



# Assessing Emerging Innovative Applications used in County Governments of Kenya

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**Abstract:** In this modern age, the world has witnessed rapid growth and ever-increasing importance of e-government and governments are under pressure from citizens to quick and efficient services. Despite the Kenyan government efforts to embrace modern Information Communication Technology (ICT) applications, it seems some obsolete ICTs of yesterday are still operational. The objective of this research paper is to identify sophisticated innovative applications of ICT used in Kisumu county government that improves service delivery through use of innovative applications. Interviews and Document reviews are the data collection methods. Constructivist paradigm approach is employed and Purposive sampling technique is used targeting seven participants. Thematic Analysis's procedures and processes are adopted during data analysis. Structuration theory is used to frame this study. The results show that the county government has adopted various modern Information Systems propelling service delivery to citizens and government stakeholders. The contribution of this paper is that despite the infancy stage of Kisumu county government of Kenya, there is evidence of use of innovative applications to enhance service delivery. This paper also recommends the way forward for the county and national governments, employees and the citizens who interact with ICT during service delivery. This paper recommends that quick interventions are required in establishing ICT infrastructure and embracing ICT training and capacity building to all employees and citizens in general.

**Keywords:** Innovative Applications, Information Systems (IS), Information Communication Technology (ICT), E-governance, E-government, Service delivery.

## I. INTRODUCTION

Recent advances in ICT have brought many innovations to the field of Information Systems (IS). The main goal of such innovations, for both developed and developing countries, is the improvement of organizations' performance and the achievement of competitive advantages particularly in the county level. There are differences between developed and developing countries in regards to the implementation of ICT innovations. [22] states that challenges experienced by organizations in developing countries when implementing Enterprise Resource Planning (ERP) systems differ from those faced by organizations in the developed ones; mainly due to differences in the sophistication of IT use, culture, and social contexts. [23] suggest that culture & language, management style, government/corporate policies, regulation/legal requirements, internal technical personnel resource/labour skills' and geography/time zone represent national differences that affect ERP implementation practices across nations.

For the first time in 2014, 193 United Nations Member States had national websites, but the majority remains at the low or intermediate levels of e-government development, termed emerging and enhanced stages in the United Nations four-stage online service model [24]. WSIS declared in the Geneva 2003 Plan of Action that all countries should aim "to connect all local and central government departments and establish websites and email addresses" [25]. [1] argues that government websites should allow the citizens to send their reactions and feedback on issues that affect them. Netherlands, which is ranked second in e-governance in Europe and fifth globally, has an important element of the e-government program called the Digital By Default strategy designed to move as many services to citizens and businesses as possible online. The Digital by Default approach was also adopted by the United Kingdom in its Government Digital Strategy 2012 and is guided by the principle of redesigning online services to make them more direct and convenient for all citizens [9]. Mauritius government is continuously developing its online portal and telecommunication infrastructure. Their website [www.gov.mu](http://www.gov.mu) offers citizens an exhaustive list of e-services segmented by target persons (139 services), by domain (59 services), by ministry (53 services), by department (13 services) and parastatals (14 services) [8].

E-Governance portal today brings just and efficient administration to governments. Conducting open transactions is effective at fighting corruption. Electronic Graft Management (EGM) project in Kenya is an example of an effective



use of ICTs to combat corruption [18]. To curb the ever-increasing Cyber security issues, the Kenyan government established a strategy that includes the development of information security management controls and procedures; cyber security systems; and identity and access management systems, among other key issues. To secure online transactions, the government has developed the Public Key Infrastructure (PKI), which offers digital certificates to those transacting online. Through the PKI system, it can enhance information security in government IT systems, including e-Government services [16].

