

Research Paper

Assessment of Digital Village Projects in Developing Countries - Case of Kenya

ABSTRACT

This paper looked at the implementation of Digital Village Projects (DVPs) in Kenya and the constraints that hinder the successful implementation of these projects. DVPs like any other Information and Communication Technology for Development (ICT4D) are projects that were initiated with the objective of economically empowering the community. The success of these projects is therefore paramount if the objective is to be achieved. An existing ICT4D assessment framework was adopted and its elements used to assess the implementation of these projects. The elements were tested using data collected through questionnaires, interview and observation. Several factors came out strongly as major hindrances to successful implementation of these projects. These include low level of information literacy, awareness, branding of DVPs, cost of services, and unavailability of affordable bandwidth. The study showed that the projects, even though still young, have contributed significantly to the lives of the beneficiaries. It is also evident that more could be achieved by adopting the proposed framework when implementing the projects.

Keywords: Assessment Framework, Digital Village, Digital Village Project, Successful Implementation

1. INTRODUCTION

This paper looked at how Information and Communication Technology for Development (ICT4D) projects and in particular Digital Village Projects (DVPs) are being implemented in the Kenya. ICT4D refers to the use of Information and Communication Technologies (ICTs) in the fields of socioeconomic development, international development and human rights. The theory behind this is that more and better information and communication furthers the development of a society. Surveys have shown that even though DVPs projects have been started with a noble cause, most if not all, have not realized their impact fully. This is evident from the findings by the IBM Team, 2010 [1,2] that shows the Digital Village Projects, called the *Pasha Centres* [3], are not currently operating as a true extension of government services. Existing *Pasha Centre* owners have a strong desire to offer e-government services, but require the means to deliver these services and communication plan is required to inform citizens particularly in rural areas about e-government services and the direct benefits consumers will gain by utilizing these types of services.

This research aimed at documenting the opinions of the DVPs stakeholders on the implementation of these projects and what needs to be done if the implementation was to be successful. The overall objective of the research was to develop a framework for assessing the successful implementation of future DVPs hence avoiding project failure.

2. RELATED WORK

Information Communication and Technology (ICT) has become a fundamental aspect of people's lives. It is therefore important that ICT services are made available to all and at reasonable costs. This has led to a growing number of ICT initiatives in developing countries that are usually undertaken on the basis of their importance on social and economic development [4]. The World Bank, the United Nations (UN) and other donor agencies are directly or indirectly implementing ambitious multi-million dollar ICT-supported initiatives or projects in developing countries. These projects aim to unlock the potential of ICT to improve the quality of life of poor, often rural, people. Previously, the initiatives have included a range of pilot projects, such as telecentres, multipurpose community access centres and information kiosks [5].

In Kenya, the government has embarked on ICT oriented projects that are geared towards bringing services closer to the people. The services provided by the projects include e-governance, e-learning, e-commerce, among many. Even though this initiative is a noble course taken by the government, most of these services are not being utilized fully especially at the community level. Barriers to the efficient utilization of ICT in developing countries, can affect the ability to manipulate and use information effectively [3]. This can lead to failed investments in ICT. Therefore it is important to develop viable projects to avoid project failures.

The IBM Team 1 Sub-Team 1 [1] carried out a research on digital village pilot projects in Kenya. The final report showed that the utilization of the ICT-related services is affected by: low ICT literacy rate, computers are generally viewed by local constituents as tools only for the university educated, basic needs (food/water/shelter) must be met before introducing computers, and national level programs tend to have high awareness rate but complete communication plans reaching to all citizens are lacking.

As the government embarks on the process of creating an information society, it should ensure that, apart from establishing these projects, they are utilized fully to avoid undertaking unsuccessful projects. Therefore the major challenge is to establish if the projects are of any value to the community or the beneficiaries. This is only possible by assessing the importance of these projects to the beneficiaries. The adoption of the conceptual framework is proposed as a guide during implementation of these projects to avoid project failure.

