

Addressing Service Delivery in Rural Areas through Deployment of Information and Communication Technology Platforms

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Abstract: ICTs have power to connect or provide access to poor people in remote rural villages. The initiatives to deploy ICTs in rural areas have mostly not been sustainable. The purpose of the paper is to ascertain what factors lead to the unsuccessful deployment of ICT Platforms in the rural areas. The contribution of ICT Platform adds to the important notion of access which enhances service delivery. This is seen through the Technology Acceptance Models used in this paper. The main research methodology qualitative study and data was collected from 14 container Platform sites. The importance of community leaders and technology champions in the acceptance and usage of these technologies by communities cannot be overemphasised. Finally, there is a need for policy development around deployment and their maintenance of these technologies.

Keywords: Information and communication technology; Technology Acceptance Model, Development, Platform, service delivery, National Development Plan, Rural development,

1. Introduction and Background

The National Development Plan (NDP) Vision for 2030 determined that the weak penetration of ICT infrastructure and communication and the high costs of access are the key national challenges that need to be addressed in order to solve problems leading to a socio-economic and geographical digital divide (NDP, 2011). The NDP asserts that the national ICT infrastructure is poorly located, unevenly distributed while the high cost of access is a major challenge. The NDP talks about a seamless information infrastructure, which is accessible to all and robust enough to enable access to services required for effective economic and social participation. In South Africa in 2008 access to ICT infrastructure and services by the country's rural households were badly affected with only 2.3% having access to a computer (COFISA, 2008) and in 2011 64.8% of households had no access to Internet (Stats SA, 2012).

In 2012 one of South African government departments (The Department) partnered with CSIR-Meraka Institute of the Council for Scientific and Industrial Research (CSIR-Meraka) to engage in a massive pilot project which deployed ICT Platforms (Platforms) at certain designated rural areas in the country. This project was meant to ensure that the rural communities were not socially and economically being left behind while at the same time addressing the NDP Vision for 2030 of ICT connected society. The aim of the ICT Platform initiative was to make a fundamental difference in computer literacy and associated skills and to provide Internet and data access to South Africans living in rural areas (van der Vyver & Marais, 2013, Smith et al 2006 & Herselman et al 2010). Platforms were based on principles similar to those demonstrated by the Indian project called the Hole in the Wall

whose objective was to show that minimally invasive education (MIE) is a viable form of education (Stillman *et al* 2012, Mitra, Dangwal et al., 2005).

2. The ICT Platform description



Fig. 1: The solar powered container Platform

The solar container Platforms (Platform) consists of the solar-powered housing (as in Fig.1 above) and ICT Platform (Fig.2 above) which provides people access to computers, mobile tablets and Wi-Fi. The accessories to the Platform included printers and photocopier. The Platforms had both cached, 90 Gigabytes of content and direct Internet in public places with the purpose of offering free 24-hour access to the technology to underserved, poor populations (Stillman et al., 2012). The content available on the Platform includes educational resources which provides user with a variety of educational resources such as: Physics Education Training, simulations, past exam papers, Thutong education portal, Motion Mountain physics textbook, Paul's Maths, Professor Weissman maths, Astronomy, Space Technology and a link to Mindset Videos, books on among others Agriculture, cookbook collection etc. The container Platform's content is accessible without connecting to the Internet but by directly engaging with the ICT terminal or via Wi-Fi enabled devices such as a tablet, laptop or smartphone (Walton & Johanson, 2012). Importantly, at the heart of any well functioning ICT Platforms are the champions.

2.1. The ICT Platform champions

The Theory of Change of the project illustrated a need for the Platform champions with the necessary technical knowledge of the Platform and understanding of their roles and responsibilities. The Department sourced from its Youth Corps programme a number of youths who were trained as potential Platform champions with the aim of providing a service to their community. The management of these champions was not in the scope of the Platform project and remained with the Department. The champions' role entailed among others helping public with printing, copying, sourcing information cached or from Internet, Internet use, tablets use, and to keep the general cleanliness of the ICT Platform (Consolidated report, 2016).

3. Objectives

The fundamental objective of this paper is to determine what leads to the lack of success of some of ICT Platforms sites. Many people who wrote about these ICT Platforms were concerned with their success stories and less so with the problems leading to some of them not being successful and closing down.

