-2.001	101	.048	-2.02020	1.00980	-4.02338	-.01703
	Equal variances not assumed			-10.000	98.000	.000	-2.02020	.20202	-2.42110	-1.61930

Table 45: Hypothesis testing 2

From the statistics in table 45 above, the significance (p value) of the F test is 0.00 which less than the Alpha value 0.05. The variances are therefore not assumed to be equal. In this case the sig (2-tailed) value is also 0.00 and less than 0.05 hence it can be concluded that there is significant evidence to show that constant connectivity as a techno characteristic creates a significant effect on behavioural strain related to cognitive development and learning.

4.9.2 Hypothesis Testing Two

Relationship between Stressors and Behavioural strain of Technostress

Does Constant information overload as a stressor (I feel overwhelmed by the information I access) creates a significant effect on behavioural strain related to addiction (I get panic attacks when I do not have my ICT gadgets)?

Group 1: (5 in the dataset) feel overwhelmed by information accessed
Group 2: (1 in the dataset) do not feel overwhelmed by information accessed

H_0: Mean number of those who get panic attacks when they do not have their ICT gadgets in group 1= who get panic attacks when they do not have their ICT gadgets in group 2

Ha: Mean number of those who get panic attacks when they do not have their ICT gadgets in group 1≠ who get panic attacks when they do not have their ICT gadgets in group 2

Group Statistics

	i feel overwhelmed by the info i access	N	Mean	Std. Deviation	Std. Error Mean
i get panic attacks when i do not have my ict gadgets	strongly disagree	43	1.9302	1.70985	.26075
	strongly agree	57	2.6842	1.99247	.26391

Table 46: Hypothesis testing 3

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
i get panic attacks when i do not have my ict gadgets	Equal variances assumed	16.113	.000	-1.989	98	.049	-.75398	.37905	-1.50618	-.00177
	Equal variances not assumed			-2.032	96.317	.045	-.75398	.37100	-1.49037	-.01759

Table 47: Hypothesis testing 4

From the statistics in table 47 above, the significance (p value) of the F test is 0.00 which less than the Alpha value 0.05. The variances are therefore not assumed to be equal. In this case the sig (2-tailed) value is also 0.045 and is less than 0.05 hence it can be concluded that there is significant evidence to show that information overload as a stressor creates a significant effect on behavioural strain related to addiction .

5.0 CONCLUSION OF RESULTS

Key results for each research objective are summarized as follows:

Objective:

1. ***To examine if the combination of intensive mobile phone, computer and internet uses are risk factors for increased behavioural strains among young adults.***

   Results from the study indicates that majority of the young adults between age bracket 19-25 years are the most active users of technology, with the key technologies in use being the mobile phone (22.30%), computer (10.92%) and browsing the internet being the most common task (14.22%).

   The following statistics on behavioural strains being heavily recorded:

   Addiction – The study indicates that 53.4% of the respondents exhibit symptoms of addictive use of mobile phone, computer and internet. This validates Christakis (2010) argument which argues that Internet addiction, while not yet officially codified within a psychopathological framework, is growing both in prevalence and within the public consciousness as a potentially problematic condition with many parallels to existing recognized disorders.

   Further, 48.54% of the respondents are completely unable to study without the assistance of ICTs. This indicates a heavy dependence on ICTs for studies by students, indicative of a worrying trend of addiction in learning and development.

   Attention Span – 53.4% of the respondents experience reduced attention span mannerism when using the fore mentioned ICT gadgets. This resonates well with Richtel (2010) assertion that people's ability to focus is being undermined by bursts of information.

   Social Networking – 65.3% of the respondents are influenced by social networking. This is in tune with Morozov (2012) who argues that social networking could be potentially harmful to

people and that this platform allows people to act in unusual ways to project a certain image or perception.

Escapism – 55.45% of the respondents use the mentioned digital platforms as a means of escape from their immediate environment, validating the free encyclopedias assertion that users use technology as an escape from perceived unpleasant or banal aspects of daily or real life.

Sleep Deprivation – 47.5% of the respondents agreed that sleep deprivation is a risk factor for increased behavioural strain. 48.54% also shared the opinion that *cognitive development and learning* is a risk factor for behavioural strains among young adults

Interestingly the behavioural strains realized from various literature works such as risky sexual behavior (39.2%) and effects on parenting (32%) did not record significant impact in this study indicating the possibilities of minimal significance of parenting for the respondents given their age bracket or lack of the understanding of this aspect by the general sample.

The study therefore deduces that addiction, Limited attention span, Social Networking, sleep deprivation, cognitive development and learning and escapism are risk factors leading to behavioural strains from use of combined mobile phone, computer and internet by young adults in Kenya.