Digital Village Projects were initiated with one major goal in mind and that is to bridge the digital gap that exists between rural and urban areas. Mostly the assessments carried out tend to address only the technology component of economic resources which only affects one part of the access function. In identifying the desirable framework, the ICT4D Value Chain Model [5] was adopted as the preferred model for this research. This framework is shown in Figure 1 below.

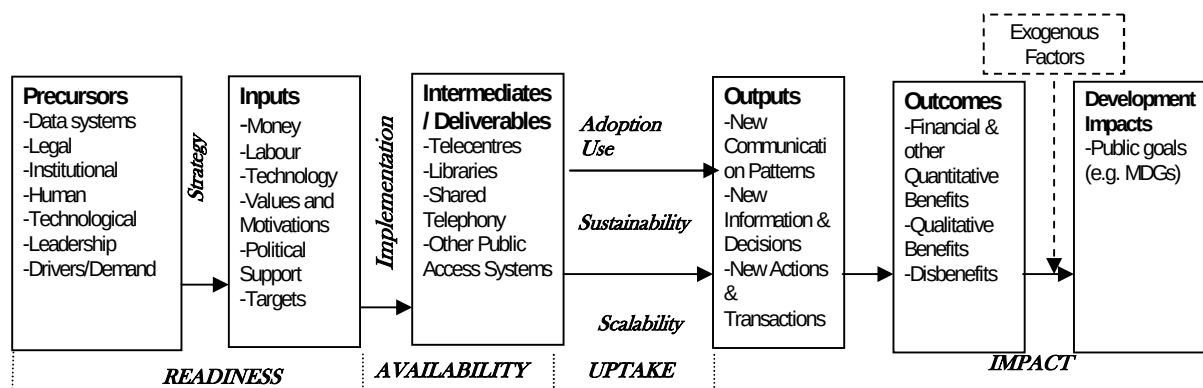


Figure 1: The ICT4D Value Chain Model (Heeks & Molla, 2009)

Heeks and Molla's ICT4D value chain [6] gives the basis for understanding the assessment of ICT4D projects and it is build on a standard input-process-output model to create a sequence of linked ICT4D resources and processes. The value chain is divided into four main targets for assessment as shown in Figure 1.

Readiness: Measures the systemic prerequisites for any ICT4D initiative, strategy that turns these precursors into project specific inputs, and the presence/absence of those inputs.

Availability: Implementation of the ICT4D project turns the inputs into a set of tangible ICT deliverables; one can assess the presence and availability of these intermediate resources.

Uptake: Assessment typically measures the extent to which the project's ICT deliverables are being used by its target population. Broader assessment could look at the sustainability of this use over time, and at the potential or actuality of scaling-up.

Impact: Assesses the impact of the project and we can divide it into three sub-elements:

Outputs: the micro-level behavioral changes associated with the ICT4D project.

Outcomes: the specific costs and benefits associated with the ICT4D project.

Development Impacts: the contribution of the ICT4D project to broader development goals.

Other frameworks and models were also studied and the important elements summarized as shown in Table 1 below.

Table 1: Summary of the Reviewed Models and Frameworks

Model/Framework	Key Dimensions/Elements	Author(s)
The Information Chain Model	Data, Economic Resources, Social Resources, Action Resources	Heeks [7]
The Three – Stage Information Society Model	ICT Readiness, ICT Intensity, ICT Impact	ITU [8]
The Key Boundary Partners Framework	<i>Pasha</i> Project, Partners	KICTB [9]
Framework to Investigate ICT Led Development at the Community Level	Input, Approaches, Social Constraints, Output, Desired Impact	Ashraf et al [10]
Sustainable Livelihood Framework	Vulnerability Context, Livelihood Assets, Transforming Structure & Processes, Livelihood Strategies, Livelihood Outcome	DFID [11]
Empowerment Through ICTs Framework	Context, Livelihood Resources, Institutional Processes, Capabilities, Livelihood Outcome	Gigler [12]

