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Internet Usage, Access Constraints, Addiction and Holistic Student Development

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Abstract: *The purpose of this study was to determine the effect of internet usage, internet access constraints and internet addiction on holistic student development. The study was guided by the theory of technology acceptance model and compulsive consumption. Data was collected from a sample of 250 University students. The study revealed that internet usage has significant effect on holistic student development. It was also established that internet addiction has significant intervening effect on student development while internet access constraints has no significant moderating effect. Study recommends that internet usage should be incorporated in learning process by students, institutions of learning and by policy makers. Excessive internet usage has high capacity to h*

Keywords: *Internet usage, access constraints, addiction, holistic student development*

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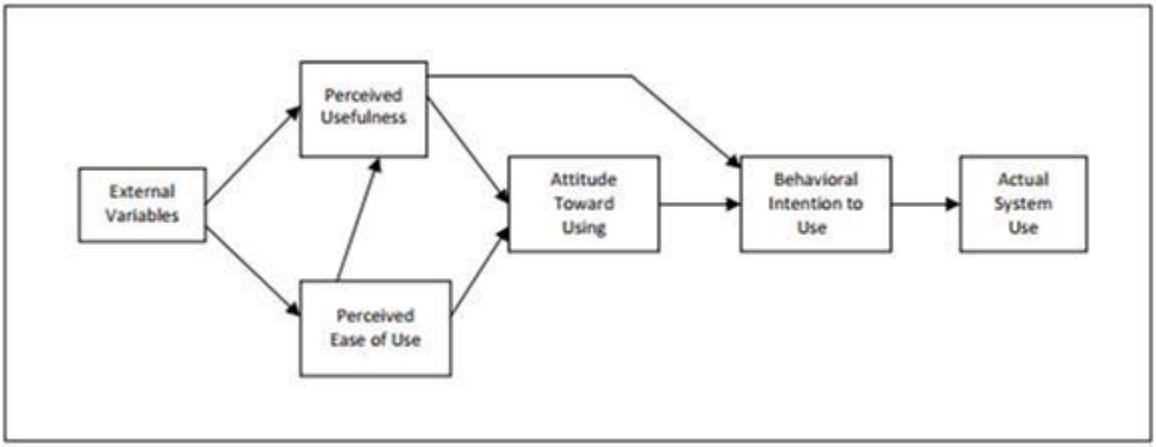
I. Introduction and background

Development of Internet in the early 90s has revolutionized the way we work and conduct affairs of our lives. Right from education to entertainment, business and to every other aspects of social life, Internet has become a major transaction platform. Michael Porter (2001), provides this incisive forecast: "*Basic Internet applications will become Table stakes and that companies will not be able to survive without them, but they will not gain any advantage from them".* This insight implies that every aspect of life will need to use Internet for its success. Twenty first century is characterized by Internet of Things (IoT), a term that implies enabling advanced services by interconnecting things based on existing and evolving interoperable information and communication technologies (International Telecommunications Union, 2012,). In emphasizing this concept, Akyildiz (2018) argues that internet has now connected 7 Billion People and over 7 Trillion Things. Use of internet has facilitated developments not only in communication but in many facets of life such as education, banking, commerce, entertainment among others.

Use of Internet may be affected by access constraints such as unreliability of providers, poor connections, high cost of access, high cost of devices and regulations from authority (Asibey et al 2017). It's however, worthy noting that use of Internet has not always been positive especiallywhere excessive use results in internet addiction. In fast developing economies such as China, India and South Korea internet addiction has been cited as a major challenge especially among students (Tang et al, 2014). The purpose of this study was to examine relationship between Internet usage, access constraints, addiction and holistic student development.

II. Theoretical foundation

The study is anchored on two main theories; Technology Acceptance Model (TAM) and Compulsive consumption theory. Technology Acceptance Model developed by Davis and Bagozzi in 1989 describes how a new technology and the various aspects of it are received and used by the user. According to the model, the acceptance of a new technology by a user is based on two factors namely *Perceived Usefulness* which refers to how much the user believes that the technology will help to improve the performance/efficiency and *Perceived Ease of Use* that implies extent the user is comfortable is using the features of the technology. If the consumer perceives usefulness of technology and ease of using, he will develop a positive attitude towards it leading to behavioral intention to use and finally becomes a user. The use of internet and access devices is a core aspect of this study. This study proposes that use of internet and access devices is core part of life of user to not only search information but also do business transactions. Internet is also used for entertainment, leisure and academic development. Excessive use of internet however, may lead to addiction.



Source: Adopted from Davis (1989)

Compulsive consumption as envisaged in consumer behavior theories is a type of consumption that is inappropriate, typically excessive and clearly disruptive to the lives of individuals who appear impulsively driven to consume (Ronald et al 1987). Compulsive consumption behavior is characterized by physical and/or psychological dependence on the substance or activity, occasional loss of control regarding the behavior, presence of a drive, impulse or urge to engage in a behavior; denial of the harmful consequences of continuing the behavior; and repeated failure in efforts to control or modify the behavior all of which subsequently interfere with normal life functioning (Anderson and Brown 1984; Miller 1980; Russell 1979). In this study, excessive use of internet could lead to its compulsive consumption that may affect holistic student development.

III. Empirical Review

The study considered internet usage as independent variable while internet access constrain and internet addiction as moderating and intervening variables respectively. Holistic student development was taken as the dependent variable.

