

**ICT Penetration and Utilization:**

**A Tool for Diversity, Inclusion and Participation in Public Service**

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## **Abstract**

Effective penetration and utilization of ICT in the public service for high-end value-adding operations in local government is crucial to enhance effective and efficient services that satisfy the citizens and other stakeholders. Affirmative action with respect to gender balance, education level and age among others has been reinforced under the Kenya Constitution 2010. It is important to study the level of ICT penetration and utilization across these categories and perhaps develop new insights into the role of ICT in facilitating diversity, inclusion and participation. This study sought to find out whether there are any significant differences between the different gender, education levels and age on the ICT penetration and utilization. Three councils were purposively selected for this study. Stratified random sampling was employed to obtain respondents within the councils. Eighty respondents were obtained with a ratio of proportional allocation being used to allocate proportionate samples to the councils and their departments based on the respective staff populations. An ICT penetration and utilization index was developed based on a custom-made weighting. Pearson Moment of Correlation Coefficient and test of statistical significance were used to compare the strength of linear relationship between the ICT penetration and utilization index and gender, education and age. It was noted that there is no significant difference between male and female on ICT penetration and utilization while there are variations across different education levels and ages.

Key words: ICT penetration and utilization, affirmative action, diversity, inclusion and participation.

## **1. Introduction and Review**

The Kenya Vision 2030 considers infrastructure development as a key enabler of economic, social and political development of the nation (GOK, 2007) while admitting that the country lacks adequate ICT infrastructure (GOK, 2006). The country therefore set out to develop a robust infrastructure under the Kenya ICT strategy 2006. This momentum in infrastructural development includes power, road, rail, air and water transport, Internet backbone across all towns and telecommunications installations among others. The availability of ICT infrastructure is key to accelerated run towards the achievement of an information society status (ITU-WTD, 2003).

It is noted that any additional dollar invested into the purchases of ICT capital per individual in Latin America, developing Asian or African countries increases efficiency (and consequently service delivery) by almost ten times (Repkine, 2008). This picture is replicated in the developed countries with every one dollar of broadband investment in the US yielding up to ten times while faster deployment of broadband in Europe is expected to create over one million jobs in Europe by 2015 (WEF, 2009). Thus, improving ICT infrastructure in Kenya would be expected to improve economic development and service delivery tremendously.

However, the acquisition of information systems, including computers and related hardware and software systems may not offer sufficient service delivery results. People are as important as technology and listening to workers' views about how ICT could improve the quality of public services delivery would help public services use of ICT more efficiently and effectively (Alexandra & Laura, 2005). It is thus critical that workers are involved in making decisions in the process of acquiring ICT infrastructure; be it software, hardware or human resources.

In terms of diversity, inclusion and participation (Imbuga and Thoruwa 2011) the constitution requires the affording of adequate and equal opportunities for appointment, training and advancement, at all levels of the public service, of men and women; the members of all ethnic groups; and persons with disabilities (National Council for Law Reporting 2010).

Diversity is any dimension that can be used to differentiate groups and people from one another. It means respect for and appreciation of differences in ethnicity, gender, age, national origin, disability, sexual orientation, education, and religion. We all bring with us diverse perspectives, work experiences, life styles and cultures. As a source and driver of innovation, diversity is a "big idea" in business and in society. In teams and leadership, diversity improves potential and strengthens innovation.

The aim of inclusion is to embrace all people irrespective of race, gender, disability, medical or other need. It is about giving equal access and opportunities and getting rid of discrimination and intolerance (removal of barriers). Inclusion is a state of being valued, respected and supported. It's about focusing on the needs of every individual and ensuring the right conditions are in place for each person to achieve his or her full potential. Inclusion should be reflected in an organization's culture, practices and relationships that are in place to support a diverse workforce.

Participation is the informed, autonomous and meaningful involvement of a community in influencing decision making and action. Participation is the process through which stakeholders influence and share control over priority setting, policy-making, resource allocations and access to public goods and services. Full participation involves not only knowledge acquisition, but also becoming part of the community.