Heeks and Molla's ICT4D value chain model [6] was used to develop the proposed framework in Figure 2. The model is built on a standard input-process-output model to create a sequence of linked ICT4D resources and processes. In the proposed framework, the components; input, process and output have been substituted by inception, implementation and post-implementation which are the key stages in the project development. The *Pasha* Projects are projects have not developed enough for full assessment on the four stages to be carried out. Therefore the proposed framework was used to carry out assessment up to the uptake stage to ascertain the successful implementation of these projects.

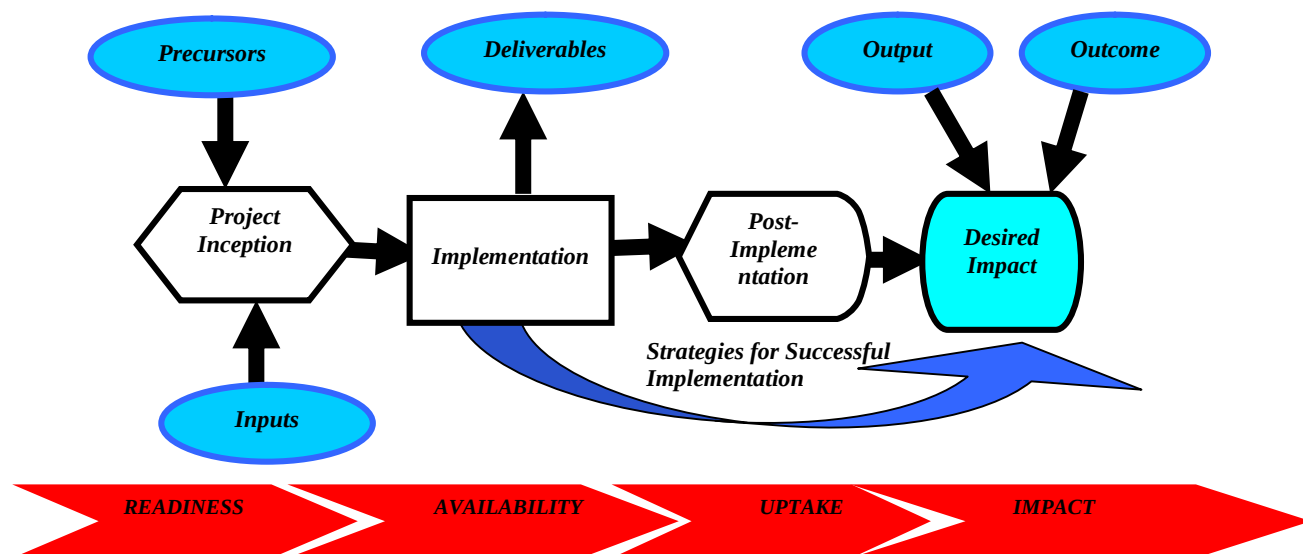


Figure 2: The Proposed Framework

3. METHODOLOGY

3.1 Research Design

The target population for this study was the Kenya ICT Board staff in charge of the DVPs, *Pasha* Centre managers, and their clients. The board is mandated, among others, to coordinate and implement Kenya Government ICT projects. Since only 37 applicants qualified for the first round allocation of funds, the research intended to cover all the Centres. This is because only a few Centres have been rolled out and therefore taking a sample would not have given a fair representation of the total population. Out of the 37, only 25 Centres were in existence or could be located and the survey covered all the 25 Centres. The survey targeted all the 3 staff members in charge of DVPs, the 25 service providers, and the 3 clients from each Centre bringing the total of the respondents to 103.

General survey method was used in this research and data was collected using majorly questionnaires. Both closed and open-ended questions were used. To supplement the questionnaire, interviews and observation were also used where possible.

