

Radio Farm Forum and Afronet: Learning from Successful ICT Projects in Zambia

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21I .034 – Media, Education, and the Marketplace
Case Study Final Project
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Abstract

In many prior case studies, such as e-Choupal (India), PDA-based healthcare (Uganda), Grameen telephone (Bangladesh), the effects of ICT have been surprisingly strong on society. These cases have shown that the introduction of Information and Communication Technology can often have an unprecedented effect on organizational efficiency. In this paper, we explore the implementation of ICT to two distinctly different case studies in Zambia, and point out the major breakthroughs, hindrances and lessons learned from these cases.

In Zambia, a sub-Saharan African country, the use of ICT in the corporate world is very rare. Often, the companies that implement any form of ICT are those that are owned and administered by foreigners. Therefore, while ICT has some prevalence in large corporations within Zambia, it never affects the local people because it is used in entirety by ex-patriots. However, two cases of exception are the Radio Farm Forum and Afronet.

Radio Farm Forum is a government-initiated ICT project to enable rural farmers to communicate effectively with the Ministry of Agriculture. This form of ICT implementation has proven to be extremely successful in addressing the common needs and problems of resource-deficient rural farmers. Afronet, an international human rights network, uses ICT to effectively disseminate information across the world. This case proved particularly useful in reducing Afronet's costs, and improving its efficiency.

In summary, while ICT implementation is rare in Zambia, when it is used appropriately, it can have a huge impact on society. This paper explores into these two case studies, and analyzes their success stories. By doing so, it establishes guidelines for ICT implementation in Zambia that could be used by companies or NGOs wishing to initiate an ICT-led project.

Case Study One: Radio Farm Forum (RFF)

Overview

This case study focuses on the Radio Farm Forum (RFF), a program that was produced by the National Agricultural Information Services (NAIS) in Zambia in the 1960's as a means of improving communication between the Ministry of Agriculture and the agricultural service staff. The motivation for strengthening this communication link and attempting effectively disseminate agricultural information to a large and dispersed population of rural farmers was to increase agriculture productivity and thereby create a form of sustainable economic development for Zambia.

At the time, information dissemination was primarily done through agricultural extension officers, who would personally visit farming communities and advise them on various agricultural topics. Because of transportation difficulties, inadequate funding, and the shortage of agricultural extension staff, the current practice was not yielding successful results and proved to be largely ineffective and non-scalable. The solution to this problem was the RFF, which included two main components: a 30-minute radio discussion program on agricultural problems and techniques, and radio listening groups who would discuss the problems mentioned in the program and their solutions, implement the various techniques within their local communities, and communicate all the information back to the Ministry of Agriculture.

The government of the Republic of Zambia, who also provided a large amount of technical assistance for the program, was the primary source of funding for the RFF, although the Ministry of Agriculture also provided financial assistance. There were many challenges in implementing the RFF program, including the lack of adequate funding, which reduces the effectiveness of the program and may ultimately result in the programs' untimely conclusion. However, there were also many successful components to the program, including the use of radios as the tool for communicating information. Overall, there are many lessons one can learn from this program.

This case study aims to provide an in-depth analysis of the RFF program to extract those lessons and in general highlight the key factors that are necessary for ICT-related international development work in Zambia. The case study starts with the program's history, continues on with an analysis of the impact and lessons learned, and concludes with a beneficiary feedback and future recommendations.

Background

In the 1960's, officials in Zambia realized that they could not depend on copper exports as Zambia's economic mainstay forever and aimed at increasing productivity in agriculture to create a form of sustainable economic development [5]. The main problem in achieving this goal was how to disseminate agricultural knowledge across Zambia, specifically to the widely dispersed peasant farmer populations. At the time, Zambia had

agricultural service staff who would visit these farming communities and advise the farmers on different agricultural matters. Unfortunately, because of transportation difficulties, inadequate funding, and the shortage of agricultural extension staff, disseminating agricultural knowledge on a personal contact basis was ineffective and not scalable to other regions of Zambia. The fact that by 1994 there were about 643,000 farming households versus 3,000 extension workers only highlights how infeasible the current system was at addressing the growing needs of the farming population [5].

