

# RANTIP -Cloud Computing Research

Case of KENYA

**(CLOUD USER PERSPECTIVES)**

NOV 2017

Dr. T. Omwansa & J. Walubengo

# 1. Background

- Research is part of the Regional Academic Network on IT Policy (RANTIP)
- **Aim**
  - To study cloud service provision, adoption and usage in Kenya, particularly within the public sector.
- **Methodology**
  - Surveyed Respondents from the *Cloud Provider & Cloud User Perspectives*. Nine (9) Cloud Providers and Fifteen (15) Cloud Users gave feedback with the majority coming from the public sector.

## 2a. Objectives

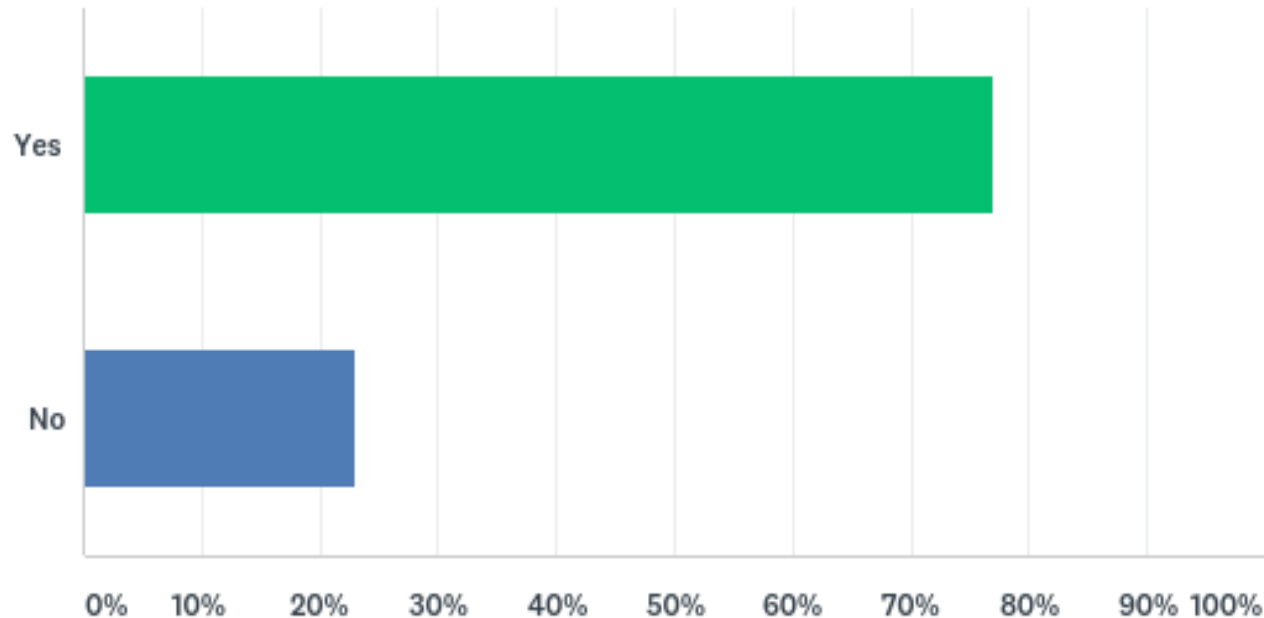
- To fill the existing research gaps on cloud computing in the public sector in emerging economy contexts.
- To move beyond the traditional primary implementation focus on technology in order to understand social, economic and political factors determining the implementation of cloud computing in the public sector.
- To influence policy by taking the systematic and rigorous evidence into policy processes;
- To identify policy bottlenecks to the implementation of cloud computing in the Kenyan public sector ;
- To provide policy recommendations on how to develop policy frameworks which enable the deployment of cloud computing in the modernization of the public sector and enhancement of service delivery ’

## 2b. Research Questions

- What is the state of the Cloud Provider /Cloud User Industry?
- What are the skills gaps within the Cloud Industry
- What is the status of Cloud use in Public Sector?
- What are the barriers and challenges with respect to adoption of Cloud Computing: - barriers and challenges
- What are the Policy & Regulatory recommendations for Cloud Computing Adoption.

