

AN E-COLLABORATION APPROACH TO BUY-IN OF DEVELOPMENT INNOVATIONS IN RURAL COMMUNITIES: A SOUTH AFRICAN EXPERIENCE

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Abstract: South Africa is attempting to rewrite its history as a national heritage of empowered citizens working in close collaboration with the government. Recognising the inherent capabilities in fast-tracking development, ICT is regarded as a critical success factor in delivering development innovations in rural communities. However, the ICT innovations do not include the collaboration element. This paper reports on the effect of an e-collaboration approach in a simulated environment to raise awareness of an act of government within rural communities. The research followed an interpretive paradigm with the researchers as participant observers. The collected data was analysed using elements of the diffusion of innovations theory as a theoretical lens to reveal that e-collaboration can lead to the buy in of government development innovations.

Keywords: Diffusion of Innovations, E-Collaboration, Collaboration Engineering, ThinkLets, Promotion of the Administrative Justice Act, Batho Pele, Multi-Purpose Community Centres, South Africa, Rural Development

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1. INTRODUCTION

South Africa has come out strongly in its development initiatives in a bid to rewrite its recent history reminiscent of institutionalised oppression and forced separation to a national heritage of empowered citizens working in close collaboration with the government. Recognising the mammoth task of changing the deeply seated suspicious attitudes towards government (Twinomurizi & Phahlamohlaka, 2005), one of the primary government policies is to make public service delivery “people-centered” and “people-driven” (South Africa, 2006). The policy, which is called Batho Pele, is aimed at instigating a collaborative approach to public service delivery which places “people at the centre of planning and delivering services” (ibid) using among others, strategies which are driven by Information and Communication Technology (ICT). One such ambitious government initiative powered by ICT-enabled gateways is the Multi-Purpose Community Centres (MPCC) programme. The MPCC programme is earmarked as a key enabler for implementing development initiatives and to introduce government services in rural communities. The goal of the MPCC programme is to “provide every South African citizen with access to information and services within five minutes of their place of residence within 10 years” (South Africa, 2001). Notwithstanding, the noble task is not without its challenges, the greatest being in adopting the programme within the communities and the community failure to adopt MPCCs (South Africa, 2006). Moreover, whereas ICT is regarded as an MPCC critical success factor, it is one of the other serious challenges facing the implementation of MPCCs in the rural areas (Legoabe, 2004).

These challenges to technological and development innovations should not come as a surprise. The discourse on the role of ICT in development efforts is criticised for being sold by international donor agencies such as the World Bank to developing countries as the silver bullet in sidetracking development hindrances and institutional inertia to leap frog development efforts. Further, the recommendations by the influential bodies to link aid to good governance and good governance to ICT enabled public sectors are misleading (Avgerou, 2003) and on the contrary lead to a new form of dependency on the donor countries (Wade, 2002). Wade (2002) argues that ICT can only be beneficial if it is used as a tool which can be adjusted to combine external knowledge and experiences and adapted within a local context. Much as the role of ICT for development is under critical scrutiny, we cannot ignore the inherent capabilities that ICT has to offer. The hardships and frequently unfulfilled and broken promises from governments and NGOs usually results in negative mindsets for which the process of socialization can be used effectively to sustain investments in rural ICT (Avgerou, 2003; Kanungo, 2004). Development efforts should show a clear relationship between the project and the community not in a “donor-recipient” type relationship but in “partnership in progress” relationship (Kanungo, 2004). The qualities of the ICT for ICT enabled rural development initiatives should be similar to the qualities for rural development goals; local relevance to the community, repeatability, sustainability and predictability (Steinberg, 2003). These qualities can be delivered through a novel e-collaboration approach, collaboration engineering using thinkLets. Collaboration Engineering using thinkLets is an approach where facilitators develop transferable, repeatable and predictable collaborative processes which can easily be adopted and used by practitioners in their local context (Briggs, Vreede, & Nunamaker, 2003).