Internet usage

Internet Usage has become a global phenomenon that now shapes most areas of human activities. The Internet penetration as per World Internet Usage and Population Statistics (2017) was enormous. North America was leading with 81% followed by Europe at 79% while Africa was the lowest at 31%. The same report indicates that 51% of the world population now has access to Internet and this presents a phenomenon growth of 962.5% from the year 2000. Africa, though constitutes the smallest proportion of Internet users at 10% has had the highest growth of 8497%. In Africa, Kenya has the highest Internet penetration at 81.8% with 39,664,377 Internet users and 5,500,000 active Facebook accounts. This huge growth in Internet usage presents both great opportunities as well as threats to an economy. Internet usage creates millions of job opportunities, provides efficiency in business transactions as well as security.

Among students internet is used in several ways that include information search, communication, business transactionand entertainment & leisure.Kuhlthau's (1993) revealed that students were involved in a complex process of construction rather than simply collecting and reporting on found information. Jagboro (2003) noted that internet serves as a source of information for literature review, authors' search and subject search among students. Tsai (2012) found out that university students in general tended to perceive better online searching strategies for daily life than for learning topics. These findings show that students tend to seek for information online for both academic and non-academic purposes with the latter being stronger.Nwagwu (2007) demonstrated that students use internet to seek information on health matters, online purchasing, stock trading, online auctions and e-banking services among others. Kabuba (2014) found out that online businesses are preferred in Kenya due to cost reduction, ability to reach more customers, access to global markets, transact business on a 24/7 basis, better prices, higher quality customer service, increased business visibility among others. Students as well as other young people use internet to facilitate social interactions through e-mailing, chatting and instant messaging. In areas of entertainment, Internet provides young people with avenues to download and play music, watch films and listen to radio programs (Nwagu, 2009). Waithaka (2013) outlined benefits of internet usage to include access to and dissemination of information globally, platform for exchange of ideas on various fields of study, growth of distant learning, as well as providing students and lecturers with a fast communication system.Internet usage tends to affect various aspects of student life. Previous studies have not demonstrated the effect of internet usage on holistic student development leading to hypothesesH_1*: There is a statistically significant relationship between internet usage and holistic student development.*

Internet addiction

Addiction refers to obsession with an object. It is abnormal psychological dependency on games, gambling, sex, and other highly impulsive behaviors (Holden, 2010; Grant et al., 2010; Longabaugh and Magill, 2011). According to centre for Internet addiction (2017), Internet addiction refers to any online-related, compulsive behavior which interferes with normal living and causes severe stress on family, friends, loved ones, and one's work environment. The behavior involves dependency and compulsivity that completely dominates the addict's life. Internet addiction may be identified by compulsive use of the Internet, a preoccupation with being online, lying or hiding the extent or nature of ones online behavior, and an inability to control or curb ones online behavior. Kuss and Griffiths (2011) view Internet addiction as excessive obsession with social network services also referred to as cyber-relationship addiction.

Studies such as Tang et al (2014) indicate that 6% of the world population is now Internet addicted. China has approximately 11 percent of the Chinese internet users being internet dependence while 27.1 percent of the adolescent internet users in China have an inclination to internet addiction with detrimental effect on work, study, and social life (Jiang, 2008). This increasing demand for the internet technology has brought about serious mental health & unhealthy social communication nuisances. On their part, Ramzan et al (2014) observed that internet addiction can lead to psychological problems such as anxiety, depression & loneliness. In addition internet addiction can lead to physical disorders, family challenges, occupational problems and educational drop-out. Internet addiction constitutes five dimensions namely salience, euphoria, immersion, compulsion and association (Inwon, et al 2011). Salience is experienced when an activity becomes the most important thing in one's life (Chou and Ting, 2003; Griffiths, 1996). Euphoria occurs when individuals gain excitement and exhilaration from the contents (Griffiths, 1996). Immersion is the deep indulgence in a product or service on basis of perceived benefits the consumer enjoys from its indulgence (Inwon et al, 2011). Compulsion refers to compulsive desire to reuse substance and enjoy its benefits without harmful side effects from the deprivation. Association is the users' sense of belonging toward substance that make them feel safe, comfortable, and proud to be part of the service when they have the sense of belonging (Teo et al, 2003).

A Study by Huang and Leung (2009) that used a stratified random sample of 330 teenagers in China, found out that 95.8% of participants use instant messaging (IM) with 9.8% of them being classified as IM addicts. The findings further revealed both the level of IM use and level of internet addiction are significantly linked to teenagers' academic performance decrement. Lopez-Fernandez et al (2014) used a sample of 1,529 secondary school pupils aged between 11 and 18 years to estimate the prevalence of possible problematic users of internet. The prevalence of problematic users among the students was 10% who were mostly adolescent between 11 and 14 years old. Findings showed withdrawal as the most relevant symptom of addiction, unpleasant emotions when not using their mobile phone. Use of mobile phones seemed to be an intrinsic part of young people's lives reinforced through the self- and social gratification. Gin (2011) concluded that parents were losing control over their children online activities which affected their academic performance. A study by Bahrainian and Khazaee (2014) among 408 students indicated that 38.5 % had moderate internet addiction while 2.2% were severely addicted which lead o depression and loss of self-esteem. They pointed to the need to determine underlying causes that lead to internet addiction such as isolation and anxiety. Mahmoud and Nesami (2014) found out that 14% of students in Islamic Azad University were rated as internet addicted and that their lives were characterized by poor social communications & psychological health. This study therefore sought to test the hypotheses that *H_2: Internet addiction significantly affects holistic student development.*