2. ***To have a theoretical and practical understanding of technology characteristics leading techno stress.***

Whitenton (2013) argues that cognitive load imposed by a user interface is proportional to the mental resources, We can deduce this argument from the statistics as 95.6% of the respondents feel *usability* (effectiveness, efficiency and reliability) as a characteristic of technology as a major causal factor of Technostress. From this perspective we can gather that ICT gadgets that do not provide for efficiency, effectiveness and reliability create stressful environment for users.

Constant connectivity is also a characteristic of technology that contributes to the phenomenon of Technostress according to 91.2% of the respondents. This validates majority of views held by most Technostress researchers such as Ayyagari (2011) who takes the position that constant connectivity is diminishing the quality of life as it blurs the boundary between work and home thus causing home-work conflict.

According 85% of the respondents old the view that *Dynamism* as a characteristic of technology causes Technostress. Burfoot (2016) holds a similar view that the speed of technology change means increased work intensification and may also lead to information overload.

Complexity of use is a technology characteristic that is deemed to cause Technostress by 87.6% of the respondents in this study. This indicates that the degree of complexity of operation of ICTs affects users negatively. This supports the argument by Ragu-Nathan et al (2011) who argue that users find the range of software, hardware and even jargon difficult to understand and this contributes to stress.

Anonymity in this study focused on the negative aspects associated with anonymous use of ICTs. 81.4% of the respondents agree that this characteristic of technology contributes to causing Technostress. The ability of users to hide identities leads may lead to stressful environment for other users through such negativities such as character assassinations or even reputational damage and other cybercrimes that can be committed in anonymous mode,

Baron (2010) asserts that use of mobile phones has risks of social infelicities and physical safety which agrees the views of 54% of the respondents on *mobility* as technology characteristics.

In summary this study deduces that usability, complexity of use, constant connectivity, anonymity, mobility and dynamism are indeed technology characteristics leading to behavioural symptoms associated with Technostress.

3. ***To develop a conceptual and practical understanding of stressors contributing to Technostress.***

A significant majority results indicate that 56.6% of the respondents feel that *work intensification* lead to Technostress just as Joling (2008) argues that work intensification has led to increased demand expectation from supervisors, employers and clients thus impacting workers behavioural characteristics.

85% of respondents feel that *techno complexity* contributes to Technostress. According to Wikipedia, people find the variety of applications, functions and jargon intimidating and consequently feeling stressed.

From the study 53.1% of the respondents feel that *information overload* lead to Technostress, supporting the argument by Sarah Thomee (2010) which asserts that consequences arising from high quantitative use of ICT include mental overload, neglect of other activities and personal needs.

54.9% of the respondents attest that techno invasion causes Technostress. Techno invasion describes a feeling of being always exposed. This supports the argument by Waltz (2012) which argues that regular workdays extends into family hours including vacation, which leads to people feeling intrusion into their time and space and therefore they experience frustration and stress.

Techno uncertainty which describes the degree to which users are unable to perceive future usage or trends of ICTS did not record significant impact with only 14.2% of respondents attesting to this fact.

The study therefore infers that work intensification and workload, information overload, techno invasion, techno complexity and work/social/school-home conflict are stressors leading to behavioural strains among young adults in Kenya.

4. ***To understand the relationship between technology characteristic, stressors, and behavioural strains creating Technostress.***

The results of Pearson correlation coefficient demonstrated in table 40 showed a significant correlation between dimensions of technology characteristics such as constant connectivity and behavioural strain such as sleep deprivation thus indicating that techno characteristics are significantly correlated with behavioural strains creatingTechnostress.

The results of Pearson correlation coefficient in table 41 indicated a significant correlation between Stressors such as such as techno complexity and behavioural strain such as escapism, therefore demonstrating that stressors variables are significantly correlated with behavioural strains creating Technostress.

5. ***To provide a foundation in which future studies on Technostress can be leveraged on in Kenya.***

From the findings, there is an indication that indeed a significant number of young people in Kenya exhibit symptoms associated with techno stress and this study provides the justification to explore further research on possible pathways that can be tested epidemiologically.

