

PGIS Supported Knowledge Based Participation and Evidences of Empowered Community Members

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Abstract

In much of Botswana's rural population, formal business ethic is not common and the business environment contains fragmented and incomplete information. Under such mainly agrarian economies, the villagers do not know where the customers for their produce are, there is limited technology and often the farmers are not aware of the potential benefits from their agro-businesses. Many people are also not aware of the supportive policy frameworks, the agricultural programs/projects that the government has set up for them and the attendant financial support programs that are intended to implement the programs. The villagers participate more in social welfare programs from which they do not earn enough to live dignified lives. Participation and empowerment paradigms have been used in development programs to foster rural community development. However, many national and international development projects have been implemented with insufficient understanding of participation and empowerment processes. Using participation as learning and empowerment as informed participation within community group interactions, this paper presents the use of participatory action research implemented through participatory geographic information system (PGIS), to facilitate community learning and the construction of a PGIS based knowledge repository. The knowledge repository addressed issues of fragmented and incomplete information and also served more to facilitate knowledge construction, encourage local innovation and forged links with the local community development institutions as well as district and central government institutions.

Keywords: *participatory geographic information systems, action research, participation, knowledge construction, empowerment, rural community development*

Participation, when implemented intentionally as a learning strategy (Elkjaer 2003) can impart knowledge (Breu 2001), especially where people are involved in personally meaningful actions (Baum, MacDougall, and Smith 2006). The process of gaining knowledge involves acquiring the understanding of the theories that are involved in a particular knowledge area (Banks 2009; Oxenham et al. 2002) as well as gaining the practical hands on experience (Kolb, Boyatzis, and Mainemelis 2000) of carrying out the tasks. Within rural communities where communication is mainly oral, conversations act as the media for experiential learning (Baker, Jensen, and Kolb 2005) and generating knowledge. The acquisition of knowledge in turn imparts capabilities and skills (Oxenham et al. 2002). Capabilities and skills then build human capital as personal power within individuals, this individual power is then deployed within community groups to produce the more effective collective power (Chambers 2006). Participatory action research such as one supported by participatory geographic information systems (PGIS) can provide opportunities for empowerment (Corbett and Keller 2005; Kesby 2005).

Empowerment is considered to be a social process whereby individuals, communities and organizations gain control over their lives by changing their social and political environment in order to improve equity and quality of life (Peterson and Hughey 2004). Godfrey et al. (2002) also refer to power when they view capacity as the abilities of individuals and groups "to perform functions, solve problems and set and achieve goals" (Godfrey et al. 2002, p356) Yet in order for communities to achieve such empowerment, they need to have basic knowledge about how democratic, economic

and political processes are carried out, for example Barber (2003) notes that within a globalization context democracy has a tendency to ascribe malevolence and anarchic behaviour to individuals and organizations. It becomes critical therefore for individuals to learn and acquire knowledge so that together they can constitute empowered, knowledgeable and intelligent advocacy groups for their communities (Chambers 2006; Peterson and Hughey 2004). Such empowerment is necessary given the poor performance of the international development project since the 1950s (Ellis and Biggs 2001; Black 2007).

Misunderstandings of Participation and Empowerment

Despite its long history since the 1970s (Uphoff 2000), empowerment, whose literal translation implies the process of imparting power to someone by an external other who professes to consider others as powerless is a patronizing act from the onset. Henkel et al.(2001) view empowerment as subjugation to modernity and the global market and consider participation to be a form of governance. Viewed in this negative sense, most self-directed individuals normally object to and rebel against such imposed assistance (Mathers, Parry, and Jones 2008). Dinham (2005) refers to such imposed imparting of power when he questions whether in Bristol's New Deal for Communities development strategy, the citizens are empowered or overpowered. Similarly, MacLeavy (2009) notes partnerships that constitute tokenistic organizations that do not represent the multiple interests of people. Empowerment cannot be properly understood and facilitated until a more appropriate understanding of the participation that enacts it is realized. Stephens (2007) discusses dominant forms of participation which advantage the more powerful groups and which do not consider the different levels of participation, whereas there are other forms of participation which consider the social psychological conceptualizations such as practicalities, everyday requirements and purposes of social life. Moreover, empowerment cannot be understood without having a clear understanding of power (Gaventa 2005), Gaventa refers to the spaces, places and dynamics of power as they relate to the structures of geographic scales, access to the inner decors of power strongholds wherein power can be visible, deliberately hidden or invisible.

