

# The Critical Success Factors for e-Government Implementation in South Africa's Local government: Factoring in Apartheid Digital Divide

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**Abstract**—Local government institutions present the ideal place for majority of the interactions between the government and the citizens. Despite this, most e-government implementation strategies tend to be national outfits that fail to consider the unique contexts of the local government. South Africa's local government takes the form and shape of the national socio-political system that is characterized by alarming levels of inequalities. This has resulted in sharp apartheid digital divide for which local e-government implementers cannot afford to ignore. Using data from three municipalities, drawn from each of the three categories of South Africa's local government institutions, this paper presents the critical success factors for guiding e-government implementation initiatives at local government level. Results from principal component analysis and arithmetic mean of data from 243 respondents was used to determine the significance of the factors relating to the priority e-services, e-skills and e-infrastructures.

**Keyword** *s-e-government; local government; South Africa's municipalities; apartheid digital divide; critical success factors*

## I. INTRODUCTION

E-government is a very widely researched area. Given the myriad of definitions that exist [1]–[4], the United Nations (UN) e-Government definition is adopted in this paper. It reads: “government's utilization of ICTs to deliver information and public services to the people” [4]. In [5], the concept of “enabling transactions between government departments and the private sector” is added to the definition of e-government. E-government takes various forms and ranges from simple e-information provision to advanced citizen participation online information systems.

The overarching rationale for adopting e-Government is the expectation that it would increase efficiency of public administration and revitalize government-citizen interaction [1], [3]. Some of the benefits of e-Government include: (1) enhanced administrative efficiency; (2) decreased transaction time and cost; (3) increased convenience for citizens to access government services and (4) possible reduction of the distance between government and citizens. The development of e-government takes a number of stages which a number of authors delineate as: (1) one-way information provision through (mostly) web-presence; (2) two-way interaction/communication (3) transaction; (4) transformation through internal integration between

government units; and (5) citizen participation. The most commonly adopted categorization of the stages is the one in [4] which is: “emerging presence, enhanced presence, interactive presence, transactional presence, and networked (connected) presence”. In [5], a detailed comparison of 6 e-government implementation models is presented along with 11 implementation stages: web presence/catalogue, interaction, transaction, transformation, e-democracy, trust building, employee training citizen sanitization, ICT infrastructure and collaboration and partnerships. These authors confirm the general agreement on the main stages – except for the one in [6] which has nine stages.

The citizen participation stage has been termed as the most evolved form of e-government. In the case of South Africa, citizen participation aspect is important and could be used as an avenue for redressing the injustices of the Apartheid regime [7] and a window for tackling the escalating service deliver protests [8], [9].

The key variables facilitating e-government include Gross Domestic Product (GDP) per capita, public spending on science and technology (as a percentage of the total expenditure), number of people with access to internet, level of education of the citizens and levels of urbanization. This explains the existence of wide disparities in e-Government development among countries and regions. This is further linked to the diversity in economic, technological, political and cultural factors that interplay to shape e-government implementations. To this end, the poor record in effective governance in most developing countries, coupled with the plaque of corruption [1], has seen the region occupy the last positions in e-Government Development Index (EDGI). For instance, at 0.3423, the 2018 EDGI value for Africa was the lowest and only 4 out of 54 African countries score was higher than the global average of 0.55. In contrast, all but two (Belarus and Kazakhstan) of the 40 countries in the Very High EGDI, are high-income countries. Income capacity therefore has a strong influence on national e-government development [4].

Other factors contributing to this dim status are poor basic (related to ICTs) infrastructure and citizens' poor access to complementary resources such as computers. It has been proven that ICTs can enhance and support economic development. On the other side of the coin, access to ICT can lead to informed populations which is the basis for effective participatory governance and knowledgeable

communities. This has introduced concerns for increased domestic digital divide factor (DDD Factor) such as integration divide. This divide is aggravated in most countries by other factors such as: class and age (intergenerational digital divide), ethnics and gender inequalities and discriminations, and race (digital apartheid) - not forgetting issues of language divide [10].