6.0 MODEL OF TECHNO CHARACTERISTICS, STRESSORS AND BEHAVIOURAL STRAINS LEADING TO TECHNOSTRESS AFTER THE STUDY

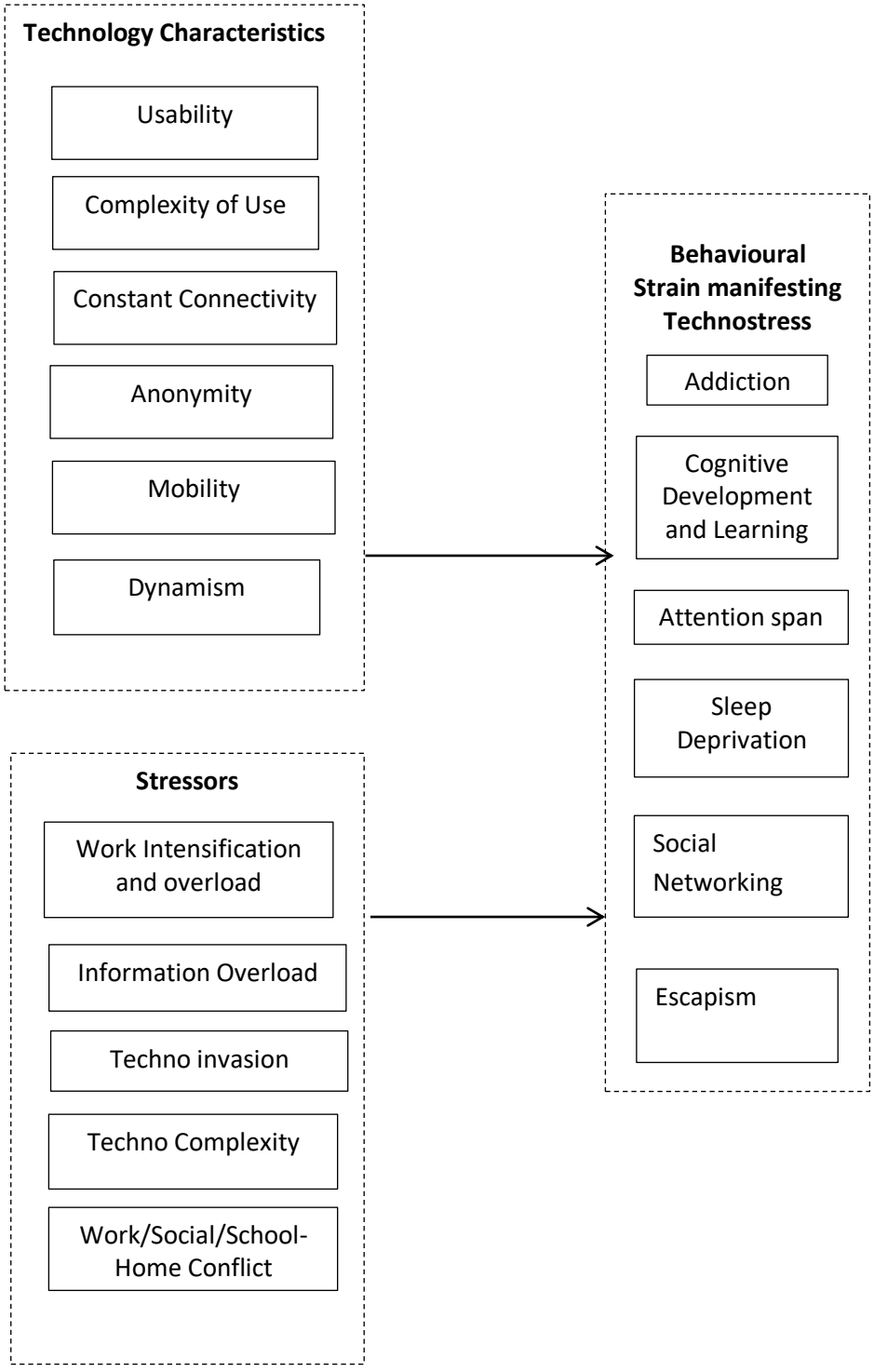


Figure 7: Model after study

7.0 RESOURCES USED IN THE PROJECT

Resources are the means which was used to achieve the project objectives. The primary resource required was the human resources with applicable skills and competencies particularly for the purposes of conducting research on the sample given the sample size. Because of time limitations a research company with capacity was used to aid in the research.

The other main grouping of resources that were used for this project include capital, facilities, equipment, stationery and information.

7.1 Inputs to resource planning

- A simple work Break Down Structure (WBS) was designed to identify the project elements that needed resources. It was therefore the primary input to resource planning for this study.
- Historical information as to what types of resources were required for similar work on previous projects was valuable input in this study.

7.2 Resource estimation

In determining costs, the element of risk and uncertainty involved in the survey were considered alongside the primary costs. The amount of effort and time that it took to complete a task such as data analysis was also important for assigning adequate resources and to avoid delays into project completion.

A properly documented Resource Plan aided to specify the exact quantities of human resources, equipment and materials needed to complete the project.

7.3 Resource acquisition

Resource acquisition is the process of which the necessary inputs were physically secured and financed. The acquisition process was managed to properly to take care of possible shortages, competing demands, and other things that could have gone wrong.

7.4 Resource allocation

The different types and quantities of resources were allocated to the project as needed to perform the activities. A schedule for was maintained to ensure that the allocation process took place on time and in the right quantities.