The problem with current conceptualizations of participation is that the theories are flawed in the sense that the evaluation of participation which is intended to discover whether empowerment has taken place, often evaluates the achievement of goals rather the outcomes and consequences of participation (Baker 2000). Ultimately, participation is a knowledge divide between the North and the South (Karlsson 2002; Karlsson, Srebotnjak, and Gonzales 2007) where the south becomes invisible in global governance, where internationalized knowledge generated from the North is less representative of conditions in the South and where consequently the South cannot participate in global governance on equal terms. Thus participation is not about economic poverty only, it is also about the poverty of influence (Najam 2005) and by the same token so is empowerment not just about increased participation in development initiatives and access to the spaces and places wherein power is enacted, it is also fundamentally about rights to define and shape the spaces of power. If ultimately participation is about access to knowledge then information systems such GIS and particularly participatory geographic information systems (PGIS) have a key role in implementing truly empowering participation (Bugs 2009; Corbett and Keller 2005; Kesby 2005), especially within rural community development initiatives.

Deriving a PGIS Framework to Effect Participation and Enhance Empowerment

A PGIS framework called the Rural Community Knowledge PGIS (RCK-PGIS) framework was developed with the active input of a rural community. The RCK-PGIS framework itself was based on a number of related participatory frameworks. These frameworks include the following: a) Enhanced Adaptive Structuration Theory (Nyerges, Jankowski, and Drew 2002), b) Spoleto framework (Rugg 2001), c) the geo-spatial ontology (Sieber and Wellen 2007), d) the participatory community design

framework (Pipek et al. 2000), e) the integrated systems for knowledge management (Allen et al. 2001), f) an information systems adapted sustainable livelihoods framework (Duncombe 2006) and g) the information systems for emancipation (Kanungo 2004). Figure 1 shows the final framework which was developed after three field trips lasting 9 months, 4 months and 2 months respectively. The first field work covered the data analysis and data collection, the second field work covered the feedback workshops and the last field work covered the evaluation of the framework.