3.2 Data Analysis

The raw data was arranged to enable analysis to take place and the following processes took place: editing of data to detect errors, corrections done where possible, coding of close-ended questions for efficient analysis, classification of data in order to come up with meaning relationship, and tabulation of the data to facilitate the analysis. Both qualitative and quantitative methods of data analysis were used to analyze the data. Data analysis tools such as SPSS was used to make the analysis process easier and more accurate.

4. RESULTS AND DISCUSSION

4.1 Results

The analyzed data was grouped to reflect the key elements of the proposed framework as follows:

Precursors: Different prerequisites for the DVPs initiatives were looked at and prerequisites such as project awareness and branding, stakeholders' contributions came out strongly.

Inputs: Several inputs facilitated the success of these Centres and inputs such as equipment, infrastructure, skills, technology, and information availability were seen as the major contributors.

Deliverables: Services offered by these Centres were looked at especially those tailored to meet the needs of the community and those required but not offered

Strategies for Successful Implementation of the DVPs: The service providers had several strategies for the successful implementation of the DVPs and they included outsourcing for alternative ISP, awareness creation, and putting alternative electricity supply in place.

Outputs: Factors that hindered the achievement of the desired success of these Centres were grouped together as constraints and the major ones included: information literacy, funding, cost of services, reliable electricity supply, adequate bandwidth, and project awareness and branding.

Outcomes: The specific costs and benefits associated with the projects were looked at.

4.2 Discussion

The research findings confirmed the importance of the elements considered in the selected framework. The results were therefore mapped to the elements of the framework. The achievement of two of the objectives and the benefits of the Centres show that their implementation was a success.

4.2.1 Constraints

Five factors came out strongly as being among the major constraints hindering the enhancement of this success and they included: channeling of funds, branding of the DVPs, awareness creation, cost of services, and level of information literacy.

Channeling of the Funds: There was a major concern on how the funds were being channeled. Process of accessing the funds was taking long. Being a loan that needs to be paid back, the service providers were left with little or no grace period to prepare for repayment. This has led to the services being charged higher than the expected prices as was expressed by the clients as their biggest constraint with 37%.

Branding of the DVPs: Most of the Centres confirmed they were not branded and the set up was different at each Centre. The service providers felt that the Centres are being seen by community as any other cyber café despite the special services they are offering.

Awareness Creation: The findings confirmed the results in the IBM Team 1 Sub-Team 1 report [1], which shows that there is awareness of ICT initiatives at the national level but the same is lacking at the community level. The Service Providers believe that lack of awareness is one of the major factors that are hindering the success of the Centres. Branding and awareness, which were considered under other factors, constituted a bigger chunk of the 22%.

Cost of Services: The major constraint the Clients were facing is cost of services which stood at 37%. The cost of the services prohibited the Clients from utilizing the services fully. This constraint according to the service providers was attributed to the cost of adequate bandwidth and inadequate way of channeling funds.

Level of Information Literacy: Major constraint the clients were facing apart from cost of services was lack of information literacy to be able to utilize the services to the fullest which was rated at 31%. Majority of the clients' knowledge on the use of computer/mobile phone and capability to use them to generate information was rated at good with 41% and 43%

respectively. When probed further, most of the clients expressed their desire to know more in order to be able to use the more advanced services.

4.2.2 Contribution of the Stakeholders Towards the Success of the Centres

The opinion of the service providers who were not satisfied with success level of their Centres was requested. The contribution of the donor came out prominently. Further probing showed that the donor had not kept its part of the bargain as was signed in the Service Level Agreement (SLA). The donor's functions included: timely disbursement of the revolving funds, provision of technical support, provision of quality and affordable bandwidth, and training of the service provider. The donor had only performed one out of the four functions i.e. training the service providers, leaving the other three pending.