Internet access constraints

Internet access constraints refers to challenges that one encounters in accessing Internet. In particular the study considered constraints as the access devices such as computers, tablets and smart phones and the effect they have in enabling student's access internet (Liao et al., 2007). Internet connectivity speed is crucial for effective usage. When the speed is low the users have a tendency of getting fed up and seek for alternative means. Statistics from Akamai State of the Internet Report (2017)show that UK has the highest Internet connectivity speed followed by Germany and Finland. In Africa Kenya leads in internet speed and is ranked higher than the United States. This implies that Kenyans can access Internet faster than any other country in Africa in which case they stand a high chance of productive use or getting addicted. Costs associated with Internet access are a major consideration for any users. In Africa, Chad Cameroon and Mali incur the highest Internet cost while Ghana, Malawi and Mauritius have the lowest. Kenya is considered to have low Internet cost at 87 US dollars a month which encourages usage (World Development Report, 2016). UNESCO report, 2003 indicates that internet cost reflect the imbalance in education between developed and developing countries. On the other hand, Carland (2015) hold the view that costs of deploying the required infrastructure needed to provide Internet access to students is an important consideration in the analyses of the benefits and costs of the Internet. He further asserts that there is evidence to support the view that high level of access to internet usage lowers the grades of high school students. The Internet Society (2017), maintains the view that:

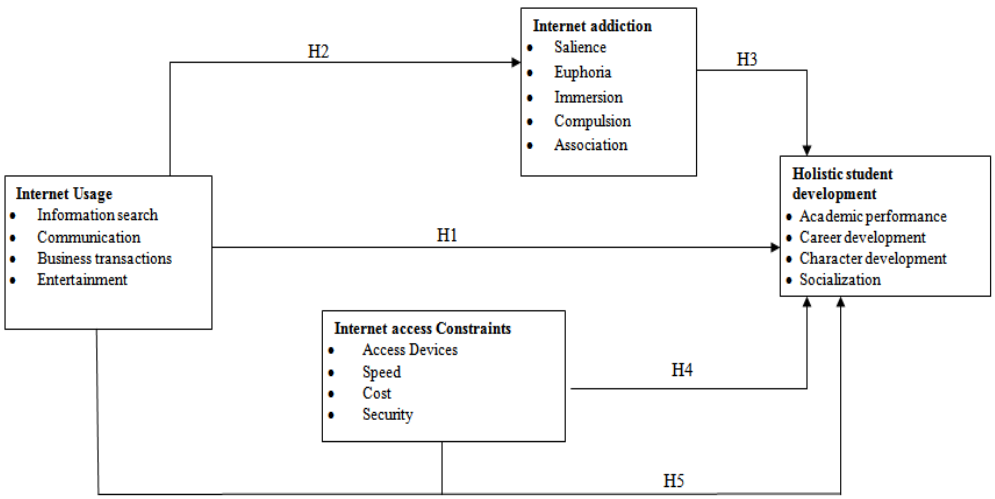
"Education as the theme of the United Nations' fourth Sustainable Development Goal is both a basic human right and a core element of sustainable development. Education enables individuals to build more prosperous and successful lives and help societies to achieve economic prosperity and social welfare. The study however highlighted a number of factors in the modern world that inhibit full achievement of these gains to include lack of access to the Internet with sufficient bandwidth, broadband connectivity, affordability legal and regulatory environment",

On their part, Allison et al (2013) support the notion that technology is a significant part of students' day-to-day experiences and is significantly related to a number of effective educational practices and student outcomes. The vast majority of students are frequently interacting with faculty, advisors, and other students through technology, and greater use of technology to communicate increases the quality of the relationships students have with faculty, staff and peers. These varying findings lead to the need to determine whether internet access constraints affects student development hence the hypotheses, *H_4: the relationship between internet usage and holistic student development is moderated by access constraints.*

IV. Holistic student development

This is a multidimensional complex issue that takes into account the academic performance, social, spiritual and physical development of a student. Broader Measure of Success Report (2013) indicates that a holistic student development cannot be measured on academic performance alone. The report proposed physical & mental health, social & emotional development, citizenship & democracy and creativity & innovation as means of assessing successful institution and students. Jenney (2013) considered achievement orientation, compassionate, self-concept, social and other collegiate outcomes such as emotional health, physical health, and spirituality as significant measures of holistic student development. Holistic student development usually refers to the total development of an individual that includes physical, psychological, social, and spiritual domains (Sheik et, 2010). Quinlan (2011) views a holistic student as one who is developed academically, emotionally and morally. Hutt (2011) identified dimensions of a holistic student to include temperament, cognition, affection, self-regulation, physical, social, spiritual, moral character and citizenship. Hare (2010) emphasized the need for holistic education that focuses on intellectual, emotional, social, physical, creative or intuitive, aesthetic and spiritual potentials of students.

From the foregoing discussion, this study operationalized holistic student development to include academic performance, career development, socialization, character development as well as economic development. The study was guided by the research question: What is the effect of internet usage on holistic student development? The study further sought to establish whether internet access constraints moderated the relationship between usage and student development as well as determine whether internet addiction mediated the relationship between usage and holistic student development as indicated in Figure 2.



Research methodology

The study adopted descriptive, cross-sectional and correlational research design. The design facilitated collection of quantitative data at a particular time and testing of relationships between the studies variables. Data was collected from a sample of 250 university students in Kenya using online questionnaires. Most universities

in Kenya provide students access to free internet.For some of the student, their mode of study require use of internet and a vast majority of them have internet support gadgets. To test the hypotheses, the study used correlation and regression analysis.