This paper draws on results from two years of an ongoing six year longitudinal interpretive research into identifying and harnessing opportunities for sustained collaboration and interaction by communities through the use of web-based Group Support System tools within e-government contexts in South Africa. The results to date suggest that the e-collaboration approach when used as an enabler in a role playing scenario which builds on practical examples, can lead to the buy in of government development innovations in rural communities. The research can contribute to proposing a new government approach in collaborative service delivery and also for research in investigating the qualities of ICT for development in rural communities.

The remainder of this paper of this paper is structured as follows. The next section gives the theoretical background of the research from a government development perspective particularly in terms of Batho Pele and the MPCCs towards rural communities. The e-collaboration concept of Collaboration Engineering and thinkLets is introduced and the relationship with the ideals in development goals is elaborated. This is followed by the research approach, design and methodology to collect data. The data is analysed with corresponding discussions through the theoretical lens from elements of the diffusion of innovations theory. The paper concludes with a summary of the key findings, practical implications, limitations, recommendations and areas for further research.

2. BACKGROUND

2.1. Batho Pele and Multi-Purpose Community Centres

Batho Pele is a Government white paper which sets out a belief set and a functional approach to transforming public service delivery to make it service oriented. Batho Pele, a Se-Sotho term meaning “People First”, is based on eight citizen-focused principles (South Africa, 2006). It is grounded in three important policy and legislative themes; those that are directed at placing citizens at the centre of public service delivery, those that deal with access to information utilising techniques such as those provided by ICT and those that deal with the transformation of service delivery for efficient administration and good governance (*ibid*). Regardless, for the vast majority of South Africans who live in rural communities, access to government services can be as many as two days away on foot (H. Twinomurinzi & Phahlamohlaka, 2005). Ironically, it is these people who have the greatest need for government services. The government therefore decided to go to the people in the rural communities through the Multi-Purpose Community Centres (MPCC) programme.

Multi-Purpose Community Centres are community service centres which will be based in each district and metropolitan council. The MPCC vision is to have these centres provide at least six key government services which are relevant to the particular community such as social grants, social security pensions, health, education, passports and identity documents (South Africa, 2001). The MPCC programme was initially started in 1998 but slowly fell silent as the years progressed and by 2000 there was almost no mention of it. It is important to note that at the first launch of the MPCC programme, ICT was not considered as a strategic driver. However, by April 2004 the government had renewed its commitment to implementing the MPCC concept adopting ICT as a critical success factor and strategic driver. ICT at the MPCC is integrated in two ways; firstly through a Batho Pele Gateway Portal office where individuals coming to the MPCC must first report; and secondly through a cyber café like extension where computing facilities are commercially made available to the community for training and personal purposes (Twinomurinzi & Phahlamohlaka, 2005).

The Batho Pele collaborative intentions combined with the MPCC are important enablers in changing the deeply seated suspicious attitudes towards government. The intention is for the programmes to reduce government complexity, disseminate information, achieve community consensus and create an air of social acceptance (South Africa, 2006). According to Vreede

(2006) there are three modes of collaborative efforts; collective type efforts where each group member works separately and the results are combined; coordinated efforts where each group member works separately but handover is a critical element and; concerted efforts where all the group members must contribute simultaneously. Basing on the above, the Batho Pele collaborative efforts can be considered as an attempt at a concerted effort. Nonetheless, there is a tendency within communities to avoid such government innovations (Rogers & Scott, 1997). People prefer not to work collaboratively for many reasons such as losses in time and coordination, social conformity, groupthink, fear of being judged, dominance from some group members and due to the information overload that usually occurs (Vreede, 2006).

Batho Pele and the MPCC programme are a good indication of the commitment of the government to engage in collaborative efforts with the public even within the rural communities and to deliver appropriate and better service delivery. But despite the good policy and rural development intentions, the corresponding government efforts are not collaborative; at most they are a one way communication channel from the Government to the public. Anyhow, even if the communications were to be collaborative as intended, a concerted collaborative effort between the few government administrators and the vast majority of the South African public is clearly an insurmountable task. There exists a collaboration gap between people in rural communities and the government. Recognising the demonstration by government to harness the capabilities of ICT in the Batho Pele and MPCC initiatives offers good opportunities to investigate other potentially helpful ICT options for the benefit of rural communities. The answer appears to lie in adopting an ICT strategy that facilitates collaborative work; e-collaboration.