## **2. Methodology**

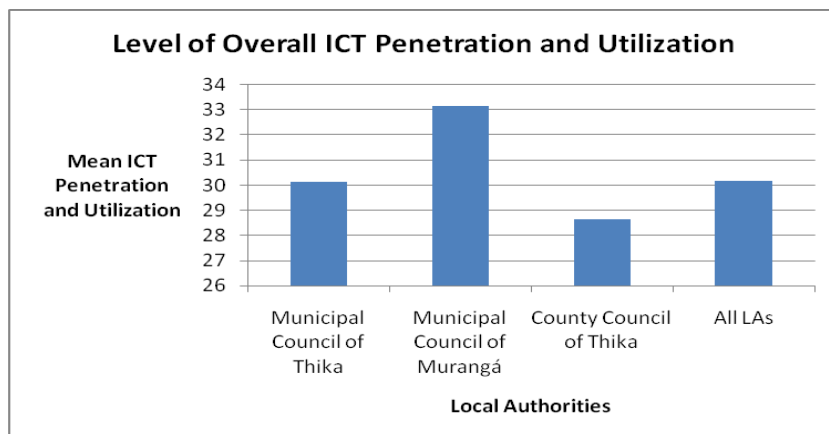
Three councils were purposively selected for the study out of the 175 councils in Kenya. A sample of eighty respondents was drawn for the entire study. To ensure a fair representation for the three councils and the respective departments a ratio of proportional allocation was used (Kothari, 2004). Stratified random sampling was used for the study given the heterogeneity of the target population (Kothari, 2004). Interviews were used to obtain information on specific ICT resources including bandwidth, number of computers and printers and ICT budgetary allocations to complement the questionnaires in the research.

For the purpose of this study an ICT penetration and utilization index was developed based on the perceived contribution by each element to ICT penetration and utilization with access weights of range 1 to 10 allocated to the elements namely direct telephone line, telephone extension, computer, mobile phone, personal e-mail address and institutional e-mail address and usage weights being allocated on a scale of 1 to 5 based on the perceived level of sophistication of the user on the given ICT tool and the level of investment (skill, effort and finance) required to reach that level of usage. Pearson Moment of Correlation Coefficient and test of statistical significance were used to compare the strength of linear relationship between the ICT penetration and utilization index and gender, education and age. It was noted that there is no significant difference between male and female on ICT penetration and utilization while there are variations across different education levels and ages.

### 3. Results and Discussion

#### 3.1. Level of ICT Penetration and Utilization

The councils in the survey recorded mean ICT penetration and utilization levels of 30.12%, 33.13% and 28.66% for MCT, MCM and CCT respectively while the overall mean ICT penetration and utilization for the three councils was 30.15% as shown below.



**Figure 1: Level of Overall ICT Penetration and Utilization**

**Table 1: Overall ICT Penetration and Utilization in the Survey**

Council	Min.	Percentile 25	Percentile 50	Percentile 75	Max.	Mean	Std Dev.
MCT	6.02	14.46	11.44	18.08	80.72	30.12	17.74
MCM	8.43	11.75	25.6	13.55	61.45	33.13	18.8
CCT	0	10.84	12.05	20.48	72.29	28.66	20.53
Overall	0	14.46	10.84	18.07	80.72	30.15	18.4

n = 75

Table 1 above shows the level of ICT penetration and utilization along the percentiles for the three councils surveyed and the overall level for three councils combined. The uppermost row indicates the level attained at each percentile while the leftmost column indicates the three councils and the overall penetration and utilization level. In the first percentile (1-

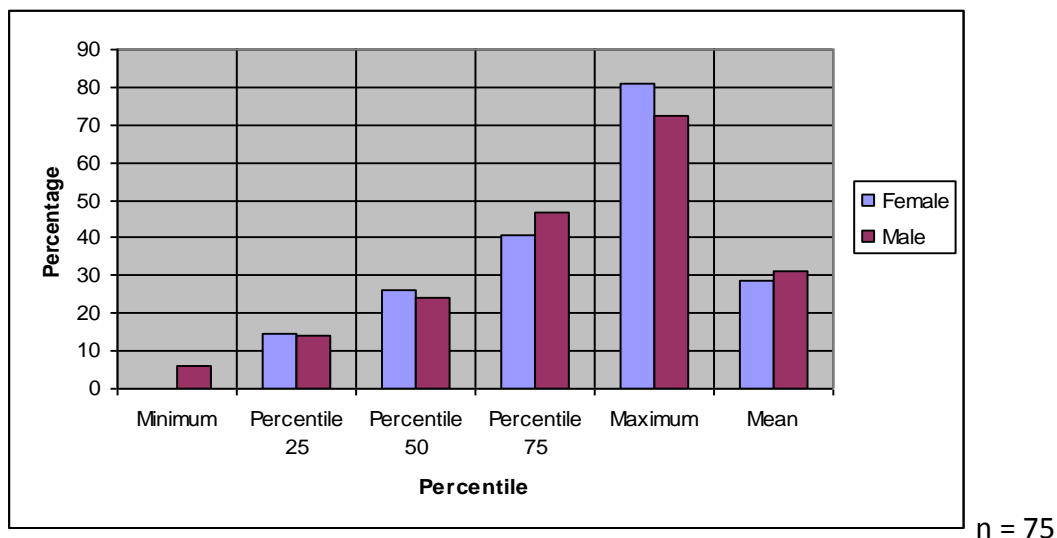
25%) we have 14.46% level of overall ICT penetration and utilization. In the second (26-50%) and third (51-75%) percentiles we have 10.84% and 18.07% respectively.

