The Effect of Mobile Data Bundle Plans on Access to Online Educational Content Among Public University Students in Kenya

Sonfred Kiamati Mwendia, MSc in Information Technology, Multimedia University of Kenya
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Abstract

The blistering internet technologies of mobile internet has transformed the accessibility of educational resources in higher education, especially in developing nations where institutional internet access is still restricted. This research evaluates how mobile data bundle plan can influence the access to online education content by students in Multimedia University of Kenya (MMU). Based on a descriptive survey design of 404 participants, the research explores the effects of daily, weekly, and monthly data plans on the capacity of the students to access digital learning materials. The results indicate that most students use daily data bundles because of the affordability although it has limitations in terms of data volume and validity. The statistical analysis shows that there is a great positive correlation between the preferences of mobile data plans and the availability of online educational material. The cost, data capacity, and validity period becomes a significant factor in the access patterns of students. The paper comes to a conclusion that mobile data bundles are flexible and more accessible, but their cost and structural constraints do not facilitate academic sustainability. It suggests student data plan subsidies and institutional arrangements with telecommunication companies to enhance equal access to online learning materials.

Keywords: Mobile data plans; Access to online learning; Student internet usage; Digital accessibility; Data cost constraints; Mobile connectivity; E-learning adoption; ICT in higher education; Kenya; Digital inequality

Introduction

The adoption of digital technologies in the sphere of higher education has completely changed the manner in which students can access and interact with educational materials. Digital libraries, online learning platforms, and virtual classrooms now form a vital part of a modern academic setting. But access to these digital resources is limited in most developing countries such as Kenya due to infrastructural and economic factors. The internet services provided by universities usually have poor bandwidth, coverage and are often disrupted and this forces the students to find alternative ways of accessing online educational materials (Bidin & Ziden 2013).

In Multimedia University of Kenya (MMU), the challenges have created a precedence towards use of mobile data bundles as one of the major internet access providers. Mobile data bundles, which are provided by telecommunication companies in different forms like daily, weekly, and monthly are now a vital facilitator of digital learning. However, these plans vary widely in terms of cost, volume of data and length of validity, which directly impact on accessibility of educational material by students.

The current research is aimed at evaluating how these mobile data bundle schemes impact the access of online learning materials by students. Through the analysis of the patterns of usage, the costs, and the relationships with the statistics, the study will lead to the empirical understanding of how mobile data structures influence digital learning experiences among students of the university. This discussion is especially significant in the light of the growing digitalization of education, where fair access to online materials is an important issue.

Literature Review

Kenya currently has three major mobile phone network operators who offer mobile phone internet/data services to their mobile telephony consumers. These operators are Safaricom Limited leads the market with the largest share of mobile subscriptions followed by Airtel at is second while Telkom Kenya (formally known as Orange) is positioned third. In reference to Communications Authority of Kenya reports on mobile phone data/internet representation distribution Safaricom is at 67.5%, Airtel at 19.7%, Telkom Kenya at 7.1% while other companies possess 5.7% of mobile data/internet in the market share. The listed mobile data/internet operators provide

different mobile data plan services. A survey by Gemeda, & Thakur. (2017) on Alliance for Affordable Internet showed that Airtel Kenya had seven types of mobile data plans on offer, while Telkom Kenya had five, and Safaricom had four. The report further revealed that Kenyan mobile data/Internet plans on offer were grouped into three categories, depending on data limits and the validity period of the data.

This research is centered on the model of Technology Acceptance Model (TAM). The model is aimed at explaining what actions influence technology users to accept and use a certain technology. Referring to TAM's model by Davis, this research aims at revealing factors that influenced MMU students to use their Mobile Devices Technology when searching for educational content and other relevant learning materials from the Internet. Introduced in 1989 by Fred Davis, TAM's model of technology adoption suggests that numerous factors inspire users' decisions. However, when presented with new technology, numerous factors inspire users on when and how one uses it (Makokha & Mutisya 2016). The model further aims at predicting the acceptance of users to an information technology system as well as assisting the researcher to detect issues related to the design before the users approve the usage of the systems.