Study findings

Data analysis in this study involved four main steps. First reliability and validity of data was tested. Secondly descriptive statistics were determined. Third, assumptionsfor use of regression model were ascertained and finally actualregression analysis was carried out.

Reliability and validity tests

Reliability indicates the accuracy or precision of the measuring instrument (Norland-Tilburg, 1990). In this study reliability was tested at three main levels. First the researcher used items that had been tested for reliability by Inwon, Matthew and Park (2011). Secondly, the instrument was discussed with experts to ensure its reliability and finally the researcher incorporated Cronbach Alpha Test as one of the most commonly used measure of internal consistency whose results are presented in Table 1. Under this method test items that score a value of 0.50 (Cronbach, 1951) are accepted as minimum value while scores of 0.7 and above are the preferred determinant of reliability.

Table 1: Cronbach Alpha Reliability Test

s/n	Item	Cronbach Alpha scores	Number of items
Internet Usage			
1.	Information search	.826	11
2.	Communication	.740	7
3.	Business Transaction	.910	9
4.	Entertainment and Leisure	.805	7
Internet Access Constraints			
1.	Access Devices and Infrastructures	.570	5
2.	Speed	.819	6
3.	Cost	.855	6
4.	Security	.902	9
Internet Addiction			
1.	Salience	.829	5
2.	Euphoria	.814	5
3.	Immersion	.788	3
4.	Compulsion	.783	4
5.	Association	.884	5
Holistic student development			
1.	Academic Performance	.906	9
2.	Economic Development	.734	8
3.	Career development	.873	5
4.	Character development	.892	10
5.	Socialization	.840	9

Source: Primary data

From Table 1, all study items scored more than the minimum acceptable with access to Internet related devices and infrastructure scoring the lowest at 0.570 while use of Internet for business transactions had the highest score of .910. These findings indicate that the research instrument was reliable.

To determine the research instrument validity which is a measures of the extent to which the instrument measures what was intended, factor analysis was carried out. Factor analysis using Principal Component Analysis (PCA) technique as a data reduction procedure with Varimax rotation was used to confirm the underlying dimensions of the predictor variables and the findings presented in Table 2.

Table 2: Factor analysis

Construct	*Components*	*Factors description*	*CumulativeVariance (%)*
Internet usage	Information search	1.Knowledge building	59.196
		2.Market access	
		3. Broadened study	
	Communication	1.Enhanced communication	59.988
		2.Enriched interaction	
	Business transactions	1.Business transactions	57.260
	Entertainment	1.Enriched entertainment	62.462
		2. Strengthened friendship	
Internet access constraints	Internet speed	1.Internet Speed	54.991
	Internet cost	1.Internet affordability	74.587
		2. Cost-free Internet	

	Internet security	1. Internet insecurity	67.102
		2.Confidentiality infringement	
	Internet access devices	1. Inadequate access	65.514
		2. Access restriction	
Internet addiction	Salience	1. Salience	63.832
	Euphoria	1.Euphoria	66.128
	Immersion	1.Immersion	79.814
	Compulsion	1.Compulsion	62.164
	Association	1.Association	71.056
Holistic student development	Academic performance	1. Enhanced learning	64.744
		2.Focussed learning	
	Economic empowerment	1. Economic support	59.203
		2. Expenses reduction	
	Career development	1. Career development	67.192
	Character development	1. Confidence building	61.816
		2. Sustainable integrity	
	Socialization	1. Enhanced interactions	74.191
		2.Expansive interactions	
		3. Reputation	

Source: Primary data

The principal components analysis results showed that the study captured key dimensions underlying the various study components. All components accounted for more than 50% variance. Internet usage was operationalized on four components that include information search, communication, business transactions and entertainment. Principal component analysis techniques reduced 34 items to 8 factors namely: knowledge building, market access, broadened study scope, enhanced communication, enriched interaction,business transactions, enriched entertainment and strengthened friendship as the main dimension underlying internet usage. The factors accounted for 57.26% to 62.46% variance. Internet access constraints was reduced to 7 factors that include, Internet Speed, Internet affordability, Cost-free Internet, Internet insecurity, Confidentiality infringement, inadequate access and Access restriction accounting for variance ranging from 54.99% to 74.58%. Internet addiction produced five factors accounting for variance ranging between 63.83% and 79.81%. Holistic student development as the dependent variable produced 11 factors with variance ranging from 59.2% to 74.19%. The factors include: enhanced learning, focused learning, economic support, expenses reduction, career development, confidence building, sustainable integrity, enhanced interactions, expansive interactions and reputation. These results indicate that all the scores obtained were greater than 0.5 (>0.5) which is the recommended value (Malhotra and Dash, 2011). This indicates that the sample used was adequate and that the variance in the study variables could be explained by the underlying factors. For all study variables Bartlet test of Sphericity was 0. 000 which is less than the level of significance of 0.05 indicating that the correlation matrix was not identity and that the study variables were related. In all cases determinant was greater than 0.000 implying that the data collected was meaningful. The results confirmed the theorized dimensionality of the study constructs and therefore it is reasonable to conclude that the instrument measured what it was intended.

Descriptive statistics

The questions developed to assess the study components were rated on a five point Likert scale ranging from 1= not at all to 5= to a very large extent. The study considered a mean score of 4.5 and above to indicate the respondents agreement to a very large extent, between 3.5 and 4.49 to a large extent, between 2.5 and 3.49 to a moderate extent, 1.5 to 2.49 to a small extent and 0 to 1.49 indicating no agreement at all. This scaling approach was intended to simplify the interpretation of data. Table 3 represents the descriptive statistics of the study.