The third factor is relatively low general and digital literacy [1]–[3]. Lack of funds to procure the required infrastructure and inadequate capacity building are other factors bogging down e-government implementation in Africa. Others are poor citizen participation and contextualized content development, cultural factors as well as e-readiness factors [10]. However, not all is negative regarding this status of in the African continent; the continent has the opportunity to leapfrog generations of service delivery.

Most e-government assessment/evaluation models look at three aspects of the critical success factors: technical, economic and social. Technical issues include issues of systems performance and accessibility while economic looks into cost saving matters. On the other and, the social dimensions involve evaluating the e-government implementations' openness, trust and perceived ease of use and perceived usefulness [11].

Apart from not paying attention to the local government aspects [5], most of these assessment models tend to ignore the unique contexts of African countries [12] – yet, this evaluation is also important and even more complex. For instance, the requirements for local government implementation in South Africa are very different from those at a local government in Singapore – the former's financial and technological challenges are massive. Other challenges documented in [5] include: poor sanitization, lack of training, low education levels, inadequate human resources with ICT skills, lack of formal e-government strategy, general ignorance on what e-government entails and more importantly, social-political factors. The oversimplification of the models makes them not fit the realities of developing countries such as South Africa [5].

The UN's e-government development index (EDGI) for instance is the weighted average or normalized scores on the three most important dimensions of e-government [4]: (1) the scope and quality of online services quantified as the online service index (OSI); (2) the status of the development of telecommunication infrastructure or the telecommunication infrastructure index (TII); (3) the inherent human capital or the human capital index (HCI).

Given the unique context of South Africa's local government, the objective of this research was to empirically identify the critical success factors which would spur growth and success of e-government implementation in the three categories of South Africa's local government system.

## II. E-GOVERNMENT IN SOUTH AFRICA'S LOCAL GOVERNMENT

Local government is described as a governing institution with authority at a sub-national territorially defined area [5]. A local municipality is such an institutions and it provides

the most ideal level for government' decision making [13]. It is here where majority of the interactions between society and government occur. The role and the structure of local government differs from country to country.

### A. South Africa's Unique Socio-Economic and Cultural Context

Given that the 2018 Gross Domestic Product (GDP) per capita value for South Africa was US\$6,161[14], the country is still arguably the largest economy in Africa [15], [16]. This has enabled the country overcome the basic infrastructural challenges facing other countries in Sub-Saharan Africa. Further, given the correlation between GDP per capita and e-Government development, this has seen the country deliver the second highest (at position 68, behind Mauritius which is position 66) e-Government Development Index (EDGI) [4] in the Continent. However, such global indices tend to disguise the country's worsening structural and historical inequality problems.

It is indisputable that South Africa has very unique socio-political and economic dynamics; more than 20 years after the end of apartheid government regime, the country fits the imagery: "two-nations". All the policies put together by the Reserve Bank (SARB) as well as the national Treasury so far, have not resulted in effective (in addressing the inequality) economic transformation [17]. The "Second Economy" continue to persist [18]–[21]. The following phrase from the 2017 budget review speech re-iterates this:

*"We need to transform in order to grow, we need to grow in order to transform. Without transformation, growth will reinforce inequality; without growth, transformation will be distorted by patronage" [17].*

Further, South Africa displays some elements of an Extractive Economic system [22] that is worsened by these alarming levels of inequality (especially along racial lines). On this, South Africa has consistently held position one [23] as the most unequal country in the world – sometimes interchanging the position with war-torn countries such as Central Africa Republic. In the most recent (2017) World Bank and UN Development index for inequality, South Africa scored the highest Gini index value of 63.38% and a starkest Palma ratio value of 71.4% respectively. The level of inequalities in South Africa is so high; the following statement captures it:

*"...inequalities of a class, 'race', gender, institutional and spatial nature profoundly shaped South African institutions, establishing patterns of systemic inclusion, exclusion and marginalisation of particular social classes and groups" [7].*

Pillay [24] captures it as follows:

*"South Africa is a country where there is a distinct first-world and third world category of people."*

However, the imagery of 'two-nations' as presented by the then deputy president Thabo Mbeki in parliament in 1998 [25], has since changed to the extent that black and white is no longer synonymous with rich and poor respectively [26]. The tragedy however is that South Africa may have entered a

new phase which “three-nations” imagery can be used to represent. These are: (1) multiracial upper class; (2) mostly urban middle class – these are either white collar workers or industrialists; and (3) marginalized unemployed and mostly black South Africans. A similar (three-nations) phrase was used by American Catholic Bishops to describe the US economy in 1995 [26].

Analysis of two surveys: StatsSA’s Income and Expenditure Survey (IES) and Living Conditions Survey (LCS), confirm the existence of three-nations. Applying the cost-of-basic-needs methodology, three poverty lines were defined back in 2012 [27]. These are: (1) food poverty line (FPL); (2) lower-bound poverty line (LBPL); and (3) upper-bound poverty line (UBPL). The latest poverty lines analysis indicates dimming situation in two aspects: firstly, there are more people poor today than there were in 2011 and secondly, the poor are relatively slightly further away from the poverty line compared to their situation in 2011 [15], [28]. A closer look at the figures portray sharp division along both geographical (provinces) and racial lines not surprisingly, the black South Africans represent the largest percent of the poorest and the white, the richest group respectively. This is a further confirmation of existence of all manner of digital divides related to the inequalities, the most prominent ones being apartheid and integration.

### B. South Africa’s Local Government System

South Africa has 3-tier government system: national, provincial and local government respectively. The local government in turn is made up of two categories of governments: (1) eight metropolitan municipalities found in large urbanized and industrialized centres; and (2) a two-tier local government consisting of 228 local municipalities that are grouped into 44 district municipalities. All these are distinctly found in one of the 8 provinces; for example, KwaZulu-Natal Province has 61 local municipalities that are grouped in 10 district municipalities. The province is also home to one of the 8 metros (eThekweni Municipality). On the hand, North West province has 4 district municipalities, namely: Ngaka Modiri Molema, Dr. Kenneth Kaunda, Dr. Ruth Segomotsi Mompati and Bojanala Platinum [29].

### C. South Africa’s E-Government Implementation Status

The implementation of e-government in South Africa reflects the same ‘two-nations’ inequality structure present at the national level. While the implementation in the larger urban centres such as Johannesburg, Cape Town and Durban is as good as the ones in the developed world, that of the rural areas and informal settlements is comparable to that of developing countries. For example, the 2018 UN sub-survey (Local Online Service Index) of 40 local governments in the world, ranked Cape Town at position 2 out of 40 – behind Moscow and ahead of cities such as London (position 4), Paris (position 4) and New York (Position 14). African cities considered in this sample were way behind with Cairo and Nairobi at no. 27, Accra at no. 36, Abidjan at no. 37 and Luanda at no. 38 [4].

In metropolitan municipalities such as Johannesburg, citizens are able to pay rates and taxes online, as well as

electricity, water and speeding fines among others [24], [30]. A recent addition is application and placement at schools.

At national level, e-government projects are spearheaded by the Department of Public Service and Administrations (DPSA) [31]. In the latest report on e-government, it is reported that security of IT and the costs of IT in the Public Service are among major hindrances to e-Enablement [31]. The e-government is anchored in the E-government policy document, 2001 and the National e-Strategy and Roadmap [32]. On page 18 of this document, five channels of e-government services are identified as: internet, mobile technology, phone (call centres), digital TV and common service centres. The model shown in figure 1 below captures the three stages of the e-government strategy as: (1) e-government services transformation; (2) e-enhanced governance; and (3) digitally-enabled society.