2.2. E-Collaboration: Collaboration Engineering using ThinkLets

E-collaboration as a field of research on its own is relatively new though as a concept, it has been around the public media for a while in an unfocused manner with different groups assigning different meanings based on the audience (Kock, 2005). A fundamental aspect of e-collaboration is the electronic exchange of information with the goal of the participants playing a role in the outcome of the collaborative process (ibid). This paper adopts a definition of e-collaboration from Kock (2005) as “collaboration using electronic technologies among different individuals to accomplish a common task” (pg. i). Although Kock (*ibid*) provides an ingenious framework for e-collaboration, he does not prescribe a method on how to go about it. Historically, most methods of e-collaboration tended to focus too much on the technology and much less on the human interaction (Gopal & Prasad, 2000). Gopal and Prasad (2000) attribute the inconsistent results from e-collaboration studies mainly to the technology-centred focus. Regardless of the results, research on e-collaboration has not abandoned the technology fad predominantly because of the inherent potential capabilities that it promises. Thus, to investigate the opportunities for sustained collaboration and interaction by communities, the research group adopted an e-collaboration approach that takes into account the human and development aspects; Collaboration Engineering using thinkLets (Briggs et al., 2003).

Collaboration Engineering is an approach where facilitators develop transferable, repeatable and predictable collaborative processes which can easily be adopted and used by practitioners (Briggs et al., 2003). Briggs et al (2003) reckon that the fundamental role of Collaboration Engineering (CE) is in training practitioners in the relevant facilitation skills on e-collaboration technology and group dynamics necessary for them to use the e-collaboration technology to create a repeatable collaborative process. They define CE as “an approach for the design and deployment of collaborative technologies and collaborative processes to support mission-critical tasks” (p. 45). For successful CE efforts, there are three critical requirements; a low e-collaboration technology related skills conceptual load (easy computer steps to follow); the e-collaboration technology related facilitation skills need to be packaged such that different practitioners using the same packaging will get similar predictable results

from their groups; the e-collaboration technology facilitation skills blocks must be packaged such that they can be reused easily to create a new collaborative process by re-organising the package blocks. These building blocks called thinkLets are “the smallest unit of intellectual capital required to create one repeatable, predictable pattern of collaboration among people working toward a goal” (pg. 46). The thinkLet consists of a collaboration tool, the tool configuration and a script with step by step instructions on how to run it. In order to achieve a goal collaboratively, the participants must follow a reasoning process towards a collaboration pattern. Briggs et al. (2003) adopt and define five general patterns of collaboration; diverge - the group moves from fewer to more concepts; converge – from many concepts to focusing on a few worthy of further attention; organise – from less understanding to more understanding of the relationships among the concepts; evaluate – from less to more understanding of the possible consequences of each concept; build consensus – from having less to having more agreement on courses of action.

Gopal and Prasad (2000) also attribute the inconsistent results in e-collaboration research to the use of positivistic epistemological approaches. A strong criticism of positivistic research is its attempt to transcribe socio-cognitive phenomena into quantitative constructs that can be measured objectively. The positivist stance therefore does not appear to inform this research. Considering the strong social context of the research, the research group adopted an interpretive approach to investigate the opportunities for sustained collaboration and interaction by communities.

3. RESEARCH APPROACH, SETTING & DESIGN

3.1. Research Approach

Unlike positivism, the central ontological focus in interpretivism is the relationship between the researcher and the phenomenon being studied (Nandhakumar & Jones, 1997). Reality is a result of individual subjective interpretations and/or of inter-subjective constructions shared between individuals. Epistemologically, facts and values cannot be separated and knowledge is viewed as ideological serving the interests of particular social groups (Burrell & Morgan, 1979).