Table 3: Descriptive statistics

	Components	*Mean*	*Standard deviation*	*Coefficient of variation*
Internet usage	Information search	3.801	0.462	12.17
	Communication	3.465	0.561	16.19
	Business transactions	3.355	0.226	6.75
	Entertainment	3.411	0.842	24.68
	Internet usage	**3.508**	**0.522**	**14.94**
Internet access constraints	Internet speed	2.767	0.132	4.77
	Internet cost	3.151	0.557	17.68
	Internet security u	2.622	0.300	11.44
	Internet access devices	2.825	0.380	13.47
	Internet access constraints	**2.841**	**0.342**	**11.84**

Internet addiction	Salience	2.290	0.512	22.37
	Euphoria	2.348	0.359	15.28
	Immersion	2.560	0.368	14.38
	Compulsion	2.443	0.377	15.43
	Association	2.462	0.434	17.63
	Internet addiction	**2.420**	**0.41**	**17.01**
Holistic student development	Academic performance	3.801	0.331	8.72
	Economic empowerment	3.159	0.452	14.30
	Career development	3.774	0.223	5.92
	Character development	3.446	0.300	8.72
	Socialization	3.789	0.533	14.07
	Holistic student development	**3.59**	**0.367**	**10.34**

Source: Primary data

The study findings indicate that the respondents agreed to a large extent on Internet usage with a mean of 3.508. Within the component of internet usage, information search scored the highest mean of 3.801 which implies that the respondent agreed to a very large extent that indeed Internet was very useful in information search. However the respondent did not show harmonious response on usage of Internet for entertainment where the coefficient of variation was relatively high at 24.68%. Internet access constraints had a mean score of 2.841 implying that respondents agreed toonly a moderate extent. Respondents had diverse views on Internet cost with a relatively high coefficient of variation of 17.68%. The respondents agreed to a small extent on Internetaddiction onwith a mean of 2.420 and a relatively high coefficient of variation of 17.01%. The findings further indicate that the respondents agreed to a large extent onholistic student development with a mean score of 3.59 with relatively low coefficient variation of 10.34%.

Table 4: Internet usage frequency table

Categories	*Frequency*	*Proportion (%)*	*Usage level*
1.0 -1.49	2	1	Not at all
1.5-2.49	21	8	To a small extent
2.5-3.49	93	36	To a moderate extent
3.5-4.49	122	48	To a large extent
4.5-5.0	18	7	To a very large extent

Source: Primary data

The findings indicate that 1% of respondent do not find Internet useful in their daily activities while 8% use Internet only to a small extent. 36% of respondents were moderate in their usage while 48% used Internet to a very large extent. The findings also indicate that 7% used Internet to a very large extent. These statistics show that 91% of respondent generally use Internet and therefore the need to determine its impact on holistic student development.

Table 5: Internet access constraints

Categories	*Frequency*	*Proportion (%)*	*Access constraints level*
1-1.49	10	4	Not at all
1.5-2.49	74	30	To a small extent
2.5-3.49	121	48	To a moderate extent
3.5-4.49	42	17	To a large extent
4.5-5	3	1	To a very large extent

Source: Primary data

The findings indicate that 4% of respondents do not experience Internet access constraints at all while 30% only to a small extent. 48% experience moderate access constraints while 17% had experienced constraints to a large extent and only 4% experience very large access constraints to Internet. These statistics show that majority of respondents 64% had relative higher access constraints. These constraints were in terms of appropriate access devices, Internet speed, security and costs.

The study further sought to establish proportions of the respondents in terms of levels of internet addiction. The frequencies on the various categories are presented in Table 6.

Table 6: Internet addiction levels

Categories	*Frequency*	*Proportion (%)*	*Internet addiction level*
1-149	34	13	Not at all
1.5-2.49	113	45	To a small extent
2.5-3.49	74	30	To a moderate extent
3.5-4.49	25	10	To a large extent
4.5-5	4	2	To a very large extent

Source: Primary data

The findings in Tables 4 indicate that 13% of respondent were not addicted to internet at all while 45% were addicted to a small extent. The findings further reveal that 30% were addicted to a moderate level while 10% to a large extent and 2% to a very large extent .This study consider those at the level of large and very large extent (12%) as already addicted and those moderate extent level (30%) as high potential addicts. This high proportion of 42% constituting addicts and potential addicts create a concern in this study.

Table 7: Holistic student development

Categories	*Frequency*	*Proportion*	*Holistic student development levels*
1-1.49	1	0	Not at all
1.5-2.49	14	6	To a small extent
2.5-3.49	86	34	To a moderate extent
3.5-4.49	131	52	To a large extent
4.5-5	20	8	To a very large extent

Source: Primary data

The findings indicate that all respondents were of the opinion that Internet has contributed to their development to some level. 6% of the respondents felt Internet contributed only to a small extent on their development, 34% moderately, 52% to a large extent and 8% to a very large extent. A total of 94% of respondents indicate that Internet usage is asignificant aspect of holistic student development.

Assumptions test on regression model

To test hypothesis of the study, diagnostic tests were carried out to ascertain assumptions of regression model. These included tests of normality, linearity, homogeneity and multicollinearity. Normality was tested using Kolmogorov-Smirnov (K-S) one-sample test as goodness of fit test and the results are presented in table 8 which indicate that the data was normally distributed. Test of linearity was carried out using one way ANOVA and the results presented in Table 9 show linear relationship between independent variables and the dependent variable.