Figure 1. National e-government model (pg. 21).

The DPSA has been mandated with the task of promoting the use of Information Technology and Information Management to improve service delivery in the public service. DPSA performs this task in consultation with Government Information Technology Officer’s Council (GITOC). One of the critical institutions in charge of the e-government implementation is the State information technology agency (SITA). The robustness of this e-government strategy may partially explain the very successful e-government implementation projects such as South African Revenue Service (SARS) e-filing system [24] and the Lwazi, an initiative of the Department of Telecommunications and Postal Services, helps victims of gender-based violence [4]. However, like other countries in the world, e-government at local government level is haphazard and no literature (known to the authors) has documented the necessary success factors for this.

Substantial research relating to the challenges of e-Government within provincial and local government levels

in South Africa is documented in literature [3], [8], [33]–[36]. The challenges range from universal (to developing countries) ones such as lack of funding and poor access to ICT infrastructure [33], [34], [36], to political [8], [37], and cultural [3]. The bottom line is that the success of e-Government, especially in non-urban municipalities has been dismal [37].

### III. DATA AND METHODS

#### A. Data Set

Data from each of the three categories of South Africa’s municipalities was collected; the selected municipalities are (1) Mangaung Metropolitan Municipality which is a category A municipality in the Free State province; (2) Dr Kenneth Kaunda District Municipality which a category B municipality in North West province; and a category C local municipality - JB Marks Local Municipality. The latter is located within Potchefstroom and is one of the local municipalities within Dr Kenneth Kaunda District Municipality. A self-administering questionnaire was used to collect data under three classifications: biographic data, a rating of services offered by the municipalities, and a rating of the e-government (ICT) implementation within the municipalities. The e-services section was made up of 15 aspects which the respondents were asked to select from a 5-Likert rating from 1 for Strongly Disagree, 2 for Disagree, 3 for Neutral, 4 for Agree, and 5 for Strong Agree. On the other hand, the ICTs implementation’s 13 aspects were rated from a value of 1 representing uncritical to 5 for very critical. In total, 243 questionnaires were useable – consisting of: 80 from JB Marks Local Municipality, 72 Dr Kenneth Kaunda District Municipality, and 91 from Mangaung Metropolitan Municipality.

#### B. Data Analysis

Data analysis was carried out in Statistical Package for the Social Sciences (SPSS) for Macintosh [38]. In particular, Principal Component analysis was carried out following reliability testing on the data. Arithmetic mean and standard deviation values were used to determine the significance of the various aspects of e-government. Alpha Cronbach’s was used to test for reliability of the questionnaire for measuring the constructs. Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy and Spearman rho correlation analysis, were used to validate the internal consistency and sampling adequacy of the 28-item questionnaire designed based on a Likert scale approach. Two aspects of e-government were assessed using a 5-Likert scale [39].

### IV. RESULTS

#### A. Reliability of the Questionnaire

For reliability, Cronbach values greater or equal ( $\geq$ ) 0.70 and validity item loading of  $\geq$ 0.50 were considered adequate. For the Validity of Research Constructs, Validity tested whether the instrument measured what it is intended. These include divergent validity, discriminant validity, content validity and face validity. Factor analysis was used to

compute convergent and discriminant validity. Principal component analysis with Varimax Rotation was performed.

#### B. Respondents Biographic and Mobile Phone Access Data

Prior to performing the PCA on the data, aspects related to the respondents’ gender and mobile phone access were analysed. The gender and race details of the respondents is shown in Table I below while the mobile phone access results are presented in Table II.