Access to online resources using mobile devices relies primarily on mobile data or connection through the WIFI facilities. Internet access allows users to download or upload content online. The cost of mobile data bundles varies from one mobile data provider to another. The survey report of 2016 conducted by (Gemeda & Thakur, 2017) reported that, Kenyan Mobile Data plans were grouped depending on data limits and the validity period of the data, that is, Full-Cost Data Bundle, Service-Specific Data Bundle, and Zero-Rated Data Bundle. Mobile uploads or downloads are dependent on available data bundles. This process is measured in the form of a megabit per second (MBPS). For students to access online educational content, a student is required to have enough data bundles that will provide the required MBPS for the action. Insufficient data bundles will not fully support content access, after mobile data is depleted, the user is required to repurchase mobile data to continue with the process of content access. This research therefore sought to shed some light on possibilities that can be applied across MMU students to allow students direct access to education without the need of having to worry about data bundles.

Methodology

The research design used was a descriptive survey design that aimed to explore the correlation that exists between mobile data bundle plans and access to online educational content among students in Multimedia University of Kenya. The target population was undergraduate students in various faculties and a sample population of 482 students was reached using both the stratified and simple random sampling methods. Among them, 404 students managed to complete the survey questionnaire, hence the response rate of 83.8.

The data collection was done using an online structured questionnaire mailed through email. The questionnaire contained questions that assessed how the students use mobile data bundles, their preferences towards particular data plans and their perceptions of the impact of the data plans on their accessibility to educational content. The application of an online survey was valid due to the nature of the study which was on digital access and made sure that respondents were conversant with online platforms.

IBM SPSS Statistics was used in data analysis and both descriptive and inferential methods were applied. Patterns of data bundle were summarized using descriptive statistics and the relationship between mobile data plans and access to online educational content studied using inferential statistics including regression and correlation analyses.

Findings

The researcher wanted to establish a mobile data bundle plan used by the respondents when accessing online educational content (eMaterials). These plans are categorized into three; daily data tariffs, weekly data tariffs, and monthly data tariffs.

A daily data bundle model refers to a data plan that lasts for 24 hours after the purchase. This data model allows one to access online content or electronic materials within the defined timeframe. After the defined time

purchased data bundles expire and one is not allowed to access online services after the expiry. A weekly data bundle refers to Internet data that expires one week after purchase while a monthly data bundle refers to a type of Internet data that expires one month after the date of purchase. The cost of these data bundles varies from one level to another with monthly data bundles costing higher than weekly data bundles and daily data bundles ranked cheapest among the listed three.

From the study responses on data bundle plans used by MMU university students when accessing online educational content, 52.7 % (213) of the respondents used daily data bundle plans, 141 respondents (34.9%) preferred using a weekly data bundle plan whilst 12.4% (50) respondents used monthly data bundles plans. Usage of a specific data plan was attributed to cost, data capacity measured in MBs and GBs, and time it takes for data to expire. The results of the findings are presented in Table 1.

Data Bundle Plan	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Daily	213	52.7	52.7	52.7
Weekly	141	34.9	34.9	87.6
Monthly	50	12.4	12.4	100.0
Total	404	100.0	100.0	

Table1: Frequency Distributions on Mobile Data Plan's usage at MMU

The researcher wanted to find out the level of usage on the available categorized mobile data bundle plan categories. From the report presented in Table 2, the majority of respondents used "Above 150MB" (63.9%) daily, followed closely by the "50MB – 99MB" category which had 63.7%. "100MB – 149MB" was placed in the third position with 58.0% while "21MB – 49MB" ranked fourth and "1MB- 20MB" fifth with 54.6% and 41.4% respectively. On the other hand, the responses of the non-usage of categorized data bundle category were 30.2% for "1MB – 20MB", 17.6% for "Above 150MB", 16.6% for "21MB – 49MB", 15.1% and 10.6% for "50MB - 99MB".

Data Plan Categories		**1MB - 20MB**		**21MB - 49MB**		**50MB - 99MB**		**100MB - 149MB**		**Above 150MB**	
	Scale	*f*	*(%)*	*f*	*(%)*	*f*	*(%)*	*f*	*(%)*	*f*	*(%)*
Rating of daily usage data bundle categories	Never	122	30.2	67	16.6	43	10.6	61	15.1	71	17.6
	Moderate	***71***	***17.6***	***81***	***20***	***56***	***13.9***	***65***	***16.1***	***52***	***12.9***
	Often	***31***	***7.7***	***62***	***15.3***	***58***	***14.4***	***60***	***14.9***	***51***	***12.6***
	Quite Often	***16***	***4***	***34***	***8.4***	***53***	***13.1***	***58***	***14.4***	***46***	***11.4***
	Very Often	***49***	***12.1***	***44***	***10.9***	***90***	***22.3***	***51***	***12.6***	***109***	***27***
	Sub - Total	***167***	***41.4***	***221***	***54.6***	***257***	***63.7***	***234***	***58***	***258***	***63.9***
Missing	System	115	28.5	116	28.7	104	25.7	109	27	75	18.6
Total		404	100	404	100	404	100	404	100	404	100