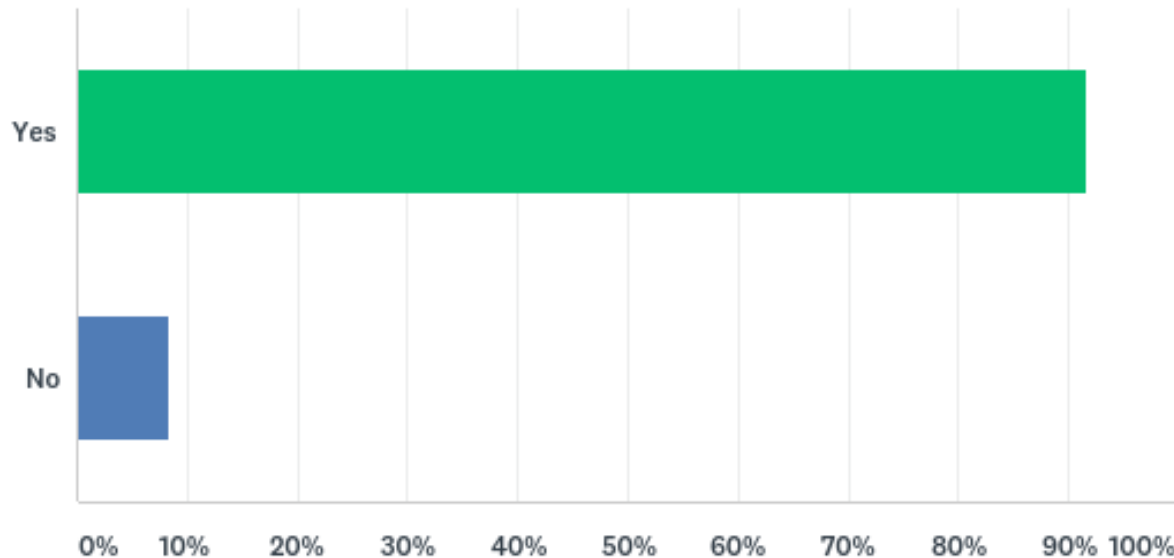
## 3a. Cloud Usage Status/Market Analysis

- Are you currently using cloud services (Y/N/Other)



## 3b. Cloud Usage Status/Market Analysis

- Which aspects of the cloud are you using now ?
  - *PaaS (6/15); IaaS (8/15); SaaS (9/15); None (2/15);*
- Do you plan or consider using cloud services in the future (within 6mths) (Y/N)



## 3c. Cloud Usage Status/Market Analysis

- List what you consider to be your top three preferred cloud service providers in the region.
- **1<sup>st</sup> Preferred Cloud Provider:**
  - Safaricom (6/12); Amazon (3/12); Google (2/12); KENET (1/12)
- **2<sup>nd</sup> Preferred Cloud Provider:**
  - Microsoft (2/10); Amazon (2/10); Safcom; IBM Jamii Telecom; Node Africa, Access Kenya; CloudPap(1/10 each)
- **3<sup>rd</sup> Preferred Cloud Provider:**
  - Liquid (2/10); Safcom, Microsoft, Amazon, Govt Cloud, DropBox, Google

## 3d. Cloud Usage Status/Market Analysis

- Which services have you moved to the cloud?
- **Top Software as a Service:**
  - eMails (7/12), WebService (7/12), Oracle HR, Office 365
- **Top Platform as a Service:**
  - Programming Tools (1/4); None (3/4)
- **Top Infrastructure as a Service:**
  - Storage (5/6)