TABLE I. BIOGRAPHIC DATA OF RESPONDENTS

	Gender			
	F	M	Total	
	Count	Count	Count	%ge
Indian	7	10	17	7.0%
White	29	44	73	30.0%
Black	42	100	142	58.4%
Coloured	6	5	11	4.5%
<b>Total</b>	<b>84</b>	<b>159</b>	<b>243</b>	<b>100.0%</b>

The gender/race statistics shown in table 1 above do not necessarily represent the composition in the three municipalities studied. The manner in which the questionnaire was administered introduced a bias in the data.

TABLE II. MOBILE PHONE ACCESS AND USE

	Mobile Phone			
	No Access	Non-Smart	Smart	
	Count	Count	Count	%ge
Indian	0	10	7	2.9%
White	0	32	41	16.9%
Black	1	85	56	23.0%
Coloured	0	8	3	1.2%
<b>Total</b>	<b>1</b>	<b>135</b>	<b>107</b>	<b>44.0%</b>

Of interest to this research is the fact, overall, a 55.6% of respondents owned non-smart phones. The figures for the respective municipalities stood at 42.5% for JB Marks, 65.5% for Dr Kenneth Kaunda and 52.7% for Mangaung. This would create a challenge in the implementation of e-government services that require mobile application. Further, given the fact that the respondents of the questionnaire were people in formal employment, the actual figure of non-smart phones (and even non-ownership of phones) among the residents of these municipalities is much higher.

#### C. Assessment of the e-Services

The 15 aspects of the e-services were coded as show in Table III below.

TABLE III. LIST OF E-SERVICES

SER1.	South African Municipalities do not have the necessary technical and other skills or capacity to render public services to its communities.
SER2.	Communities in the municipality are not well-informed about development plans of government or municipality.
SER3.	The Integrated Development Plan (IDP) and budget of the municipality is informed by the needs of the communities.
SER4.	Regular and timely communication from the municipality to communities (say through their mobile phones) will minimize service delivery protests.
SER5.	Dissemination of information from the municipalities to the citizens is reliable and effective.
SER6.	The record keeping (e.g. of houses, rates, financial statements) is organized and automated.
SER7.	One of the root causes of employees not utilizing the ICT is lack of ICT skills in the municipality.
SER8.	One of the benefits of Electronic Document Management System is to improve staff morale by enabling them to retrieve files easily from their computers.
SER9.	Electronic Document Management System can be used to ensure that documents coming in are sent to the correct people for action and track the process.
SER10.	The implementation of the Electronic Document Management System will enhance service delivery in the municipality.
SER11.	The implementation of the Electronic Document Management System will comply with the ever-changing regulations.
SER12.	Employees at this municipality do not have ICT skills.
SER13.	ICT training programme are necessary to reskill municipal employees.
SER14.	The municipality must develop ICT monitoring and evaluation procedures to monitor whether employees utilize the ICT skills they have learned after training.
SER15.	The Network connectivity (bandwidth) of the municipality is fast and reliable.

TABLE IV. LIST OF E-SERVICES

	Mean	Std. Dev
SER9	3.8	1.3
SER7	3.8	1.3
SER13	3.7	1.2
SER10	3.6	1.4
SER12	3.6	1.4
SER4	3.6	1.5
SER11	3.5	1.2
SER6	3.5	1.3
SER14	3.5	1.1
SER8	3.4	1.4
SER3	3.4	1.2
SER2	3.4	1.2
SER1	3.4	1.2
SER15	3.2	1.3
SER5	2.8	1.3

All items, except for SER5 (*Dissemination of information from the municipalities to the citizens is reliable and effective*) extracted had loading higher than 0.50 on their factors, implying that there was a desirable measurement on convergent validity. The items were then ranked based on the mean as shown in Table IV below. Not surprisingly, SER5 is the lowest ranked – a clear indication that dissemination of information to the citizens was in shambles. The other low ranked items related to reliable network connectivity and the presence of necessary technical and other related skills or capacity. Related to the latter is the fact that the items relating to equipping municipality employees with ICT skills scored highest scores, e.g. SER7 and SER13.

PCA analysis resulted in six components shown in Table V below.