The Kenyan government has initiated the automation of Public Financial Management processes as a priority among many reform agendas. The introduction of Integrated Financial Management Information Systems (IFMIS), Electronic Funds Transfer, the Pension system and the Public Debt management systems among others, have been premised on the realization that government can effectively leverage existing and emerging technology to enhance the pace of reforms [13]. ‘Huduma’ center is a government initiative aimed at improving and hastening delivery of making it a “one-stop shop” services to the public that won a United Nations award. It was rated the overall winner in improving the delivery of public services category [7]. Also, Kenyan innovations range from providing mobile financial services that benefits the “unbanked” population to linking farmers with buyers, monitoring patients’ medications and simply locating a restaurant of the desired type. Two innovations are notable, M-PESA (mobile money-transfer) and Ushahidi (crowd-sourced mapping). This technological revolution (in both mobile phones including mobile money and the Internet) is transforming the lives of Kenyans, while the country is emerging as a recognized ICT leader, especially in mobile app development like the M-PESA platform [14]. M-pesa is used to pay utility bills, pay charges in government agencies and make deposits in banking industries today. As an alternative, cost effective services were innovatively devised to run on the mobile phone, for example, the m-money, m-banking, m-health, m-insurance, m-learning, m-working [17]. Other innovations include mobile phone car-tracking system; bicycle mobile phone charger; mobile grain moisture meter; mobile tea maker; and mobile home security system.

The objective of this qualitative research paper was to identify innovative applications of ICT used in Kisumu county government that improves service delivery through innovative applications. At the end, from the themes that emerged applying Thematic Analysis of data analysis, the study answers the following research question: What are the innovative applications of ICT adopted in Kisumu county government? The answer to these research question contribute to the review of Kenyan county government’s efforts to embrace ICT subsequently, identifying information systems adopted so far and the impact on service delivery to the citizens of Kisumu County government of Kenya.

**Table 1:** World e-government leaders

1	Republic of Korea
2	Australia
3	Singapore
4	France
5	Netherlands
6	Japan
7	United States of America
8	United Kingdom
9	New Zealand
10	Finland

**Source:** United Nations (2014)

**Table 2:** Regional e-government leaders

AFRICA	Tunisia Mauritius
AMERICAS	United States of America, Canada
ASIA	Republic of Korea, Singapore
EUROPE	France, Netherlands
OCEANIA	Australia, New Zealand

**Source:** United Nations (2014)

#### B. Problem formulation

ICT innovations not only deal with technologies and information content, but also their deliverables are shaped by the associated social/cultural context [15]. In Kenyan perspective, the problem is that most ICT projects are replica from developed nations and most of the time fails to be effective upon implementation. [11] points out that an e-Government system should be country specific because adopting other nations’ e-government systems is a risk, support this



statement. A great deal of customization effort is necessary for these proposed prescriptions for the best fit within different organizations [13]. The county government of Kenya, therefore, must develop tailor made systems to suit their requirements. If this is not considered, the government risks deploying outdated technology that may yield financial capital losses and damages environment.

### C. Theoretical framework

Anthony Giddens, contemporary British is regarded as one of the worlds' most cited sociologists [1]. As [21] note: "Through being drawn on by people, pattern and shape interaction. Structures themselves are, however, reproduced only through interaction. Explanations of social phenomena must thus refer to both the role of human action and the effects of existing institutional properties. The approach of Giddens' structuration theory argues that action and structure operate as a duality, simultaneously affecting each other. Giddens defines structure as 'rules and resources recursively implicated in social reproduction; institutionalized features of social systems have structural properties in the sense that relationships are stabilized across time and space'.

[5] opines that structure is similar to language. While speech acts are situated temporally and contextually and involve dialogue between humans, language exists outside of space and time. Language is a condition for achievements of dialogue and language is sustained through the ongoing production of speech acts. Social actions are temporary and contextually involve human interaction. Social structures conditions these social practices by providing the contextual rules and resources that allow human actors to make sense on their own acts and those of other people. Conceiving of structure in this way acknowledges both its subjective and objective features. Structure does not merely emerge out of subjective human action; it is also objective because it provided the conditions for human action to occur. Structure provides the means for its own sustenance and structure and action constitute each other recursively. Structuration theory recognizes that "...man actively shapes the world he lives in at the same time as it shapes him" [4].