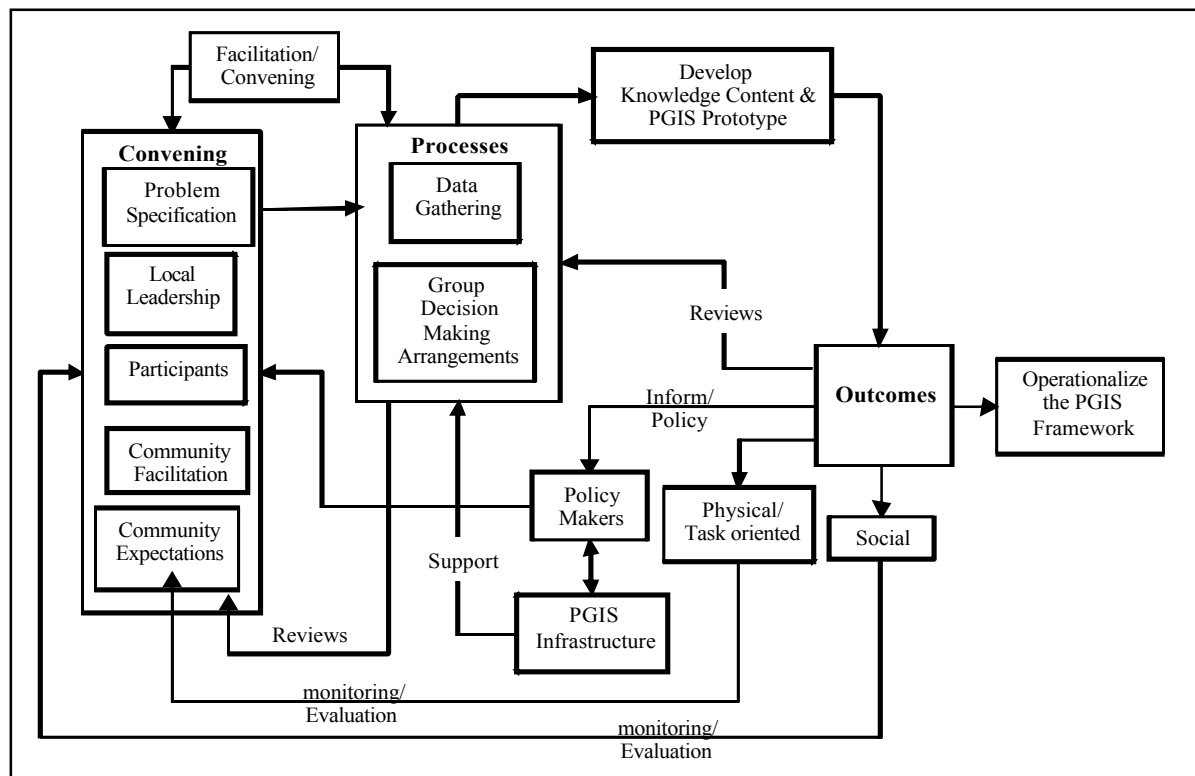


Figure 1 The Rural Community Knowledge PGIS framework

The key to meaningful participation lay in preparing the community to participate by basing all communication with work based interactions. The village leaders assumed the role of mobilizing the community by convening public village meetings, selecting the convening venue and the village participants. The village participants included the village development committee (VDC) which acted as co-management of the research project and the village trainees who did the actual work. The activities were based on 'on the job training' which covered: a) basic computing, b) business process modelling, c) basic introductions to GIS, learning the GIS software, georeferencing and on screen digitizing to develop the village plots map which subsequently served as the core data set for the village knowledge repository, d) review of draft social survey questionnaire, its testing and its subsequent administration through personal interviews, e) administration of an attitude scale, f) feedback workshops which included all the villagers who were interviewed and g) the evaluation workshops. The evaluation of the RCK-PGIS framework used the definition of empowerment that related to the acquisition of capabilities which empowered action. A score of '1' represented capability which was not sufficient to empower action. A score of '2' denoted capabilities which were likely to empower action and a score of '3' which ensured capability to act. The evaluation also used combinations of individual and collective empowerments to conclude whether community empowerment was achieved or not, where successful community empowerment was judged on the successful achievement of collective capabilities.

Some of the Outcomes of the PGIS Approach as Evidences of Empowerment

The first outcome which emerged was the decision by the village community to adopt the research concept of knowledge to improve livelihoods at the household level by proposing and working to develop their own knowledge centre which they called “*Mashego a Lobu*” Knowledge Centre (MLKC), this means the “pan’s blessings”. This indicated deliberate reflection by the community leaders, and the deliberation was followed by action to institutionalise the MLKC. The key to this surprising response

by the community lay in their appreciation of being recognized as knowledgeable individuals who had important contributions to make from their knowledge of their own social system. Figure 2, which shows the vision of the MLKC information flow infrastructure, that is VDC offices as main centre and ward based data collection centres forms the main basis of the village development initiative.