- As part of service delivery, it needs to be noted that the actual deployment of the ICT Platform is achieved to ensure the 2030 vision.
- Once the community has been provided with the technology and content it is the expectation of government that they are used. This will also include the community contributing their own content.

The container Platform project rolled out ICT Platforms for the following purposes: (i) As information and communication resources; (ii) As learning centres; (iii) As access points to ICTs; (iv) As practical tools for development; and (v) As a tool for bridging the digital divide.

The purpose of the paper is to ascertain factors leading to the unsuccessful use of ICT Platforms in the rural areas by bringing to the fore the challenges that were encountered.

4. ICT for service delivery

Accessing basic services is a problem most South Africans are faced with daily. The South Africa government is not able to meet its responsibility to ensure adequate health, education, water and sanitation to their people (Institute for Security Studies, 2009). These add to the growing dissatisfaction in mostly poor communities leading to citizen unrest. The Institute for Security Studies explains that often inadequate service delivery relates to lack of accountability, transparency and commitment in making services work for the poor. Lack of implementation and absorptive capacity also contribute to lack of service delivery (UNDP, 2007). The challenge in rural areas is access to ICT technologies by learners, teachers and the broad community. “ICT is an enabler that can speed up delivery, support analysis, build intelligence, and create new ways to share, learn and engage” (NDP, 2011). These ICTs have the power to connect and provide access to information to poor people living in remote rural villages. “The application of ICT in the rural development sector has been relatively slow because of poor ICT infrastructure, poor ICT awareness among officials working in rural areas and local language issues” (Kumar, Abhay and Singh, 2012).

In South Africa local government plays a vital part in the provision of service delivery and development. The Batho Pele principles were developed to serve as acceptable policy and legislative framework regarding service delivery in the public service with its main thrust being the improvement of service delivery in the public service South African Government, 2016). According to Visser and Twinomurinzi (2009) the challenge here is to ascertain to what extent are government ICT technological innovations adhering to the principles of “people first” and are enabling the improvement of service delivery to all South Africans? Within a development context, ICTs are generally accepted as enablers of the development process, facilitating organisational processes to be fast tracked and better managed Phahlamohlaka et al (2010).

5. Conceptual framework

Why do users accept or reject technologies is at the heart of this paper. This study attempted to understand the reasons for people accepting and utilising the ICT Platform. The *Technology Acceptance Model* (TAM) attempts to focus on how people can adopt and utilise a particular technology introduced to them, the model was developed by Fred Davis

in 1989 (see Fig. 2 below). Therefore, TAM predicts the user acceptance of end-user applications by specifying causal relationships among select belief and attitudinal constructs that mediate the influence of external variables on usage behaviour (Davis, 1989). This theory suggests that when users are introduced to a new technology system a number of factors would influence their behaviour or decision of adoption and how they will use the technology, which is being orientated to them. In this regard Davis (1989) shows that at the heart of TAM are two beliefs, the perceived utilities and the perceived ease of application, and these determine attitudes for adopting the new technology. Beliefs are individually based and subjective as they relate to an individual's assessment that carrying out some behavior will lead to a specific result (Hubona & Kennick 1996). Attitudes could either be the individual's positive or negative feelings about performing a specific belief. They further assert that beliefs connote a degree of instrumentality tied to an action whereas attitudes are purely affective.