The relationships among technology, people, and organization have been a fundamental focus of research within the Information Technology field [20] which is determined by interaction between structure and members using technology. Social and organizational structures undergo constant change, and information technology is an integral element of those structures because it enables some actions, constrains others, and is itself shaped by those same actions over time [19]. This paper assesses technology (Innovative applications) as an enabler or constraint to people (ICT employees) in government service delivery context. The Political dimension of structuration theory comprise of the structure of domination; the modality of Facilities/Resources and the interaction of power. Facilities/Resources are the "means through which intentions are realized, goals are accomplished, and power is exercised" [6]. Resources are the modalities actors draw on to exert power over objects (allocative resources) or actors (authoritative resources) to make interventions that transform social events or states [3]. It is through the engagement of rules and resources that actors build control strategies. For this study, the Kenyan government can change the existing system of domination and advance their own strategic autonomy through use of IS.

### D. Presentation of main Contribution

In an effort to contextualize Structuration theory borrowed from sociology field to ICT, the researcher built on what Giddens call Political dimension: the structure of Domination, modality of Facilities/Resources and interaction of Power in depth. Relevant literature was reviewed and Political dimension is contextualized to Information Systems dimension to match ICT adoption in government perspective. Facilities and Resources were contextualized to Information Systems (ISs) in ICT field. ISs present a new modality that enables exercising Power and creating the structure of domination. Examples of ISs used in Kenyan government are IFMIS, GHRIS, IPPD and G-pay systems as per the study findings.

## II. METHODS

### A. Participants

Using purposive sampling method, a sample of seven Top and Middle level management employees from Kisumu county government was interviewed. For purposes of enhancing objectivity of the research instruments, a pilot study was done in a different county and respondents isolated from the final research. All participants were employees with daily duties using ICT devices engaged in voluntary basis. In addition, the participants must have been employees of Kisumu County and national government employees attached to this county.

### B. Research Design

This study adopted a qualitative case study research design. The strength of a qualitative design is that it emphasizes qualitative research on people's lived experience of a phenomenon. Qualitative research also considers a small sample with deeper and detailed depth. A Case study was adopted because a county is bounded by time and place (boundary) and this paper was a single case study.



### C. Measures

This paper uses Interviews and Document reviews as data collection methods. Face-to-face interviews were the primary data collection methods. In-depth interviews were conducted and audio-recorded through a laptop and later keenly transcribed into word documents. Document reviews are secondary sources of data collections. They represent variety of non-personal documents such as minutes of meetings, agendas of such meetings and office memos. In Kenyan context, government circulars, specific ministry master plans and any other official correspondences were perused to give more information on use ICT innovation applications.

### D. Procedures

The first step is seeking consent from Jaramogi Oginga Odinga University of Science and Technology (JOOUST) who gave an introductory letter showing that I was a bonafide Doctor of Philosophy student doing research. I sought consent from Kisumu county government, particularly reporting to the offices of County Commissioners and County Directors of Education. Written consent letters were presented and data collection started immediately. Top and Middle level management employees were targeted in a voluntary basis. Confidentiality, the principle of anonymity and the right to de-briefing to participants are examples of ethical issues spelled out before interviewing commenced.

## III. DATA ANALYSIS

Data analysis in this research paper means understanding the ways county employees use and make sense of innovative applications, but also identifies and defines the patterns that emerge from that meaning making process. This paper applied Thematic Analysis, which is a type of qualitative analysis. This analysis was ideal since this paper adopted qualitative approach where emerging themes/patterns relating to data were categorized.