TABLE V. LIST OF E-SERVICES

	Rotated Component Matrix					
	Component					
	1	2	3	4	5	6
SER1					0.6	
SER2					0.7	
SER11					0.5	
SER3			0.6			
SER8			0.8			
SER4						0.8
SER5				-0.6		
SER15				0.7		
SER6		0.6				
SER7		0.7				
SER9		0.5				
SER10	0.5					
SER12	0.6					
SER13	0.7					
SER14	0.6					

Variable normalization of the components is shown in figure 2 below.

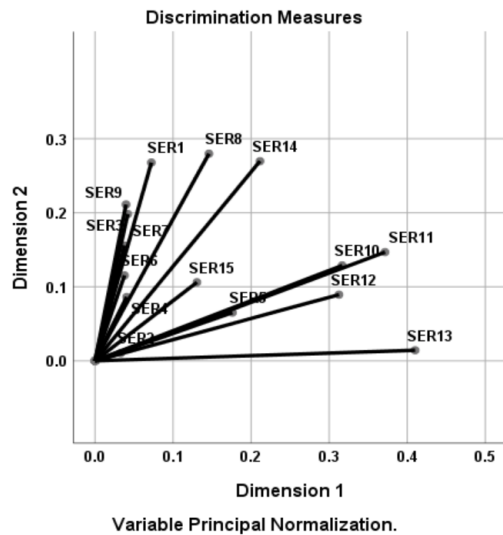


Figure 2. Variable normalisation: e-services.

Given the difference in the three categories of municipalities, a comparison of the rankings of the e-services is presented in Table VI below

TABLE VI. RANKING OF E-SERVICES BY MUNICIPALITIES

<i>Combined</i>	<i>JB Marks</i>	<i>Dr K Kaunda</i>	<i>Mangaung</i>
SER9	SER4	SER7	SER9
SER7	SER13	SER13	SER7
SER13	SER9	SER10	SER10
SER10	SER1	SER9	SER12
SER12	SER7	SER4	SER13
SER4	SER11	SER12	SER2
SER11	SER3	SER14	SER3
SER6	SER6	SER8	SER8
SER14	SER2	SER6	SER11
SER8	SER15	SER15	SER6
SER3	SER14	SER11	SER1
SER2	SER12	SER1	SER14
SER1	SER8	SER2	SER4
SER15	SER10	SER3	SER5
SER5	SER5	SER5	SER15

From the comparison in Table VI above, it emerges that the top three e-services and e-skills critical for the success of e-government in all the three types of municipalities are:

**SER9:** Electronic Document Management System can be used to ensure that documents coming in are sent to the correct people for action and track the process.

**SER7:** One of the root causes of employees not utilizing the ICT is lack of ICT skills in the municipality

**SER13:** ICT training programme are necessary to reskill municipal employees

Further, the following two are unique to metros:

**SER10:** The implementation of the Electronic Document Management System will enhance service delivery in the municipality.

**SER12:** Employees at this municipality do not have ICT skills

In the case of district municipalities, aspect SER10 above applies as well as one unique one which is:

**SER4:** Regular and timely communication from the municipality to communities (say through their mobile phones) will minimize service delivery protests.

In the case of local municipalities, SER4 above applies as well as one other aspect which is:

**SER1:** South African Municipalities do not have the necessary technical and other skills or capacity to render public services to its communities.

#### D. Assessment of the e- infrastructure

Table VII below shows the list of 13 e-infrastructure considered.