Given the dual social and technology focus of the research in understanding social processes and trying to improve them using technology, we followed an action research method. Although the meaning of action research has been used in many different ways depending on the theoretical tradition (Reason & Bradbury, 2001) we adopt the meaning portrayed by Reason and Bradbury (2001, p. xxiv) that action research describes the “approaches in inquiry which are participative, grounded in experience and are action oriented.” Through action research the researchers are able to infer new insights into a social system while at the same time attempting to improve it in a quasi-experimental fashion (Kock, 2003, p. 105). The nature of the research as is described in the next section illustrates such an attempt.

Data was collected in different forms; the electronic logs from the e-collaboration technology, observations, video taping, discussions, questionnaires, written feedback and we took minutes and reports and registers for keeping of accurate records. The process is auditable because of the nature of the design through following the notion of a thinkLet. Owing to the space and time limitations imposed on conference paper research reports, the bulk of the research design and setting will not be elaborated on in detail; it will only be briefly described in as sufficient detail to enable a good understanding. The details of the research design and setting are fully described in Twinomurinzi and Phahlamohlaka (2006).

3.2. Research Design and Setting

The research followed the CE approach as a basis for conducting simulation exercises using an e-collaboration technology, GroupSystems®, as the e-collaboration technology tool in a

workshop setting. The aim of the workshops was to raise awareness about the process involved in the implementation of one of the acts of government, the Promotion of the Administrative Justice Act 3 of 2000 (PAJA). The PAJA stipulates the right to procedurally fair, just and reasonable just administrative action to anyone in South Africa and that everyone who has been affected by it has a right to request written reasons. Administrative action is any decision or the lack of a decision which could have a negatively impact on an individual or a group of individuals. There is a stipulated process that must be followed by an affected individual or a group of individuals when requesting the written reasons. There is also a process that an administrator who receives the request for written reasons must follow. The PAJA advocates a concerted collaborative effort between government and the public.

In the simulation exercises, we facilitated the collaborative process between participants using GroupSystems® basing on a real case scenario. The simulation exercises are designed following a uniform set of procedures, support material, case scenario, instructions, duration and facilitation with the goal of being able to create possible repeatable patterns of interaction. We followed the notion of a thinkLet in designing the simulation exercises based on the design illustrated in Figure 1. While maintaining the same process in the simulation exercises, in Workshop 1 to Workshop 3 one real case scenario was used and in Workshop 4 and Workshop 6, a second real case scenario was adopted (Twinomurinzi & Phahlamohlaka, 2006).