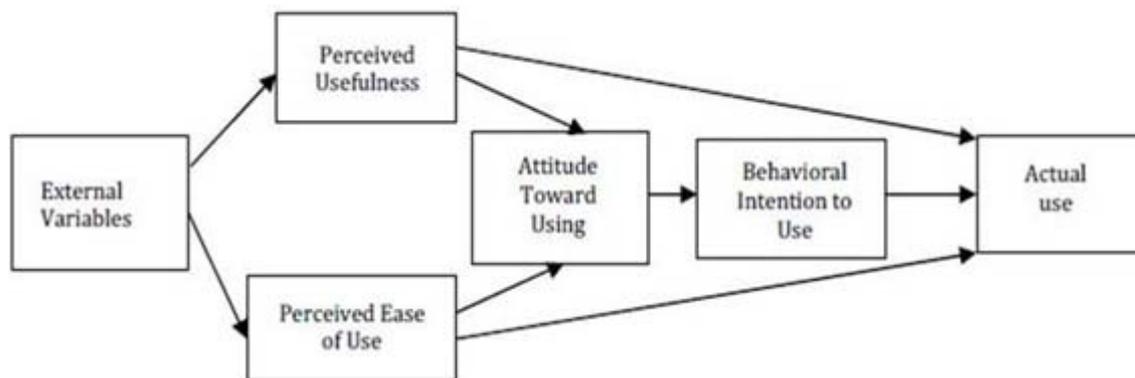


Fig. 2: Technology Acceptance Model framework

“The goal of TAM is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being parsimonious and theoretical” (Davis, 1989). TAM suggests that when users are presented with a new technology, a number of external factors determine their decision about how and when they will use it. It is on the basis of the perceived usefulness and the perceived ease of use that users develop a positive or negative attitude toward using any technology. In return this leads to the behavioural intention to use the technology in the future and the actual use.

6. Methods and tools

The main research methodology was a qualitative study with interpretivism as the philosophy. Interpretivism is grounded in the social sciences and it accepts the notion that individuals create meaning within a specific context (Hanson, 2008). “Interpretive methods start from the position that our knowledge of reality, including the domain of human action, is a social construction of human actors” (Walsham, 2006). These methods support our research paradigm because of their flexible use, particularly with technology, while allowing future developments.

Qualitative data methods were mainly used in this study. Qualitative data collection instruments entail “analysis, interpretation, and report writing differ from the traditional, quantitative approaches”. Creswell indicates that at the core of the qualitative approach is the space it creates for comments by the researcher about their role and strategies they used. Data was gathered from all 14 Platform sites (Ebenhaezer, Luwamba, Vukuzakhe, Marapyane, Sokhulumi, Devon, Wupperthal, Moretele, Verdwaal, Tswelopele, Dannhauser, Matlakeng, DonDonald and Sedibeng) where containers Platforms were deployed (see Fig. 3 above). Teams also spent time observing champions and user

interaction with technology was also observed. The results were interpreted using the Microsoft Excel spreadsheet.

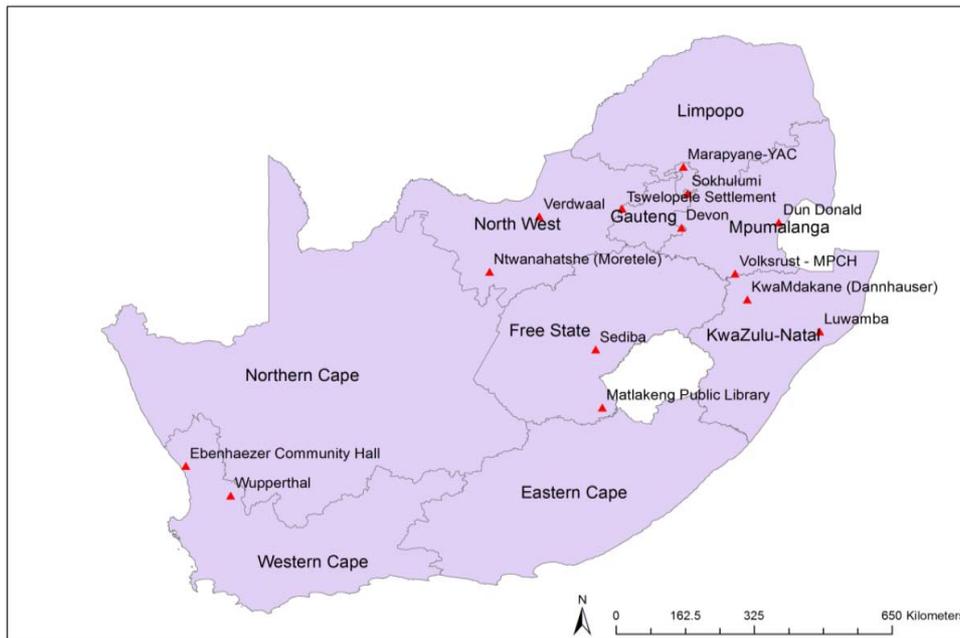


Fig. 3: Map of areas of ICT Platform deployment

7. Results and Analysis

The Government achieved one of its objectives of service delivery by deploying 14 ICT Platforms to the rural communities. This included among others technology, Internet access and trained champions.

