RANTIP - Cloud Computing Research
Case of KENYA
(CLOUD USER PERSPECTIVES)
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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 6mnths) (Y/N)
3c. Cloud Usage Status/Market Analysis

• List what you consider to be your top three preferred cloud service providers in the region.

• **1st Preferred Cloud Provider:**
  • Safaricom (6/12); Amazon (3/12); Google (2/12); KENET (1/12)

• **2nd Preferred Cloud Provider:**
  • Microsoft (2/10); Amazon (2/10); Safcom; IBM; Jamii Telecom; Node Africa, Access Kenya; CloudPap (1/10 each)

• **3rd 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, WebApplication, Learning Mgmt 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?

• **1st Priority Skills:**
  • Info/Cyber_Security (4/14); Networking Skills (2/14); Tech Skills (2/14); Dev Ops, Client-Side Mngmnt, Cloud Support, Application Support, Prog

• **2nd Priority Skills:**
  • Info/Cyber_Security (3/12); Networking Skills (2/12); Project Mngt; Contract/SLA Mngt; Prog, System Admin, Bus Continuity.

• **3rd 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 extend do you feel these skills are readily available locally?
4a. Cloud Drivers, Barriers & Challenges

To what extend do you think the Technologies for providing Cloud Computing Services are mature?
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\textsuperscript{st} Factor:** Cost Savings (Capex2Opex, hr, support) (5/12); Changing Technology (2/12); Storage/DR; ICT Leadership
  - **2\textsuperscript{nd} 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\textsuperscript{rd} Factor:** Availability of Local Cloud Providers (2/9), Cost Savings, Availability of Skills, Scalability, Affordable Storage
  - **4\textsuperscript{th} Factor:** Increased Security
4d. Cloud Benefits

• List top three benefits you have realized or hope to realize by moving to the cloud.

• 1st Benefit: Cost Savings (4/12); Better Uptime, Efficiency Gains, Service Availability/Stability, Reduced Mngt Overheads, DR Services

• 2nd Benefit: High-Availability of Services (4/11); Cost Savings, low CAPEX (2/11); SLAs, Outsourcing enhances focus on core business

• 3rd 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?

• **1st Challenge:** Info_Security/Cyber Threats (5/10), Lack of Policies_Laws (Procurement, Data/Privacy2/10); Lack of Internal cloud skills; Inflexible SaaS Solutions.

• **2nd 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);

• **3rd Challenge:** Lack of Skills/Roadmap to Cloud Services (2/10); Info_security Threats; Inability to port applications, Cost of Connectivity, No Budgets

• **4th 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)
  - *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