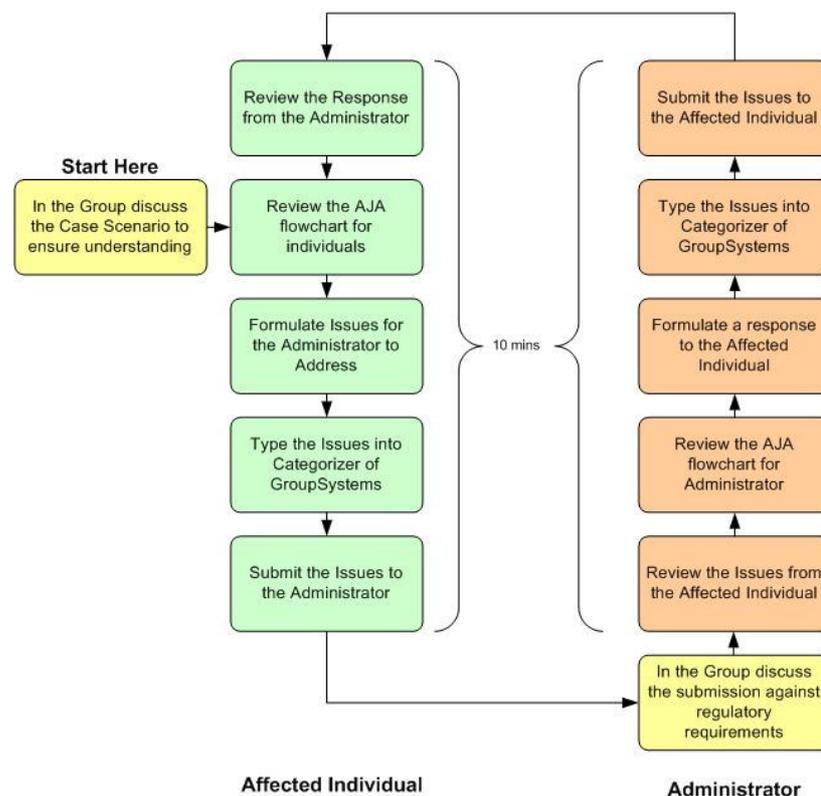


Figure 1. The Simulation Model for the TurnStormer thinkLet (Twinomurinzi & Phahlamohlaka, 2006)

At each workshop, the computer simulations are followed by three research feedback sessions. In the first session, there is a group discussion where the participants, facilitated by the research members, record their experiences of the PAJA while using ICT. For the second session the participants record their experiences individually. At the final discussion, the participants openly offer their personal opinions and observations within the context of the day on anything they wish to comment on. At the close of the workshops a follow on

workshop is requested and planned for with the participants. All participants expressed their willingness to participate as research participants.

Three field locations were chosen which covered four of the nine provinces of South Africa; North West, Limpopo, Mpumalanga and Gauteng. Each of these locations presented a unique social environment. A great deal of consultation and preparation with the community leaders went into selecting twenty participants from within the provincial localities. The leaders from the institutions played a significant role in deciding who the most appropriate participants from within those communities would be based on the criteria we requested. The research sought to have a cross-section of participants ranging from government officials, community leaders, students, pensioners, social workers and those who were likely to attend. Most, but not all participants came as representatives of their organizations. Written invitations that were signed by the research project leader and by the community leaders from within these institutions were sent out to each participant two weeks prior to the workshop. A substantial effort also went into preparing the actual locations for the workshops.

As is consistent with action research, our role in the research was as both participants and as observers (Whyte, 1991).

3.3. Data Interpretation & Analysis through elements of the Diffusion of Innovations

Theory in interpretive case studies such as this can play a role in providing some insight into the thinking of the researcher about a social phenomena, as a guide to the research approach and as a theoretical lens to interpret and analyse data (Walsham, 2001, p. 8). Walsham (2001) alludes to the fact that there is no theory that can perfectly describe a situation and recommends that elements of a theory which are appropriate to the situation can be borrowed in order to make sense of it. In this report, elements of the diffusion of innovation theory are adopted as the theoretical lens to interpret and analyse the data that was collected. The choice of the Diffusion of Innovation theory suggested by Rogers (1995) was predominantly because of its historical roots in rural sociology research which focuses on the social problems of rural life. Rogers & Scott (1997) describe diffusion as a four stage linear process of communication of new ideas in which ; (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system.

However, Rogers' linear suggestion of how the four variables come together towards the adoption and implementation of an innovation does not apply to the complex societal mix and collaborative approach that this research is investigating. This report is only able to identify with the characteristics of the four elements as identified by Rogers for the similarities with the thinkLet notion in repeatability, transferability and predictability. The four elements from the diffusion of innovations theory have been shown to be critical for collaborative interactions (Briggs et al., 2003; Twinomurinzi & Phahlamohlaka, 2006) but are lacking in the thinkLet approach. By borrowing these four elements from Rogers, this report defers the criticisms that are targeted at the theory on its prescribed linear adoption and implementation of an innovation without taking into account the social aspects.

4. RESULTS AND DISCUSSION

4.1. Innovation

Roger and Scott (1997) define an innovation as “an idea, practice, or object that is perceived as new by an individual.” In this instance, the innovation is the use of e-collaboration technology in a simulation environment to assist in raising awareness about the PAJA. An innovation has characteristics which determine the rate at which it is adopted. These characteristics are relative advantage, complexity, trialability and observability.