## IV. STUDY FINDINGS

Structuration theory supports the findings where Information Systems are being used at the county governments as examples of Facilities/Resources. This stage is also known as Political dimension of structuration theory where the structure of domination (command, control) is available as authoritative and allocative resources through which power is exercised. Facilities/Resources are the “means through which intentions are realized, goals are accomplished, and power is exercised” [6]. Resources are the modalities actors draw on to exert power over objects (allocative resources) or actors (authoritative resources) to make interventions that transform social events or states [3]. It is through the engagement of rules and resources that actors build control strategies. For this study, the Kenyan government can change the existing system of domination and advance their own strategic autonomy through use of ISs used today. If used well, ISs in county governments enhances service delivery that leads to good governance.

The responses from participants were linked to literature as stated in Introduction section. Participants responded according to their lived experience when asked about which innovative applications (innovative systems) are used in their respective offices.

A participant recited that:

“We have a Website where procurement issues are handled online and job advertisements downloaded. Also, county weekly updates on various events/happenings are posted for Wananchi (citizens) to be informed”.

In agreement with the recited verbatim above, the literature states that for the first time in 2014, 193 United Nations Member States had national websites, but the majority remains at the low or intermediate levels of e-government development, termed emerging and enhanced stages in the United Nations four-stage online service model [24]. This shows governments’ response to embrace ICT. WSIS declared in the Geneva 2003 Plan of Action that all countries should aim “to connect all local and central government departments and establish websites and email addresses” [25]. [1] argue that government websites allow citizens to send their reactions and feedbacks on issues that affect them at any time of the day, at one’s convenient.

A few respondents mentioned “Huduma” centers as one of the successful ICT applications being recognized internationally. One of the interviewee stated that:

“The Kenyan government has established “Huduma” centers offering all government functions”

In concurring with this study finding, “Huduma” centers were established as “one stop shop” for services from the national government and are one of the innovative ideas that have highly put Kenya in the eyes of the global arena. It has been awarded and rated the overall winner in improving the delivery of public services category, for instance; issuance of birth certificates, certificates of good conduct, clearance certificate and issuance of passports. United Nations has recognized this innovative project through an award to Kenyan government [7].

Another participant recalled that:

“We have Government Pay (G-Pay) systems and IFMIS where payments are facilitated”

This data findings are in accord with the document reviewed – G-Pay Operational Manual for administrators (Appendix 1). The Manual covers sections on how to get started, Administration, File maintenance, Changing Pin number and contacts of relevant persons [10]. G-pay has been operational since the inauguration of the new constitution and I was able to authenticate its use over time by perusing the system in the relevant County offices.

## V. CONCLUSIONS AND RECOMMENDATIONS

This research paper reports that the county government of Kisumu has made great efforts to embrace innovative applications. However, a lot needs to be done to attain the best practices in ICT. One of the major innovative applications breakthroughs by the government is the establishment of ‘Huduma’ centers now in almost all the counties in Kenya meant to deliver and coordinate national government functions. All of the respondents were aware of IFMIS as a mandatory system to be used at the county level of government. An example of a system currently used is ‘Department of Youth Training and Information Management Systems’ (DYTIMS) for managing Polytechnics which is used at the Headquarters in Nairobi but yet devolved to the county. A proposed system yet to be implemented is ‘Performance Management Systems (PMS) to monitor employees’ performances at the county government of Kisumu. It is recommended that quick interventions are required in ICT infrastructure and ICT training and capacity building. Taking urgent remedial action paves way for arresting seen and unforeseen issues before any project is implemented. Training and capacity building in ICT should be implemented from primary schools, secondary, tertiary colleges and at university levels. This means that the government through ministry of education should come up with an ICT curriculum that addresses the above levels of training and capacity building. The analyzed findings also disclose that most citizens are unaware of most ICT initiatives tailored for them by the governments. This is evident by some services delivered by the new and ongoing establishment of ‘Huduma centers’ not known by citizens. To all employees of governments, training and capacity building is essential to maximize use of ICT to enable good governance. It is envisaged that this recommendation will be useful to all employees regardless of their levels. I recommend to the citizens of Kenya to embrace ICT as the government makes strides to provide ICT, which enables service delivery to them in an instant way, anywhere and at any time.

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**Appendix 1: G-Pay Operational Manual**