## 3e. Cloud Usage Status/Market Analysis

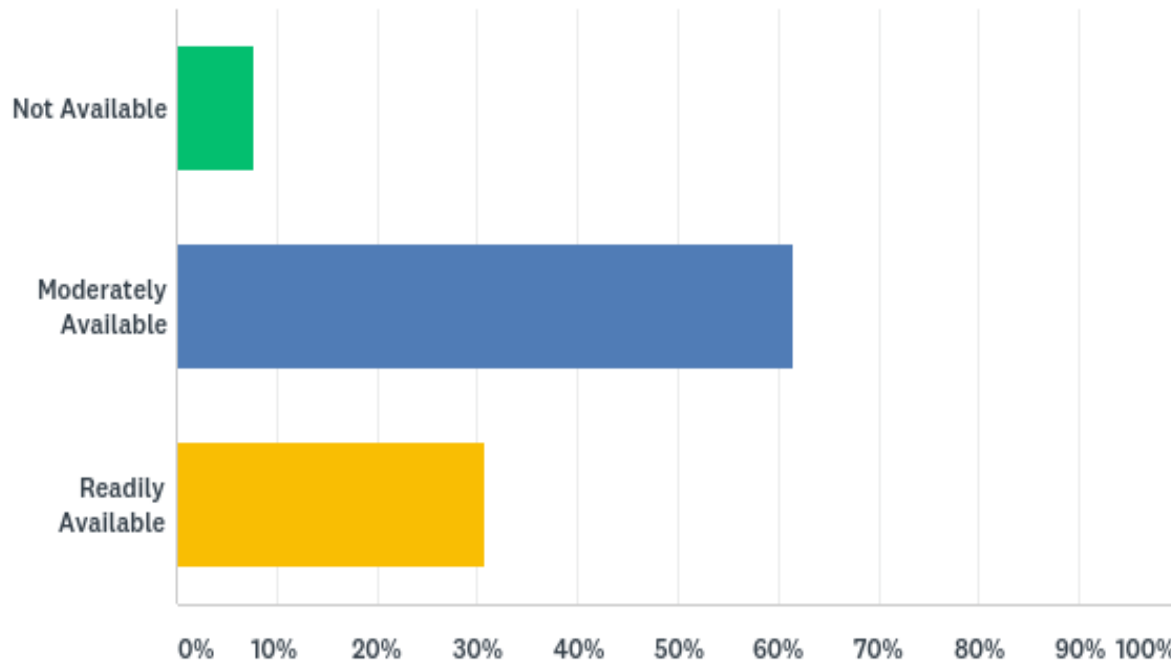
- What are top three/Apps/Services/Resources that your customers mostly use
- **Top (SaaS):**
  - Mail, Office Product, WebApplicaiton, Learning Mngt Sys
- **Top (Paas):**
  - Lamda, PABX, VPNs
- **Top (IaaS):**
  - Storage, Virtual Machines, DR Services

## 3f. Cloud Usage Status/Market Analysis

- Which top three skills do you require internally in order to migrate, manage and support cloud services?
- **1<sup>st</sup> Priority Skills:**
  - Info/Cyber\_Security (4/14); Networking Skills (2/14); Tech Skills (2/14); Dev Ops, Client-Side Mngemt, Cloud Support, Application Support, Prog
- **2<sup>nd</sup> Priority Skills:**
  - Info/Cyber\_Security (3/12); Networking Skills (2/12); Project Mngt; Contract/SLA Mngt; Prog, System Admin, Bus Continuity.
- **3<sup>rd</sup> Priority Skills:**
  - Networking Skills (3/10); Security, Contract/SLA Mngt, Virtualization, Storage, Contracting, DB Management
- (\*nothing on business process re-engineering, cloud roadmap)