4.1.1. Relative advantage

Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes. The measure of this can be using economic terms and other social indicators. The greater the perception of relative advantage, the higher the rate of innovation. Against both economic and social indicators, the use of the e-collaboration technology was perceived to have the potential to offer greater benefits. The participants noted that it would make more economic sense to use adopt such an e-collaboration technology to interact with government than the alternative which is to travel to the next government service delivery point, wait in line and hope that the request will be accepted. The participants commented that the e-collaboration if adopted by government could “*save me time and money (travelling expenses)*” and “*I will not used more money for transport, faxing etc*”. The social benefit was the most cited with the predominant comment being “*It is a simple way to answer me for my application, because answers comes fast, rather than going there (physically)*”, “*Because computer make thing easy and fast, the administrator help people because of the living conditions*”. In summary, the e-collaboration experience was perceived to be better than the traditional means of communicating with government.

4.1.2. Compatibility

Compatibility is the degree with which an innovation is socially relevant to potential adopters. Firstly, it is important to note that the research participants were carefully selected to be a good representation of the communities in which we carried out the research. Most importantly though, the entire workshops are built around the PAJA and its implementation which is relevant to the rural social contexts. E-collaboration technology is appropriate for the PAJA as the PAJA entails a constant back and forth movement from people who have requested a government service. For people in rural communities, we introduced the act to them and then allowed to experiment with the technology to communicate with government better basing on a real case scenario. “*I can communicate with the administrator by means of an email, internet because it is the most simplest form of communication especially with people from far places, to get the information easily and fast.*” In summary, CE was socially relevant for PAJA in the rural communities.

4.1.3. Complexity

Complexity is the degree with which an innovation may be regarded as difficult to understand and use. The easier it is, the greater the potential to be adopted. The simulation exercises on the computers were carefully facilitated by the researchers and research group members assisted groups which did not have anyone with typing skills. This was acceptable to all the groups. The groups would then get together and discuss the case, and give a response. For example, we take note of a group which used a research group member to type, “*Computer can speed up the information or details. And is simple way that message can received faster.*” In summary, this approach to assist those who could not type reduced the complexity of using the technology.

4.1.4. Trialability

Trialability refers to the degree to which an innovation may be experimented with on a limited basis. An innovation should be able to have been trial run before it is adopted. If it cannot be trial run, then it is harder to have it adopted. At each of the workshops, it was emphasised that we are conducting research and requested the participants to be as open about there experiences as is possible. We noted that it is their feedback that would enable us to improve the process. The process of building a thinkLet is an iterative one which is dependent on the context. Time is an important factor in developing a thinkLet. In summary, it is possible to do a trial run using another real case scenario.

4.1.5. Observability

Observability is the degree to which the results are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Such visibility stimulates peer discussion of a new idea. The simulation was well captured by the participants, several commented at the second workshop that had received opportunities to share about their experience and to leverage their new knowledge of the PAJA as a result of the workshops. Some of the response to whether the members had an opportunity to exercise the PAJA include:

“Yes. One of the members involved in the workshop helped another member also at the workshop, this was in concern of a transfer of a child grant that was transferred to the bank but was paid to a wrong person. The one member went to the another and they reapplied and stop the wrong transaction.”

“Yes, one of the participants was personally affected by the AJA and used the principles of the AJA to formulate a program to assist with the implementation of the AJA. Another one of the participants was involved in helping people who were HIV positive to get grants from the government.”

In summary, the degree of observability of the e-collaboration experience was high.

Rogers and Scott (1997) reckon that an innovation which is perceived by individuals to have a greater relative advantage, compatibility, trialability and observability and a less degree of complexity, the greater the potential that the innovation will be adopted. The potential that e-collaboration as an innovative tool to lead to buy in of the PAJA is great.