4.2.3 The Refined Framework for Assessing the Successful Implementation of Digital Village Projects in Kenya

The findings showed that apart from the elements that were contained in the selected framework, the following elements added value to the success of the DVPs hence were incorporated in the framework as shown in Figure 3: DVPs awareness, Service Level Agreement (SLA) implementation (channeling of funds and availability of affordable bandwidth), DVPs branding, and level of information literacy.

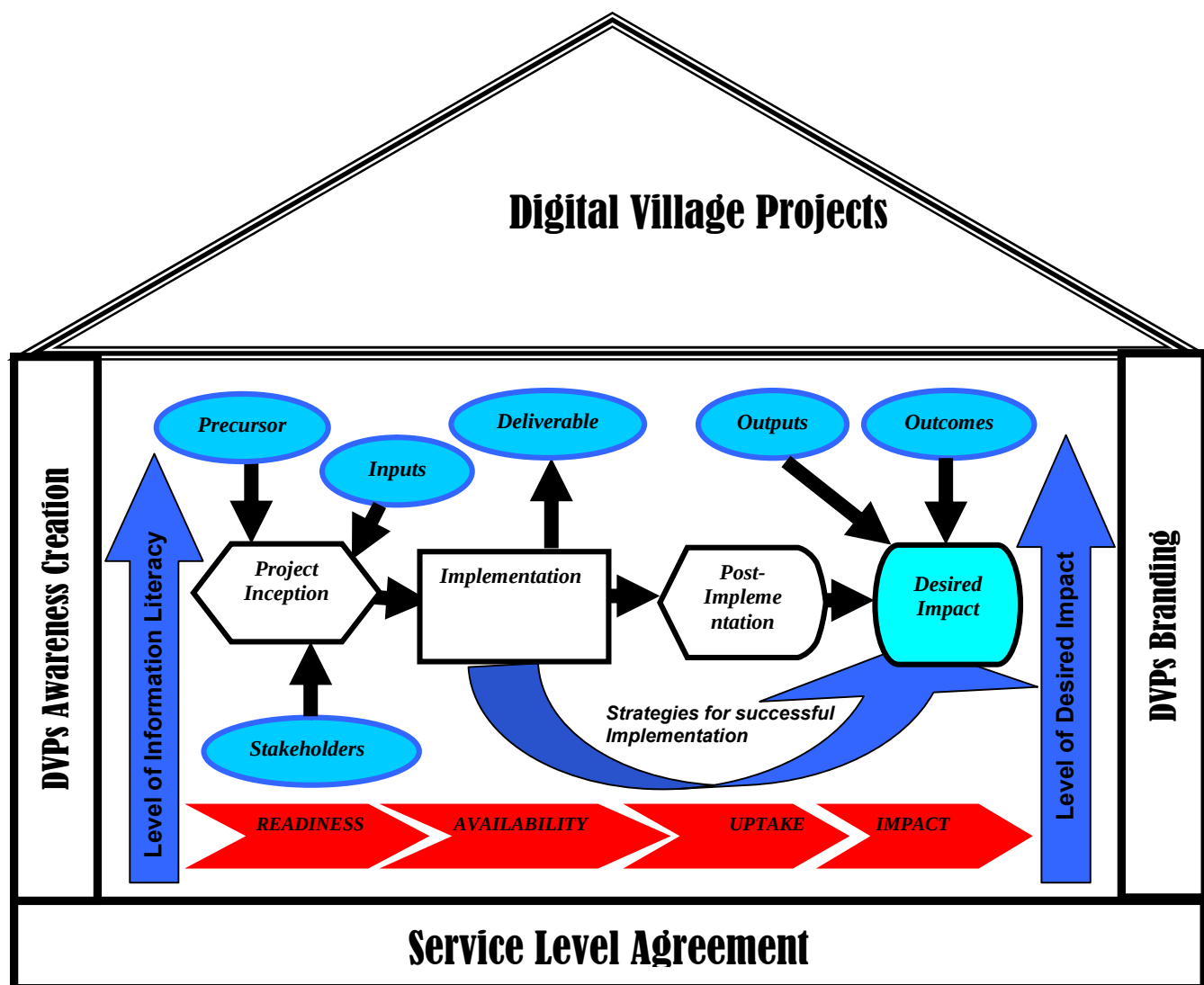


Figure 3: The Refined Framework

DVPs Awareness Creation: The community needs to be made aware of the existence of these Centres and the services they offer. Most people are not aware of the Centres and this is evident on the way government offices are still being crowded for services that can easily be accessed through the Centres.