Table 8: One-Sample Kolmogorov-Smirnov Test

		Internet usage	*Internet access*	*Internet addiction*	*Holistic student development*
N		255	250	250	252
Normal Parameters[a,b]	Mean	3.50501	2.83922	2.42675	3.58013
	Std. Deviation	.676787	.745840	.865206	.709855
Most Extreme Differences	Absolute	.044	.039	.080	.089
	Positive	.023	.039	.080	.033
	Negative	-.044	-.023	-.057	-.089
Kolmogorov-Smirnov Z		.699	.615	1.270	1.414
Asymp. Sig. (2-tailed)		.713	.844	.080	.037
a. Test distribution is Normal.					
b. Calculated from data.					

Source: Primary data

Table 9: Linearity tests

			Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
*Holistic student development * Internet usage*	Between Groups	(Combined)	118.476	223	.531	1.757	.044
		Linearity	7.352	1	7.352	24.312	.000
		Deviation from Linearity	111.124	222	.501	1.655	.063
	Within Groups		7.863	26	.302		
	Total		126.339	249			
*Holistic student development * Internet access constraints*	Between Groups	(Combined)	115.031	205	.561	2.251	.001
		Linearity	.279	1	.279	1.120	.296
		Deviation from Linearity	114.752	204	.563	2.257	.001
	Within Groups		10.967	44	.249		
	Total		125.998	249			
*Holistic student development * addiction*	Between Groups	(Combined)	108.373	199	.545	1.545	.035
		Linearity	6.032	1	6.032	17.111	.000
		Deviation from Linearity	102.341	198	.517	1.466	.055
	Within Groups		17.625	50	.353		
	Total		125.998	249			

Source: Primary data

Correlation analysis

The study sought to establish the level of correlation between the independent variables and the dependent variable using Pearson correlation analysis and the results are presented in Table 10

Table 10: Correlation analysis

		Internet usage	*Internet access constraints*	*Internet addiction*	*Holistic student development*
Internet usage	Pearson Correlation	1			
	Sig. (2-tailed)				
Internet access constraints	Pearson Correlation	-.070	1		
	Sig. (2-tailed)	.269			
Internet addiction	Pearson Correlation	.164**	.277**	1	
	Sig. (2-tailed)	.010	.000		
holistic student development	Pearson Correlation	.241**	.047	.219**	1
	Sig. (2-tailed)	.000	.459	.000	
**. Correlation is significant at the 0.01 level (2-tailed). N= 250					

Source: Primary data

The results in Table 10 show that there is a significant correlation between Internet usage and holistic student developmentwith p value 0.000 r = 0.241 and also between Internet addiction and holistic student development where p value 0.000, r = 0.219. However there is no significant correlation between Internet access constraints and holistic student development whose p value is 0.459, r=0.047.

Test of hypothesis

The study tested six hypotheses as follows:

H_1: There is a statistically significant relationship between Internet usage and holistic student development.

To test the hypothesis, regression analysis was carried out and the results are presented in Table 11. The results indicate that the regression model was statistically significant F (1, 255) = 15.165 p value = 0.000. Adjusted r squared 0.052 shows that the model accounted for 5.2% variance. The standardized beta coefficient of 0.237 with p value 0.000 was also statically significant. This leads to failure to reject hypothesis H_1 and conclude that there is a statistically significant relationship between Internet usage and holistic student development. The regression equation is presented as (i)

$Y= 2.714 + 0.237X$ (i)

Where:

Y= Holistic student development

X= Internet usage

This implies that for every unit change in Internet usage there will be a change of 0.237 in holistic student development. To accelerate holistic student development therefore management of university should ensure that students have adequate access to internet.

Table 11: Regression analysis for Internet usage and holistic student development

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.237[a]	.056	.052	.684214	.056	15.165	1	255	.000	1.842

a. Predictors: (Constant), Internet usage

b. Dependent Variable: holistic student development

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.714	.226		11.989	.000					
	Internet usage	.247	.063	.237	3.894	.000	.237	.237	.237	1.000	1.000

a. Dependent Variable: holistic student development

Source: Primary data

H_2: There is a statistically significant relationship between Internet usage and Internet addiction.

The results of regression analysis are presented in Table 12

Table 12: Regression analysis on Internet usage and Internet addiction

Model Summary										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.160[a]	.026	.022	.843904	.026	6.729	1	255	.010	1.681
a. Predictors: (Constant), Internet usage										
b. Dependent Variable: Internet addiction										

Coefficients[a]											
Model		Unstandardized Coefficients		Std Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zeroorder	Partial	Part	Tolerance	VIF
1	(Constant)	1.715	.279		6.143	.000					
	Internet usage	.203	.078	.160	2.594	.010	.160	.160	.16	1.000	1.000
a. Dependent Variable: Internet addiction											

Source: Primary data

The results indicate that the regression model was statistically significant F (1,255) =6.729 with a p value of 0.010 and adjusted r square of 0.022 which indicate that the model accounted for 2.2% variance. The standardized beta coefficient of 0.160 p value of 0.010 was also statistically significant. The study fails to reject H_2concluding that Internet usage leads to Internet addiction. The regression equation for this relationship is presented as

$Y= 1.715 + 0.160X$ (ii)

Where

Y= Internet addiction

X= Internet usage

This imply that for a unit change in Internet usage, there will be 0.160 change in Internet addiction.The low variance of 2% implies that internet addiction has not had much effect among the student and its effect. However, university management need to take keen interest on the subject as it might prove to be a challenge in the near future.