Figure 9: Work breakdown structure for the study

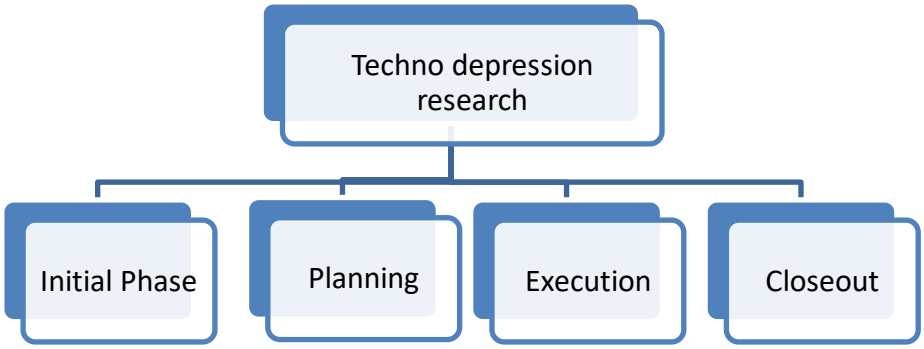


Table 48: Resources used for the project.

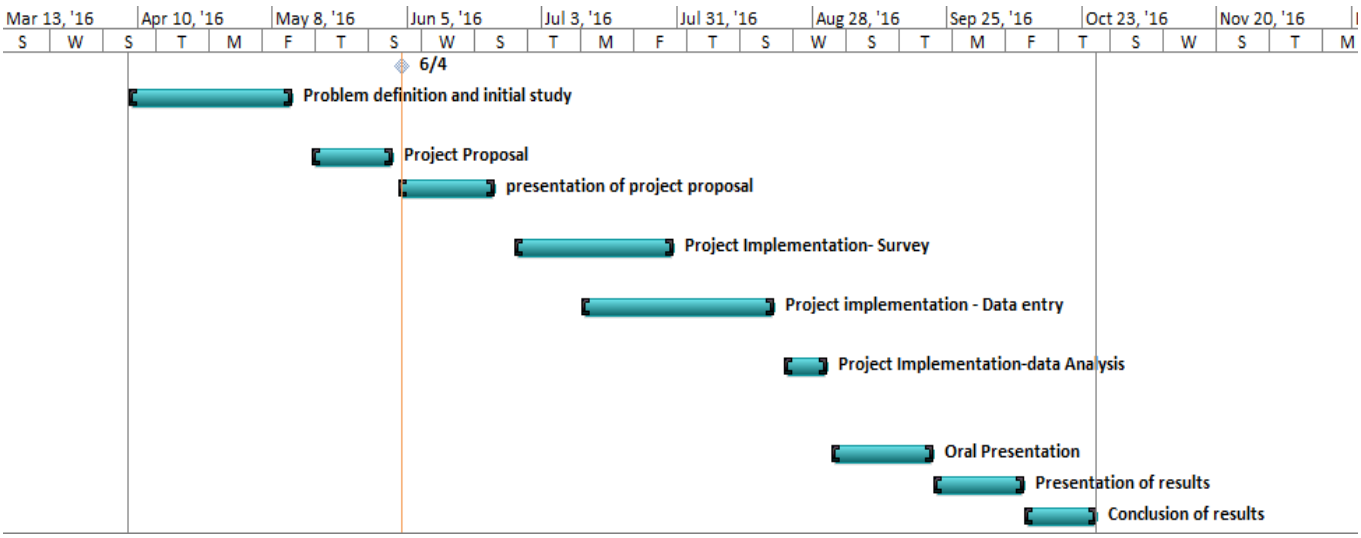
PHASE	RESOURCE	ESTIMATE COST (Ksh)
Initial Phase	Information access	3,000
	Internet access	5,000
Planning	Information access	3,000
	Internet access	5,000
	Approvals	2,500
Execution	Survey firm	30,000
	Analysis	5,000
Closeout	Approvals	2,500
TOTAL		56,000

8.0 PROJECT SCHEDULE

Table 49: Project Schedule – The project was executed as per the schedule below:

Task Name	Duration	Start	Finish
Problem definition and initial study	24 days	Fri 4/8/16	Wed 5/11/16
Project Proposal	13 days	Mon 5/16/16	Wed 6/1/16
presentation of project proposal	14 days	Fri 6/3/16	Wed 6/22/16
Project Implementation- Survey	25 days	Mon 6/27/16	Fri 7/29/16
Project implementation - Data entry	30 days	Mon 7/11/16	Fri 8/19/16
Project Implementation-data Analysis	7 days	Mon 8/22/16	Tue 8/30/16
Oral Presentation	15 days	Thu 9/1/16	Wed 9/21/16
Presentation of results	13 days	Thu 9/22/16	Mon 10/10/16
Conclusion of results and final presentation	11 days	Tue 10/11/16	Tue 10/25/16

Figure 10: Gantt chart



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