Service Level Agreement (SLA) Implementation: There should be a proper way of funds channeling to avoid delays which is impacting negatively on the success of the Centres. Also, affordable bandwidth should be made available. Both of these are contained in SLA which needs to be implemented fully for them to be achieved.

DVPs Branding: The Centres need to be branded so that they can be unique hence easily differentiated from the normal businesses providing ICT services.

Level of Information Literacy: For the community members to utilize the services provided by the Centres fully, their information literacy level needs to be increased. This can be achieved through training and awareness creation.

5. CONCLUSION

Based on the literature reviewed, many ICT for development initiative have been or are still being undertaken in the developing countries. Even though these projects have been started with a noble cause, most if not all, have not been successfully implemented. The research findings have confirmed this. An ICT project with a difference that is worth emulating is Grameen Foundation AppLab Incubator in Uganda [13]. This innovation lab helps private sector partners build, test and deliver solutions into the hands of users in some of the poorest regions in the world.

In Kenya several ICT4D projects have been started and failed along the way. There is therefore need for proper strategy to be put in place if these projects are to succeed and DVPs are no exception. The refined conceptual framework would act as a guide when undertaking such projects. For the projects to be successful, we therefore recommend the adoption of the refined conceptual framework.

The research findings evidently show that there is need for an assessment framework if the ICT4D projects in general and DVPs being initiated are to be successful. The research was carried out on projects that were relatively young and a lot might have been missed in the study. The framework needs to be refined further as the projects grow and new ICT innovations adopted and incorporated in the projects.

ACKNOWLEDGEMENTS

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COMPETING INTERESTS

The authors declare that no competing interests exist.

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APPENDIX

Appendix 1 – Results

Location of the DVPS

County	Frequency
Kajiado	1
Busia	1
Nyandarua	1
Kisumu	3
Bomet	1
Meru	3
Nithi	1
Kilifi	2
Makueni	1
Kiambu	4
Baringo	1
Homa- Bay	1
Mombasa	1
Kakamega	1
Garissa	1
Kericho	1
Murang'a	1
TOTAL	25

Respondents

RESPONDENTS	TARGET	%	RECEIVED	%
No. of Respondents to be interviewed	3	3%	1	33%
No. of respondents to be reached through questionnaire	100	97%	88	88%