The second part of service delivery, which are now encapsulated in the results below, deals with the actual usage of the ICT Platform and its contents by the relevant communities. In this regard, the results show some of the problems, which lead to ICT Platforms not operating optimally.

7.1. Operational challenges

During the operationalisation of the ICT Platforms sites four different scenarios for performance or non-performance of Platforms were identified and these were:

Scenario 1: Ineffective Platform - no champion present:

An ineffective ICT platform with no trained champion present on site does not allow access by the community to the platform and its services.

Scenario 2: Ineffective Platform - champion present but no call centre and maintenance/ equipment failure:

An ineffective ICT platform, where trained ICT champion is present but over time the Platform equipment is not maintained leads to equipment failure and vandalism by the community.

Scenario 3: Partially effective Platform - champion present, functioning and computer equipment but inadequate management of printer supplies (toner/paper):

A partially effective ICT platform site has platform champion present, functioning computer equipment, with or without a call centre and maintenance. However, there is no or inadequate management of printer toner and paper supplies. This leads to the printer being underutilized after a period of time.

Scenario 4: effective Platform - Champions engagement and Active call centre and maintenance.

An effective ICT platform site has a trained Platform champion, functional equipment that is maintained. Support via an Active call centre, established community engagement and process in place for replenishing of consumables (printer toner and paper).

7.2 Institutional arrangements

There were many instances where the institutional arrangements were not optimal to support joint responsibility and joint accountability for all role-players. For example, people could not access the sites if champions were not trained on time, deployed to sites on time, or were not aware of their roles and responsibilities.

7.3 Champions selection, training and deployment

The role of Platform champion is critical in ensuring that the Platform is accessed and used. The use of Platforms suffered where champions were not properly selected, trained or deployed.

From the training of champions there was evidence that some of them were either not interested in ICTs, or did not have the minimum level of technical knowledge and well language skills required.

It was observed that the administrative and management content required by champions to manage a Platform was not included in the training. The training was focussed on technical training.

Again training did not provided champions with any clear explanation of their roles and responsibilities regarding site management and the acceptable use of Platform equipment.

After training not all champions were deployed to their sites. For example, 36 champions were trained in September 2014 but only 12 were deployed to their sites, 13 were not deployed and 11 were not contactable.

In addition, in September 2015 some champions claimed to have never been to their sites after their training due to either Platform being too far or not knowing where it was located.

7.4 Community participation

In some sites community members were not aware of the Platform and its services, particularly where champions were not present at all times.

Some community representatives were not clear about theirs or the champions' role. In communities where there was a champion and awareness of the Platform and its services, community members of all ages used the Platform services. A great example is a community in the Northern Cape, which had two active champions who had the support of the community representative. In this community older generations visited the Platform during the morning hours, they used the platform for printing, making copies of their IDs, sending CVs and searching for jobs on the Internet. In the afternoon the platform was a buzz with students who came to the Platform to do research, play games and watch YouTube videos.

7.5 Operations and management approach & Entity maintenance:

With ICT equipment there is a need for continuous servicing and up-keep. This is also required for the Platform equipment (printer, tablets, and terminals) so that it remains functional and usable to the community.

8 Discussion of results

The purpose of the paper is to ascertain factors leading to the unsuccessful use of ICT Platforms in the rural areas by bringing to the fore the challenges that were encountered. Once the community has been provided with the technology and content it is the

expectation of government that they are use. In discussing the results above there is a need to understand the critical questions answered by these results are what leads to the failure of some of the ICT Platforms and what are the lessons learned during the deployment? “ICT development will continue to transform economic and social activities and how individuals and communities communicate and function” (NDP, 2011). The results from the deployment of these containers Platform indicate that at the heart of this transformational agenda lie the human being and their skill. The first scenario from the results above shows that even with the deployment of the best of platforms if the champions do not show up for work the technology becomes ineffective as communities cannot accessed it. The lack of access to the Platform and its services will render it ineffective regardless of the training levels of platform champions. For any successful participation in the Platform there is a need to install a local champion as this will increase the credibility and potential for the initiative to spread (Colle, 2005).