4.2. Communication Channel

This is the process in which participants create and share information with one another in order to reach a mutual understanding. The communication channel is the means by which messages get from one individual to another. Mass media is good for creating the knowledge about the innovation while interpersonal channels are effective in forming and changing attitudes. The research design in terms of the social setup was such that groups could interact with one another. We used the Categoriser tool of GroupSystems® which is ideal for enabling people communicating with each other to come to a mutual understanding. The groups also allowed interpersonal communication between the participants and from the comments on observability, certainly led to new and changed attitudes. For example, *“The workshop helped one participant by giving her the knowledge of the AJA as well as helping her to transfer the knowledge to her citizens/clients (in this case it was a group of PWAs). It also helped her realise the potential use of technology for implmenting the AJA. Another particiapnt used the knowledge from the workshop to tackle an issue of corruption in her local community.*

4.3. Time

There are three sub-elements in time; innovation-decision process is an information seeking process where an individual passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea and to confirmation of the decision; innovativeness which refers to the degree to which an individual is relatively earlier in adopting new ideas than other members of a social system; the rate of adoption which refers to the relative speed with which an innovation is adopted by members of a system. This is usually measured by the number of people who adopt the innovation. While “sustainability is a desired goal, rural IS initiatives should not pressure themselves or be pressured into unreasonable timeframes to demonstrate sustainability” and “nurturing collaborative relationships takes time” the same would apply to e-collaboration (Kanungo, 2004). We recognise that this is research in progress.

4.4. The social system

This is a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The social structure and norms affect how an innovation will be accepted. The norms refer to the culture. Opinion leadership is also an important aspect of this element; the extent to which an individual is able to influence informally other individuals' perceptions with relative frequency. As noted earlier, the representative groups consisted of community leaders, ordinary citizens, government workers, NGO organisations. A change agent, who in this case are the researchers, seek to influence other individuals towards what the change agency believes is better, towards PAJA and the potential use of e-collaboration technology to address PAJA related issues. A final critical mass of the social system is the critical mass where enough individuals have adopted an innovation that further adoption becomes self-sustaining; the basis of the thinkLets is designed to create a repeatable and predictable pattern of action which is self-run and self-sustaining within unique contexts.



Figure 2. In Gauteng Province



Figure 3. In North West Province



Figure 4. In Mpumalanga Province (participants from Mpumalanga & Limpopo)

5. CONCLUSION

South Africa is emphatic on its development goals in terms of creating a national heritage of empowered citizens working in close collaboration with the government. It is because of such intentions that the constitution of South Africa is regarded as one of the best in the world (Weinberg, 2004). The use of ICT to fast-track development initiatives at the national level has some challenges most notably the community failure to adopt the initiatives and the inability to correctly harness the ICT being used.

From the results, it comes out that government efforts are still a one way communication channel, from the Government *to* citizens. According to Belanger and Hiller (2006) the collaborative intentions would group South Africa under the e-government category of Government with Individuals (GwIS) where a government seeks to establish and maintain a

direct relationship with citizens to deliver a service or benefit through a two way communication.

The results also illustrate that Collaboration Engineering through the use of thinkLets has the qualities which are fundamental to rural development initiatives; sustainability, relevance to local context, predictability and repeatability. Moreover, within a simulated environment in rural communities, the results have shown that a CE approach leads to the buy in of rural development initiatives. .

Based on the field experiences, CE can add value to government development initiatives which are intended for public service delivery. For research, CE could act as a blueprint on how to change attitudes to technology innovations prior to adopting new technologies in rural communities. CE appears to offer an approach to aligning incongruent technological frames (Orlikowski & Gash, 1994).

The limitations of this paper include the rejection of the suggestion in the Diffusion of Innovations theory by Rogers (1995) to prevent users from changing an innovation to better suit their circumstances (Siebeling, 2004) as it does not align with the inherent nature of CE in which adapting a technology for the specific local context carries great significance. It may also be questionable whether this approach is suitable in rural communities in terms of the resources that would be required to run the communication when citizens do not have basic computing skills. For this, we argue that according to the government commitment in terms of the MPCCs and community development workers, there are sufficient resources to operate such technological innovations within rural communities. Additionally, it is not perfectly clear whether the acceptance of the development innovation was a result of the CE experience or the PAJA awareness raising. We make the assumption that since the CE experience formed a crucial part of the workshops, it similarly had a significant impact.

For further research, we note that the process of creating and refining a thinkLet for every social context is a daunting task requiring multiple iterations over an extended period of time. Also, assuming that e-collaboration worked very well in rural communities and was adopted, the next hurdle would be whether the government is ready for the new way of doing work.

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