Considering the cumulative (sum of current percentile and the previous percentiles) figures across the percentiles, the overall ICT penetration and utilization the indication is that 25% of the respondents are at 14.46% level of ICT penetration and utilization, 50% respondents at 25.3%, and 75% respondents at 43.37%. Assuming that there were no errors in the sampling and sample design then the level of ICT penetration and utilization is quite low in all the councils involved.

ICT resources were noted to have a great linear correlation with the level of ICT penetration and utilization with Pearson Moment Coefficient of Correlation  $r=0.667$  and statistical significance  $p<0.01$ .

### 3.2. ICT Penetration and Utilization versus Gender

There is no indication that the level of ICT penetration and utilization varies with gender. Both male and female staff was found to be at par across the percentiles with respect to the ICT penetration and utilization index as indicated in Figure 2 below:

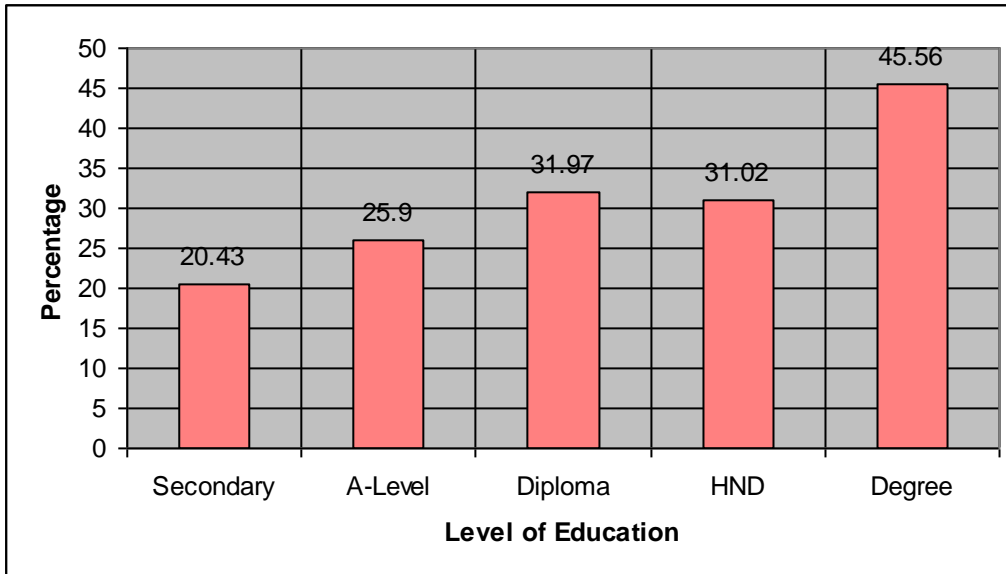


**Figure 2:** *ICT Penetration and Utilization by Gender*

### 3.3. ICT Penetration and Utilization versus Education

The level of education, on the other hand, has a strong linear relationship with ICT penetration and utilization. The ICT penetration and utilization is seen to gradually increase with an increase on the level of education from secondary school leavers at 20.43% to degree holders at 45.56% as indicated in Figure 3 overleaf.

An investment in more educated staff is thus pertinent to improved ICT penetration and utilization.



n = 75

**Figure 3: ICT Penetration by Level of Education**

The above is further confirmed by the Pearson Moment of Correlation Coefficient value,  $r$ , of 0.416 and  $p < 0.01$  meaning that there is a significant linear correlation between the level of education and the ICT penetration and utilization. This means that a greater investment in better educated staff would be an incentive towards an increased ICT penetration and utilization. However, it is also noteworthy that the difference between the lowest and highest of education with regard to ICT penetration and utilization is not significantly large. This means that ICT offers opportunities for engagement of all cadres of employees regardless of their highest academic level.

#### 4. Conclusion

It is noteworthy that both male and female gender remained at par with respect to ICT penetration and utilization. This means that there was equal access and use of ICT in the local authorities surveyed.

The study has revealed that massive investment in ICT resources in the labour force would provide equal chance for effective engagement in service delivery regardless of gender. ICT is seen to provide equal opportunity for men and women and reinforce their diversity, inclusion and participation in the labour force. It also means that high adoption of ICT in public service would provide opportunity for the inclusion and participation of young school leavers and enhance their active engagement in the public service.

The results of this study can be used to guide the access and use of ICT in the National and County Governments as well as local authorities towards implementation of vision 2030.

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