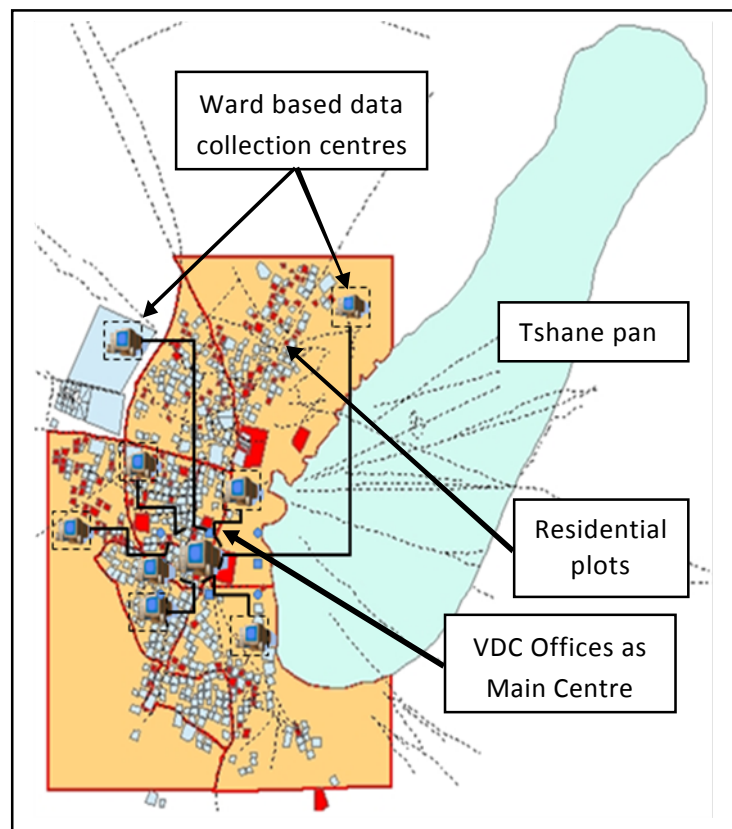


Figure 2 Tshane RCK-PGIS Wireless Information Flow Infrastructure

The vision of the information flow structure serves also as the vision of the village which visualizes a future where all households will have dignified shelters with water and electric power connections. The information structure requires the formalization of the ward centres, their building (currently mainly open spaces) and the mapping of the ward boundaries. Improved household shelter has been mandated as the responsibility of the ward heads. Thus the anchoring role of knowledge repositories has created village groups, the village ward leaders, the village trainees as the PGIS users, a number of goat project owners who through emulating a successful goat project by one of the village trainees are beginning to talk about forming a goats owners group. Moreover, the trainees have begun prioritizing the acquisition of residential plots and the building of better housing, an activity that is being copied by other members of the community. The information flow infrastructure also represents the

avenue through which the community development institutions (CDIs) and central government can interface with the village community. In addition, the presence of development projects which were produced by the village community outside the CDIs intervention processes creates an opportunity for the CDIs to participate in community initiated projects.

The results of the evaluation exercise appear in Figure 3 which shows the participation scorings over the participation activities which range from the convening to the participation outcomes. The results show empowerment for the convening, facilitation, data capture, PGIS evaluation and potential operationalization of the RCK-PGIS framework. Lack of empowerment was revealed at data structuring and the livelihood outcomes. The failure of empowerment at the more technical components and the livelihoods was expected. For the data structuring activity, it was considered to result from activities carried out away from the site but also from low levels of education and lack of ICT activities in the village. Failure to secure sustained livelihoods resulted from lack of financial resources to implement the business plans and lack of skill in sourcing funding as well as lack of skill in filling the application forms.