H_3: Internet addiction significantly affects holistic student development.

Table 13 presents results of H_3

Table 13: Internet addiction and holistic student development

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.219[a]	.048	.044	.695512
a. Predictors: (Constant), addiction				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.032	1	6.032	12.469	.000[b]
	Residual	119.967	248	.484		
	Total	125.998	249			
a. Dependent Variable: holistic student development						
b. Predictors: (Constant), addiction						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.140	.131		23.927	.000
	addiction	.180	.051	.219	3.531	.000
a. Dependent Variable: holistic student development						

Source: primary data

The results indicate that the regression model was statistically significant F 1, =12.469 with r square adjusted at 4.4 %. The standardized beta coefficient of 0.219 was also statistically significant. Based on these results the study fails to reject hypothesis H_3 and conclude that Internet addiction has statistical significant effect on holistic student development.

H4: Internet access constraints has significant effect on holistic student development

Table 14: Internet access constraints and holistic student development

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R^2Change	F Change	df1	df2	Sig. F Change
1	.048[a]	.002	-.002	.7090412	.002	.577	1	251	.448
a. Predictors: (Constant), Internet Accessconstraints									
b. Dependent Variable: Holisticstudentdevelopment									

Coefficientsa					
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.450	.177		19.516	.000
	Accessconstraints	.046	.060	.048	.760	.448
a. Dependent Variable: holisticstudentdevelopment						

Source: primary data

The results in table 14 show that both the model and the beta coefficients are insignificant with p-value of 0.448 indicating that internet access has no significant effect on holistic student development

H5: Internet access significantly moderate the relationship between internet usage and student holistic development

Table: 15 Moderating effect of Internet access constraints on relationship between Internet usage and holistic student development

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.240[a]	.057	.050	.6905494	.057	7.616	2	250	.001
a. Predictors: (Constant), usage, centered means									
b. Dependent Variable: holisticstudentdevelopment									

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.263	2	3.632	7.616	.001[b]
	Residual	119.215	250	.477		
	Total	126.478	252			
a. Dependent Variable: holistic student development						
b. Predictors: (Constant), usage, centered means						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.691	.232		11.594	.000
	Centered means	-.003	.077	-.003	-.044	.965
	usage	.254	.065	.240	3.900	.000
a. Dependent Variable: holistic student development						

Source: Primary data

To test moderating effect of internet access constraints on relationship between usage and student development, a multiple regression involving internet usage and interaction term was carried. The regression model was statistically significant with a P value of 0.001 and adjusted r squared of 0.05 indicating that the variables explained 5% variance on holistic student development. The beta coeffiecnt for the internet usage 0.254 was statistically significant while that of interaction term was insignificant with a p value of 0.965 which imply that internet access constraints has no moderating effect on the relationship between usage and holistic student development.

V. Discussion and conclusion

The aim of this study was to establish the effect of Internet usage on holistic student development and further assess the moderating effect of internet access constraints and internet addiction. Factors analysis results established that Internet usage affects social, academic, character and overall development of students. Use of Internet by student has brought about increase in knowledge, greater market access as well as widened scope of the study. The use of internet has given students greater access to learning materials which can be purchase easily online. This has contributed positively to increase in knowledge among students as it enables students to

interact with a variety of methods of acquiring knowledge as well as modes of study that are more flexible. Further internet usage enhances communication and interactions between faculty and students, enriching learning for both parties. As students use internet, they are opened up to online business transactions improving their economic wellbeing. Internet usage has capacity to strengthen friendship and enrich entertainment that go a long way to enhance students' sociallife.

The analysis on internet access constraints revealed that internet speed remains a major challenge among students. Though Kenya is rated as one with highest internetspeed in Africa and even higher than the United States, it is still one of themajor constraints toholistic student development. Majority of students feel that internet is not as affordable especially the access devices required such as smart phones, tablets and computers. Internet security as well as infringement of privacy of users remains a big challenge with negative effect on users. There is need for technology that guarantees security of data as well as ensuring that one's private information and data remains intact despite being online. Internet access restriction especially among students inhibits exploitation of potential. Internet access constraintshampers holistic students' development and therefore need to be addressed.

The study identified Internet addiction as one of the negative consequences of access and use of internet. Excessive internet usage often leads to addiction that maybe reflected by activities that take priority over constructive hobbies, social interactions as well as family and friends relationships. Internet usage becomes a real challenge when it is used as antidote to life's problems and consumes ones time without control. Craving for internet access as well as feeling of emptiness are indicators of addiction that normally result depression. There is need for training on responsible use internet to avoid addicted especially among students.

Holistic student development is a broad concept affected differently by internet usage among other factors. The study has shown that access to internet enhances learning among students as it greatly reduces learning expenses, provideseconomic support for its users, enhances career development as well as well as confidence building. Expansive and enhanced interactions as well as building of one's reputation are part of holistic student development that are significantly contributed by internet usage. This study therefore concludes that internet access is an essential part of holistic student development that must be enhanced for proper development. Without internet access holistic student development will be hampered and therefore the need to address access constraints.

Regression analysis revealed more information on relationship between internet usage and holistic student development.Though a positive relationship exists, it is not as strong as would be expected. This could be explained by other factors such as internet addiction and internet access. Internet addiction showed statistical significance as intervening variable with negative effect on holistic student development. This explains the weak relationship between internet usage and holistic student development as the positive gains of internet usage are downplayed by the negative effects of addiction. The statistical insignificance of access constraints on its moderating effect between internet usage and holistic student development imply its inconsequential role in the variables relationship.