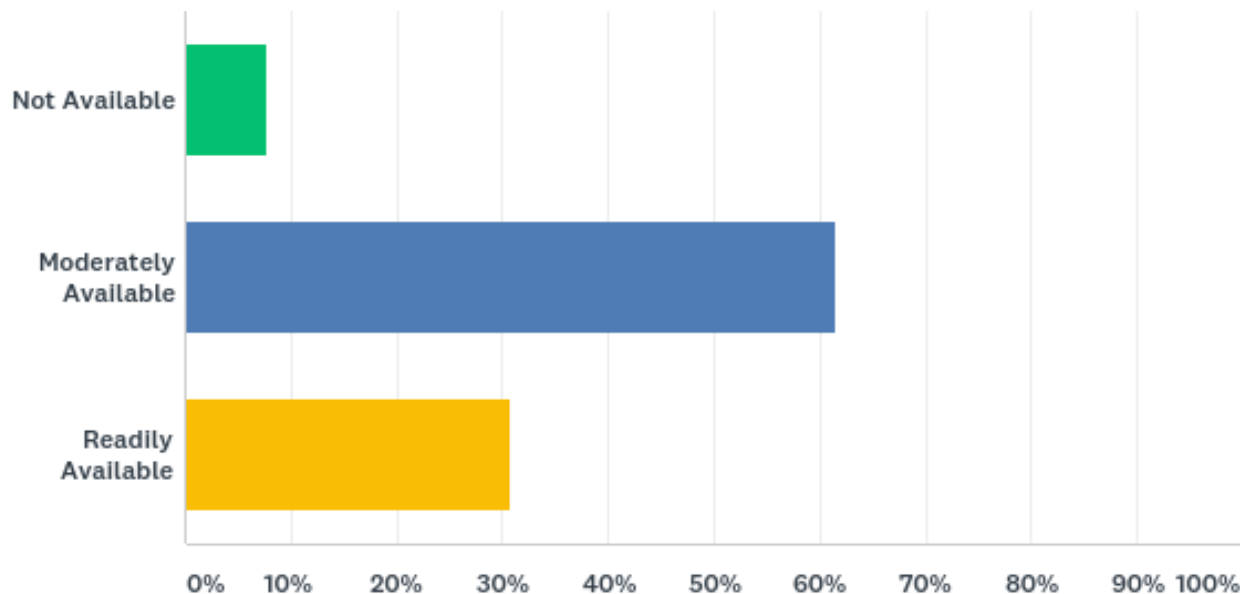
# 3g. Cloud Usage Status/Market Analysis

- To what extent do you feel these skills are readily available locally?



# 4a. Cloud Drivers, Barriers & Challenges

To what extent do you think the Technologies for providing Cloud Computing Services are mature?



## 4b. Cloud Barriers

- What do you think are the top four factors (barriers) that would *negatively* affect your decision to move to the cloud service
- **1<sup>st</sup> Factor:** Security Concerns (6/12); Cost, Procurement risk, Lack of Knowledge/Awareness, Client Side issues & Politics
- **2<sup>nd</sup> Factor:** Security (4/12); Lack of Policy/Laws (Data Protection 2/12), Lack of Knowledge/Awareness, Data Sovereignty /Jurisdiction Issues, Poor Cloud Services, Cost
- **3<sup>rd</sup> Factor:** Lack of Control over Cloud Server/Staff (SLAs); Stability of CloudProvider (Contract transition issues); Poor Connectivity, Fears of Vendor Lock-in, Costs, Procurement Challenge
- **4<sup>th</sup> Factor:** Technical Resistance to Change, Poor Connectivity, Lack of Laws, SLAs (Fears of Vendor Lock-in /contract transition issues); High-turnover at Strategic Leadership

## 4c. Cloud Drivers

- What do you think are the top four factors (Drivers) that would *positively* affect your decision to move to the cloud service
- **1<sup>st</sup> Factor:** Cost Savings (Capex2Opex, hr, support)(5/12); Changing Technology (2/12);Storage/DR; ICT Leadership
- **2<sup>nd</sup> Factor:** Cost Savings (2/10), Availability of Local Cloud Providers (2/10) Changing Technology, Increased Efficiency & Support through Outsourcing; Lack of Internal ICT Capacities.
- **3<sup>rd</sup> Factor:** Availability of Local Cloud Providers (2/9),Cost Savings, Availability of Skills, Scalability, Affordable Storage
- **4<sup>th</sup> Factor:** Increased Security