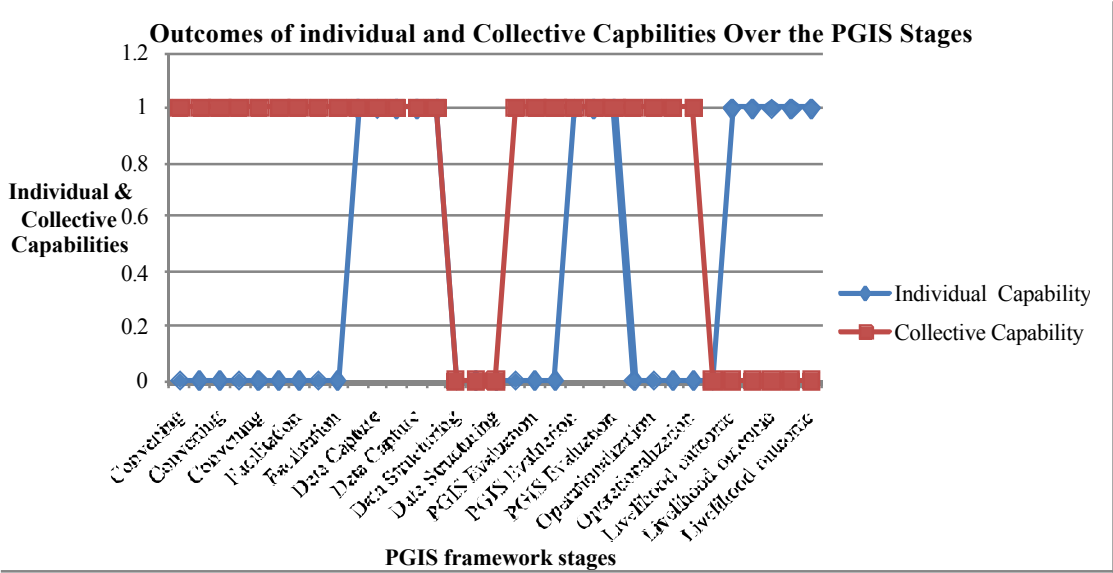


Figure 3 Outcomes of the individual and collective capabilities over the PGIS stages

The research project is currently over, however, the collaboration work with the village community continues, where the task now is to operationalize the innovative ideas which have been generated and essentially taking on the task of building the MLKC. The indication is that the community still has much learning to do, participation and empowerment processes do not honour research bound time scales, they are long and quite often lifetime journeys.

Conclusions

The first nine months of field work showed clearly that even for a national member of a community, it takes time to create a productive collaborative research partnership. This results from a long history of exploitation that the village communities have gone through. Mathers, Parry, and Jones (2008) note that communities use non-participation as a survival strategy against this long term multiple disadvantage. It is therefore wise for external experts to be humble and to take time to find out what the community knows with regard to proposed intervention strategies and who their knowledge experts are.

When a participatory research method is followed and a training strategy that relates directly to local livelihoods is pursued, village community members can engage successfully in collaborative research and derive benefits from it. This requires that a needs assessment should precede the actual intervention so that the intervention is aligned with the community needs.

A participatory intervention strategy that is perceived by the local community to present balanced power relations such as recognizing and expecting contributions of local knowledge, pacifies and imbues the community with the confidence to participate more meaningfully and enhances their chances of achieving the right to define and shape the participation spaces and places. It is useful therefore to have knowledge of the village power dynamics in order to be able to navigate safely through the hidden networks of power and avoid costly mistakes.

Failure to achieve empowerment at data structuring and livelihood procurement stages of the deployment of the RCK-PGIS framework indicates the presence of activities that need a stronger local community knowledge base. Such cases indicate the need for other institutional interventions, such as appropriate education policies and the placement of enabling ICT infrastructure. Participation and empowerment strategies therefore call for integrated and planned interventions whose plans go beyond the standard project time scale.

Although village community members may appear humbled, silenced, made to feel inferior to external expertise and constantly exploited, it does not mean that they are culturally weak, pragmatically ignorant or totally unskilled. On the contrary, rural communities are survivors and can understand ICTs if they are presented in a form that they can consume and through a process that they can participate in, the conceptualization of the Mashego a Lobu Knowledge Centre is a clear evidence of this. The intervention strategies therefore need to identify activity roles that the village community can occupy, their involvement should not appear to be an after-thought as this will be perceived by the community and cause conflict.

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