Table 2: Respondents' Daily Data Bundle Rating

To identify different criteria used by MMU students' when making internet selection four selection criteria were evaluated. These selection criteria are High Speed On Uploads and Downloads, Flexible Internet Bundles Costs, Easy Access to Mobile Internet Bundles, and Internet Mobility. The results of the findings were Flexible internet bundles lead the list with 269 (66.6%) followed by high speed on uploads and downloads with 237 (58.7%) which was closely followed by Internet mobility with 229 (57.0%). Easy access to mobile Internet bundles came last on the list with 226 (55.9%) responses.

The inferential statistical analysis also showed that mobile data bundle plans were important in determining access to online educational information. The regression model showed that there is a positive and statistically significant association between data plan preferences and access to educational resources with a beta of 0.068 with a p-value of 0.033. This means that when data bundle plans are better, e.g., when they are cheaper or have more data, the access to online education content improves.

Likewise, the correlation analysis revealed that there was a significant positive correlation between the preferences of mobile data plans and the availability of educational content, with the correlation coefficient of 0.101 with $p < 0.05$. According to these findings, the null hypothesis according to which the preferences towards mobile data plans do not have any impact on the access to online education content was rejected. This supports the fact that mobile data bundle schemes are very important factors that influence access among students to online learning materials.

Discussion

The results of the current research are rather strong evidence that mobile data bundle packages can play a vital role in determining the availability of online educational resources to university students. The fact that the majority of data packages are daily is indicative of the economic realities that students are exposed to, where they are concerned with the affordability and not the long-term value. This is in line with the current literature which provides cost as one of the main obstacles to internet access in the developing world (Gemeda & Thakur, 2017).

Nonetheless, there are a number of challenges brought by the dependence on daily bundles. The small data storage and the small validity of these plans limit unlimited access to educational resources and students have to buy more data regularly. This does not only make the general cost of access to the internet more expensive but also breaks the continuity of learning especially in activities that cannot be conducted without constant connectivity like streaming lectures or even engaging in online discussions.

Another paradox of mobile data usage is also exposed in the study. On the one hand, mobile data bundles are flexible and mobile, allowing students to study in different places, but, on the other hand, they also introduce some limitations that restrict their usefulness. This two-sidedness is what explains why more sustainable data solutions are needed, which can offer a middle ground between affordability and functionality.

Moreover, the strong correlation between data plan preferences and access to educational material underlines the need to structure data bundle in accordance with academic requirements of students. This incorporates the offering of bigger data volumes, longer validity durations and lower-cost alternatives. The absence of such changes means that mobile data bundles can remain a partial solution to the issues of digital access in higher education, as opposed to a comprehensive one.

Conclusion

This paper has established that mobile data bundle plans have a considerable impact in accessing online educational content by students in Multimedia University of Kenya. The results show that daily data packages are the most widespread ones as they are cost-effective, but they do not provide enough to address the requirements of digital learning. The biggest challenge is the cost, which has restricted access of students to online educational resources.

The correlation between the preference towards data plans and the availability of educational material is positive, which highlights the need to improve the mobile data structures to improve the digital learning outcomes. Though mobile data bundles are a convenient and dynamic way of staying connected, their constraint points to the importance of more sustainable and inclusive ways of living.

Recommendations

The study recommends that telecommunication operators should come up with subsidized data bundle packages which are specifically student friendly, where the data volumes are higher but at lower prices. It further implies that institutions of higher learning enter into agreements with cell phone carriers to offer cheap or free use of educational platforms and online libraries. Moreover, policy interventions that would facilitate equal access to internet services in higher learning are required. Lastly, universities ought to invest in the developments of their internal internet infrastructure to minimize the use of mobile data bundles among students.

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