## 4d. Cloud Benefits

- List top three benefits you have realized or hope to realize by moving to the cloud.
- **1<sup>st</sup> Benefit:** Cost Savings(4/12); Better Uptime, Efficiency Gains, Service Availability/Stability, Reduced Mngt Overheads, DR Services
- **2<sup>nd</sup> Benefit:** High-Availability of Services (4/11); Cost Savings, low CAPEX (2/11); SLAs, Outsourcing enhances focus on core business
- **3<sup>rd</sup> Benefit:** High-Availability, of Services Agility (speed to market); flexibility, scalability, optimization of resources, better focus on core business, better security,

## 4e. Cloud Challenges

- What are the four top challenges you are experiencing or might experience from the using cloud services?
- **1<sup>st</sup> Challenge:** Info\_Security/Cyber Threats (5/10), Lack of Policies\_Laws (Procurement, Data/Privacy2/10); Lack of Internal cloud skills; Inflexible SaaS Solutions.
- **2<sup>nd</sup> Challenge:** Lack of Financing (2/9); Fear of Vendor-Lockin(2)(Data Ownership/SLA Issues);Poor Connectivity, Lack of Policy\_Laws, Hidden Charges (with increased volumes);
- **3<sup>rd</sup> Challenge:** Lack of Skills/Roadmap to Cloud Services (2/10); Info\_security Threats; Inability to port applications, Cost of Connectivity, No Budgets
- **4<sup>th</sup> Challenge:** Data Jurisdiction/ Sovereignty; Info\_Security, Poor Infrastructure, Technical Resistance



# 5a. Policy, Regulations & Standards

- Is there any government support you are receiving towards cloud initiatives and what else should government do to stimulate cloud adoption?
  - No support at the moment – Other than the Govt Data Center used as Backup Facility (x5)
  - ICT Authority Should lead the way with Policies & Strategies on Cloud Adoption
  - Government could develop enabling policies to guide boards and top management .
  - Government could also review the procurement laws as relates to ICT in general and cloud in particular
  - Government could sign framework contracts with key providers allowing other government agencies join in at predictable cost, service levels thus largely reducing the procurement risk

## 5b. Cloud Policy Environment

- Are there existing national and/or organizational Cloud policy & regulatory framework and how does this impact on Cloud adoption?
  - \*None (7/10)
  - \*ICT Authority has some published Standard but adoption/enforcement weak (<http://icta.go.ke/standards/cloud-computing-standard-2/>) . \*Draft CyberSecurity Regulations recommend local hosting of public data (supports local hosting)
  - \*Judiciary ICT policy supports cloud service – subject to pending laws.
  - \*Existing Legal and Operational Frameworks (e.g. Procurement) hamper cloud uptake

## 5c. Cloud Policy Recommendation

- Which specific policy do you feel would support the cloud computing initiatives?
  - \*Upcoming revised National ICT Policy 2017 should have cloud provisions
  - \*Need specific clause on Data Sovereignty/Jurisdiction/Disposal (Data Protection Laws/Cyber Security Laws)

## 5d. Cloud Regulatory Recommendation

- Which specific regulatory intervention do you feel would support the cloud computing initiatives.
  - \*Need for Data Protection/CyberSecurity Laws
  - \*Update Kenya Information Communication Act
  - \*Communication Regulator to subsequently enact supporting Data Protection/Security & regulations.
  - \*Revise Procurement Laws to facilitate Cloud Adoption.

## 5e. Cloud Standards Recommendation

- Which specific standards do you feel would support the cloud computing initiatives.
  - \*ISO Standards on Info\_Security
  - \*ISO Standards on Cloud Services
  - \*Audit Standards & Practice for Cloud Providers

# Respondents

- Parliament of Kenya
- Ministry of ICT
- Communications Authority of Kenya
- ICT Authority-Director
- ICT Authority-Manager
- Judiciary of Kenya
- County Government of Bungoma
- Kytabu Company Limited
- Kenya Revenue Authority
- Multimedia University of Kenya
- Dimension Data
- Ecobank
- Min Of Education
- Ministry of ICT
- NSSF KENYA

# Ends

- Q&A