Based on the findings of this study, there are implications for students, learning institutions, policy makers and society in general. Internet usage enhances holistic student development and therefore student should appreciate its role in their wholesome development. Students should explore different ways of interacting with internet to enhance information search, communication, entrainment and economic wellbeing. They should however, be well aware that excessive use may lead to internet addiction with negative effects on academic, family and social life.Learning institution should embrace use of internet by their students to enhance learning and also put in place control mechanisms to address negative effects of internet usage. Policy makers should incorporate usage of internet in the education system and put measures to avoid abuse. The society in general should support use of internet for student developmentbearing in mind its possible negative effects. This study covered use of internet only among university students and therefore future studies should incorporate students in primary and secondary school levels. They should also incorporate qualitative techniques as this study focused on quantitative method.

Reference

[1]. Akamai State of the Internet Report Q1 2017
[2]. Akyildiz I.F, (2018) Internet of Things: Trends, Directions, Opportunities, Challenges Retrieved from: http://www.ece.gatech.edu/research/labs/bwn
[3]. Allison B, Heather H, Jennifer N, &Karyn R (2013)) Student Perspectives on the Importance and Use of Technology in Learning; Annual Forum of the Association for Institutional Research, May 18-22, 2013 Long Beach, California
[4]. Asibey B.O, Agyemang S., and DankwahA.B (2017) The Internet Use for Health Information Seeking among Ghanaian University Students: A Cross-Sectional Study. International Journal of Telemedicine and Applications, Article ID 1756473, 9 pages https://doi.org/10.1155/2017/1756473
[5]. Bahrainian A, &Khazaee A. (2014) Internet Addiction among Students: the Relation of Self-esteem and Depression Bull. Env. Pharmacol. Life Sci., Vol 3 (3)

[6]. E. Williams, Nwagwu J, &Adekannbi O. B, (2009),"Factors influencing use of the internet", The Electronic Library, Vol. 27 Iss 4 pp. 718 - 734
[7]. Gin Y.S (2011). A study of internet addiction among students of SekolahMenengahJenisKebangsaan Pei yuan, Kampar. Unpublished research paper UniversitiTunku Abdul Rahman
http://netaddiction.com
http://www.Internetworldstats.com/stats.htm
[8]. Huitt, W. (2011, July). A holistic view of education and schooling: Guiding students to develop capacities, acquire virtues, and provide service. Revision of paper presented at the 12th Annual International Conference sponsored by the Athens Institute for Education and Research (ATINER), May 24-27, Athens, Greece. Retrieved from http://www.edpsycinteractive.org/papers/holistic-view-of-schooling-rev.pdf
[9]. International Telecommunications Union. (2012). Internet of Things Global Standards Initiative. Retrieved from http://www.itu.int/en/ITU-T/gsi/iot/Pages/default.aspx
[10]. Internet Society (2017), Internet Access and Education: Key considerations for policy makers
[11]. Inwon K., Matthew M., & Shin C. P, (2013),"Internet addiction as a manageable resource: a focus on social network services", Online Information Review, Vol. 37 Iss 1 pp. 28 – 41
[12]. Jagboro, K.O. (2003), "A study of internet usage in Nigerian universities: a case study of Obafemi Awolowo University, Ile-Ife, Nigeria", First Monday, Vol. 8 No. 2
[13]. Jenney T.J (2013). The holistic development of college students: spirituality as a predictor of college student's pro-social character development: Research gate
[14]. Jiang Q. (2014),"Internet addiction among young people in China", Internet Research, Vol. 24 Iss 1 pp. 2 – 20
[15]. Jim C (2015) High school students' academic performance and internet usage, Journal of Economics and Economic Education Research, Volume 12, Number 1:
[16]. Kabuba P.K. (2014) E-Commerce and Performance of Online Businesses in Kenya. Unpublished Master's Thesis, University of Nairobi
[17]. Kuhlthau, C. (1993a). A principle of uncertainty for information seeking. *Journal of Documentation*, 49(4), 339-355.
[18]. Mahmoud G &Nesami M.G (2014) Internet addiction among students of Islamic Azad University, Research gate.
[19]. Porter M.E (2001) Strategy and the Internet, Harvard Business Review
[20]. Quinlan K.M (2011) Developing the whole student: leading higher education initiatives that integrate mind and heart Oxford Learning Institute, University of Oxford
[21]. Ramzan H., Ghahraman M., Masoumeh B. & J. F(2014) Internet addiction among students of Islamic Azad University Journal of Nursing and Midwifery Sciences 2014: 1(2): 46-50R
[22]. Shek D, (2010) Nurturing Holistic Development of University Students in Hong Kong: Where Are We and Where Should We Go? The Scientific World JOURNAL (2010) 10, 563–575
[23]. Tang J[1], Yu Y[2], Du Y[3], Ma Y[4], Zhang D[5],& Wang J[6]. Prevalence of Internet addictionand its association with stressful life events and psychological symptoms among adolescent Internet users.
[24]. United Nations Educational, Scientific and Cultural Organization (2003) Internet in education support materials for educators, UNESCO institute for information technologies in education
[25]. Waithaka M.W (2013) Internet use among university students in Kenya: a case study of the University of Nairobi. Unpublished master thesis, University of Nairobi

Dr. John N Kamau. "Internet Usage, Access Constraints, Addiction and Holistic Student Development". IOSR Journal of Research & Method in Education (IOSR-JRME) , vol. 9, no. 1, 2019, pp. 54-66.