TABLE VII. LIST OF E-INFRASTRUCTURES

ICT1.	New perceptions of service. Improved service delivery because of ICT
ICT2.	The need for connectivity
ICT3.	The “here and now “approach to service.
ICT4.	Mobility (anytime, anywhere culture).
ICT5.	User friendliness/ comfort to users
ICT6.	Improved user experience.
ICT7.	The need to have the right mix of infrastructure, human capital, online services and e-participation.
ICT8.	Instant communication through social media
ICT9.	Creating awareness and communication
ICT10.	Creation of commonalities through the removal of barriers (social, cultural, racial and otherwise) - online we are all the same
ICT11.	Users are defining what information they need
ICT12.	Users accessibility ICTs such phones, computers etc.
ICT13.	Availability of the information in the local languages (e.g. Sesotho)

Based on the arithmetic mean, the ICT aspects are ranked as shown in figure 8 below – from the most significant to the least significant.

TABLE VIII. RANKING OF E-INFRASTRUCTURE

	<i>Mean</i>	<i>Std. Deviation</i>
ICT2	3.71	1.25
ICT4	3.56	1.28
ICT1	3.49	1.24
ICT12	3.39	1.19
ICT9	3.34	1.19
ICT11	3.32	1.15
ICT13	3.25	1.28
ICT7	3.24	1.18
ICT8	3.11	1.09
ICT6	3.1	1.02
ICT10	3.09	1.1
ICT5	3.05	1
ICT3	2.99	1.11

All had mean of greater than the mid-point (2.5) and extraction values of greater than 0.5

Similar to the e-services, ICT2(Need for connectivity) tops the priority the ICTs needs, this is followed by ICT4 (Mobility (anytime, anywhere culture). Element ICT3 (the “here and now “approach to service) is not of much relevance to South African municipalities. This also applies to ICT5 (User friendliness/ comfort to users)

A Comparison of municipalities resulted in results shown in Table IX below.

TABLE IX. A COMPARISON OF E-INFRASTRUCTURE BY MUNICIPALITIES

<i>Combined</i>	<i>JB Marks</i>	<i>Dr K Kaunda</i>	<i>Mangaung</i>
ICT2	ICT2	ICT4	ICT2
ICT4	ICT1	ICT2	ICT4
ICT1	ICT7	ICT12	ICT9
ICT12	ICT4	ICT11	ICT1
ICT9	ICT11	ICT1	ICT13
ICT11	ICT13	ICT9	ICT7
ICT13	ICT12	ICT10	ICT8
ICT7	ICT9	ICT13	ICT11
ICT8	ICT6	ICT8	ICT6
ICT6	ICT8	ICT3	ICT5
ICT10	ICT10	ICT7	ICT10
ICT5	ICT5	ICT5	ICT12
ICT3	ICT3	ICT6	ICT3

The most critical ICTs for the three categories of municipalities are:

ICT2: The need for connectivity

ICT4: Mobility (anytime, anywhere culture)

ICT1: New perceptions of service. Improved service delivery because of ICT

In addition to the above, the metros should consider:

ICT9: Creating awareness and communication and

ICT13: Availability of the information in the local languages (e.g. Sesotho)

Local municipalities also require the following two additional crucial ICTs:

ICT7: The need to have the right mix of infrastructure, human capital, online services and e-participation. and

ICT11: Users are defining what information they need.

Similarly, to the local municipality, the district municipalities need to consider ICT11. Further, similar to metros, ICT 9 should be considered.

The Component Analysis of e-infrastructures is shown in Table X below

TABLE X. PCA OF E-INFRASTRUCTURE

	Rotated Component Matrix			
	Component			
	1	2	3	4
ICT1	0.5			
ICT4	0.5			
ICT9	0.8			
ICT12	0.6			
ICT2			0.6	
ICT7			0.7	
ICT3		0.5		
ICT5		0.6		
ICT11		0.6		
ICT13		0.5		
ICT6				0.6
ICT8				0.6
ICT10				0.5