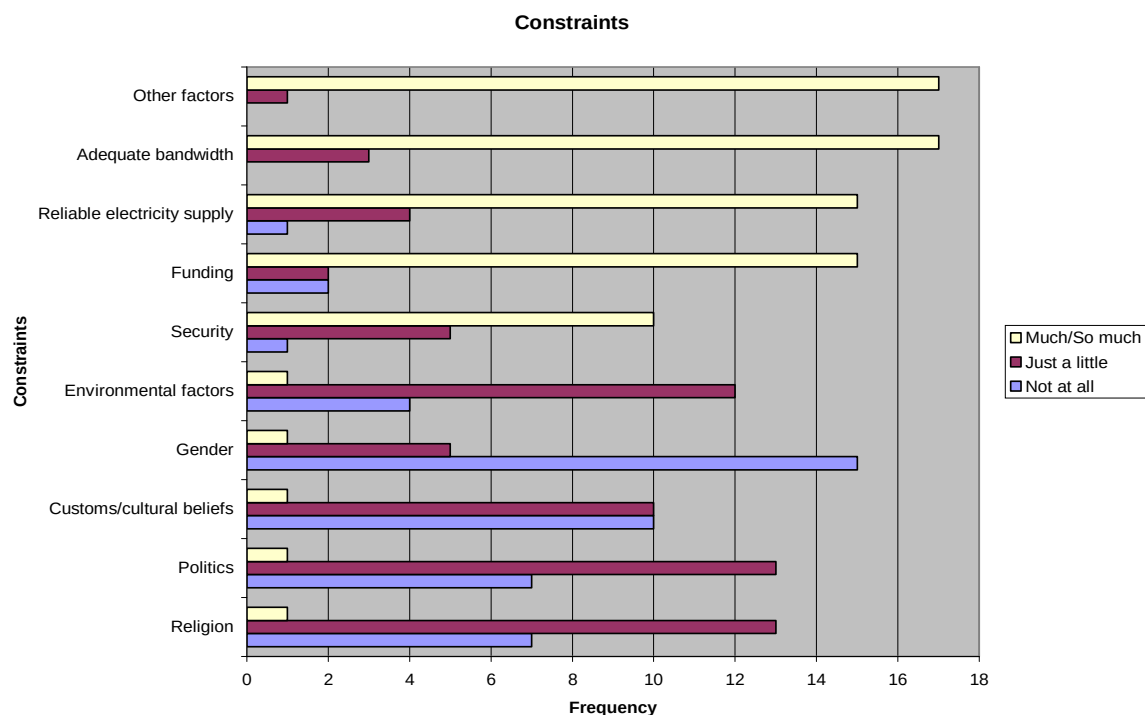
Benefits of DVPS

BENEFITS	SERVICE PROVIDERS						CLIENTS					
	Not at all		Just a little		Much/so Much		Not at all		Just a little		Much/so Much	
	N	%	N	%	N	%	N	%	N	%	N	%
E-government services	7	23%	5	11%	9	13%	45	32%	12	10%	5	4%
Generation of Income	0	0%	0	0%	21	29%	40	28%	17	14%	6	5%
Employment	0	0%	10	23%	11	15%	20	14%	20	17%	23	20%
Training	9	30%	7	17%	5	7%	6	4%	24	20%	33	29%
Affordable Services	4	13%	12	27%	5	7%	25	18%	30	25%	8	7%
Location of the Centres	0	0%	5	11%	16	22%	6	4%	17	14%	40	35%
Other Benefits	10	34%	5	11%	5	7%	0	0%	0	0%	0	0%
TOTAL	30	100%	44	100%	72	100%	142	100%	120	100%	115	100%

Constraints

FACTORS	SERVICE PROVIDERS						CLIENTS					
	Not at all		Just a little		Much/ So much		Not at all		Just a little		Much/So much	
	N	%	N	%	N	%	N	%	N	%	N	%
Religion	7	15	13	19	1	1	45	17	12	16	5	7
Politics	7	15	13	19	1	1	48	18	12	16	2	3
Customs/cultural beliefs	10	21	10	15	1	1	53	20	1	1	6	8
Gender	15	32	5	7	1	1	51	19	9	12	1	1
Environmental factors	4	9	12	18	1	1	25	9	30	41	4	6
Security	1	2	5	7	10	13	0	0	0	0	0	0
Information Literacy	0	0	0	0	0	0	8	3	6	8	22	31
Funding	2	4	2	3	15	19	0	0	0	0	0	0
Cost of Services	0	0	0	0	0	0	8	3	4	5	26	37
Reliable electricity supply	1	2	4	6	15	19	0	0	0	0	0	0
Adequate bandwidth	0	0	3	4	17	22	0	0	0	0	0	0
Other factors	0	0	1	1	17	22	31	11	0	0	5	7
TOTAL	47	100 %	68	100 %	79	100 %	269	100 %	74	100 %	71	100 %

Graphs showing the constraints



Constraints from the service providers' point of view