In the second scenario an ineffective ICT Platform is again seen where champions are trained and are deployed on site but over time the Platform equipment is not maintained leading to equipment breakdown and vandalism by the same community. The results indicate that there is a need for proper maintenance regime to be put in place to ensure that access is not short lived due to poor equipment failure. This is not a unique problem to South Africa but according to Hedberg (2010) one of the main problems is the lack of skills for telecentre maintenance and operation. This reveals the connectedness of the technology, human aspects, and functionality. Therefore, there is a need for well trained champions to be present at their sites and a call centre to be established where queries for assistance with the problematic equipment could be forwarded.

In terms of the service delivery, communities have to be made aware of the services available to them accessible through the Platforms so that they can have the buy in. The issue of vandalism seen where Platforms are not functioning suggests a need for communities to accept ownership of the deployed technology. ICT is an enabler, it can speed up delivery, support analysis, build intelligence, and create new ways to share, learn and engage (NDP, 2011). “One of the critical issues for a telecentre’s success is the involvement of the local community and community ownership” (Rega, 2010). This means that community participation is important for the success of these Platforms. “Lack of local ‘legal’ ownership of equipment (and structures) can lead to the downfall of a telecentre, even despite high managerial competence and business competence” (Attwood & Braathen, 2010).

The real success of ICT Platform depends on the usage, which is influenced by a number of factors (Bailey & Ngwenyama 2013). Just like in scenario three above there are instances whereby a site is partially effective because there is a champion on site, functioning computer equipment but there are inadequate management of other resources such as printer toner and paper. Once these resources are depleted and not replenished the number of users declined. The ICTs’ impact on service delivery and many sector of society depends on how uptake is addressed (NDP, 2011).

The perfect situation of a Platform site working optimally and deemed effective is seen in scenario four above. The underlying reasons for this good performance include among others (i) champions being fully engaged in the activities of the Platform, (ii) community leadership buy in, (iii) reporting problems and maintenance on time, and (iv) use by community members. It is therefore, very import to emphasis the importance of the community engagement. One of the critical issues for a telecentre’s success is the involvement of the local community and community ownership (Rega, 2010). It is in this regard that the utility of technology as understood through the use of TAM model is also crucial to the delivery of services. TAM shows that where people are not able to use the provided technology it would not be easy to attract them to the telecentre.

8.1 Recommendations

It is recommended that the communication and coordination should be improved amongst all role-players as the implementation of a project of this nature includes varying levels of responsibility from different role-players.

An updated framework or guideline for selecting sites is required. This guideline needs to prescribe minimum and ideal criteria, as well as a process for selecting sites, which also includes consultations with the community.

A framework for minimum operational hours of DDs may need to be developed to improve accessibility.

Awareness campaigns need to be established before and after the deployment of the ICT platforms. This will create excitement and buy in from community members.

More content on administration and management to equip champions sufficiently in their role as Platform champions who provide services to the community;

Additional criteria to be included in the selection of champions are: a minimum of a matric certificate and an interest in ICTs and residence within a reasonable distance from the location of the assigned Platform site.

Follow-up training for champions is required

The deployment and maintenance policy needs to be established

During training of champions there should be more practical components to the training like visiting a Platform on site.

9 Conclusion

The deployment of ICT Platforms in the rural areas of South Africa goes a long way in addressing both the issues relating to government service delivery and the NDP's Vision for 2030. The deployment of the Platform addresses the challenge of access to ICT infrastructures as proposed by the NDP. The critical lesson learned during the deployment of the Platforms, which was an attempt among others to take services to the rural communities, is that at the hub of a successful site are the people both the Platform champions and the recipients of the technology. It's crucial that champions were well trained in order to provide sound advice and other services to the communities and the communities understood the benefits of accepting and using the technology. For the community to participate in the deployed technology depended more on how well it functioned, addressed their needs, and was made accessible. The management of these Platforms by the champions was high critical for the community to accept and utilise the Platforms.

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