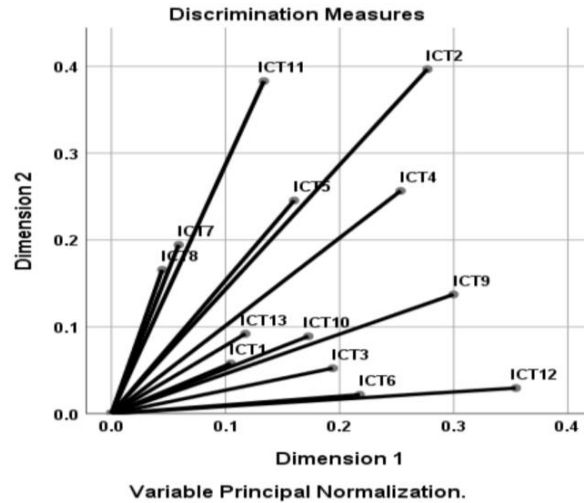


Figure 3. Variable normalisation: e- infrastructures.

## V. CONCLUSION AND FUTURE WORK

From the discussion presented in this paper, it is clear that South Africa’s local government is a complex terrain. It is characterised by extremely high levels of inequality – it fits the ‘three-nations’ analogy. In the three-nations’ arrangement, wealthy elite citizens, who are highly mobile, affluent and educated, live in urban metros such as Johannesburg and Cape Town. These first world citizens have access to fast and reliable telecommunications infrastructure which is as good as in any other cities in the developed countries. This for instance explains the position 2 ranking of Cape Town in the 2018 UN sub-survey (Local Online Service Index) of 40 local governments in the world. On the extreme end of the spectrum, sits the disadvantaged South Africans living in the rural areas and in informal settlements of the urban centres. For the latter, the main worry is the next meal and issues of access to telecommunications infrastructure are a luxury. Further, for historical reasons (apartheid regime), these are the majority of South Africans and mostly black [27] represented by the ‘second economy’ and the ‘third economy’ analogies. The common local government institution serving these residents are local municipalities (category C) located within district municipalities (Category B). Evidence show that most of the service delivery protests rocking the country happen in these municipalities.

Given the facts in the paragraph above, it is clear that e-government implementation strategy for South Africa’s local government requires a unique strategy. Such a strategy should be preceded by contextualised identification of critical success factors. This paper makes a contribution to this end. By using data from one urban Metro (Mangaung), a District Municipality (Dr. Kenneth Kaunda) and one Local Municipality (JB Marks), general (to the three categories of municipalities) and specific (to each category) critical success factors are identified. These relate to e-services, e-skills and e- infrastructure requirements.

Overall, the six critical success factors were identified as: (1) implementation of some form of e-government system that can ensure timely and effective processing of documents; (2) provision of basic ICT skills to employees of municipalities; (3) implementation of ICT training programmes to support life-long reskilling; (4) need for e-connectivity; (5) support for anytime and anywhere access to information; (6) institutionalisation of a new paradigm of service delivery under the slogan; “improving service delivery through ICTs”. To some extent, these critical success factors are aligned to the three sub-indices of the UN e-Government Development Index (EDGI), namely: the online service index (OSI), the telecommunication infrastructure or the human capital index (HCI). However, in the case of the South Africa’s local government, the TII should be viewed from the provision of basic internet connectivity while for HCI, it is critical that the provision of ICT skills is contextualised and sustainable. There is evidence that past initiatives relating to ICT skilling have failed.

Given that a very robust national e-government implementation strategy has already been put in place, adaptation of this strategy for the local government context, could be considered. In particular, prioritisation of the different common channels of e-government access could be done and ensure higher priority is given to the common service centres. Such centres will provide access points for the poor people with no e-infrastructure of their own. Further, data analysis revealed that, for the marginalised citizens living in the district and the local municipalities, the issue of provision of technical and other skills required for e-government is a top priority. The respondents also flagged the need for regular dissemination of information from the municipalities’ offices – preferably in the local languages. Related to this, is the ability for the local municipalities to define their own information needs. This points to the possible perception that the more financially endowed municipalities tend to unduly influence the operations of poor local municipalities. The e-government implementation strategy should therefore cater for these critical success factors.

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