In response to this situation, in June 1966, a UNESCO Mission on Agriculture Broadcasting conducted a survey in Zambia to assess the existing broadcasting facilities and determine the adult educational needs with rural communities. The Mission recommended the Radio Farm Forum (RFF) as a means of improving communication between the Ministry of Agriculture and the agricultural service staff. The RFF would include two main components: a 30-minute radio discussion program on agricultural problems and techniques, and radio listening groups of 15 farmers, in all agricultural areas where farmers are close together, who would discuss the problems mentioned in the program and their solutions as well as implement the various techniques within their local communities. The radio program was produced by the National Agricultural Information Services (NAIS) and broadcast by the Zambia National Broadcasting Corporation (ZNBC) in English and in seven Zambian languages, including Tonga, Lozi, and Lunda. This arrangement gave the farmers the chance to discuss a particular problem that was introduced on the radio among themselves, decide on how and what to do about the problem, determine any clarifications that were needed, and then communicate the information back to the program producers through the local extension officers [1]. In this sense, a two-way communication system was established between the Ministry of Agriculture and farmers in the local communities.

The original motivation behind the program was to provide a means for the experts at the Ministry of Agriculture to communicate agricultural news and technical information, including the following: new farming methods, new varieties of seed, types and spacing of seeds, types and applications of pesticides, types and treatment of crop diseases, and answers to specific questions raised by farmers. Additionally, the objectives of the program [5] included the ability of the listeners to do the following:

1. Correctly apply the technical information received
2. Correctly identify and describe some of the common crop and animal diseases and pests
3. Effectively advise other farmers on good farming practices

These objectives have remained the same since the inception of the RFFs but only because there was no in-depth study performed to determine whether these objectives should be modified or extended in any way.

Impact Review

Currently, there are about 1,440 RFFs in Zambia. These RFFs have had a significant positive impact on the lives of farmers in rural communities in Zambia. They have taught farmers how to change and improve their agriculture practices, including how to survive through droughts, prevent their soil from eroding, and construct more durable storage barns. The success of the RFF program is largely attributed the partnerships with various educational and research institutions, the government of the Republic of Zambia, and the Ministry of Community Development and Social Services. Without the help of the government, especially, the program would not have had sufficient funding for its continuation. One of the programs greatest assets is its use of radios, which has overcome obstacles of distance, literacy, and other factors affecting large scale information dissemination. The following impact analysis focuses on how various aspects of the program contributed to its overall success while the Beneficiary Feedback section describes in greater detail exactly how the program impacted its rural farmer target group.

Impact Analysis

Partnerships

Educational and Research Institutions

The success of the RFF is largely attributed to the partnerships it has formed with other organizations. RFF is able to provide accurate and relevant technical information because of its close relationship with educational and research institutions such as the Zambia College of Agriculture and the national Council for Scientific Research. Guest speakers on the RFF include teaching staff and research scientists from these among many other institutions who can share their expertise in the large field of agriculture.

Ministry of Community Development and Social Services

The RFF has also had a close relationship with adult literacy programs run by the Ministry of Community Development and Social Services. As a results, many of the illiterate peasant farmer were taught functional literacy skills such as counting and reading so that they could carry out practices described in pamphlets provided as part of the RFF and in radio broadcasts.

Government of the Republic of Zambia

Finally, and perhaps most important, the government of the Republic of Zambia was a key participant in the RFF program, providing both technical and financial assistance. This assistance included providing radio sets, batteries on a monthly basis, subsidized fertilizer and seed, and pre-paid mail service, so that farmers did not have to purchase stamps and envelopes to send in their feedback and reports. Overall, the government established 1000 RFF groups throughout Zambia and because of its assistance, from 1968 to 2001, a total of 31 radio programs were broadcast weekly in all the seven local languages and English [2]. Without the extensive support from the Zambian government,

it is likely that the RFF program would not have gotten off the ground, much less expand to all across Zambia and remain in existence for so many years.

Target Group

The main target group for the RFFs was the rural non-white farming communities widely dispersed across Zambia. The educational levels of these farmers range from a 4th grade level of education to beyond a 12th grade level of education, with the highest concentration at a 7th grade level of education [5]. Many farmers are unable to go to school because they come from poor families, while some families actually do not permit their children to attend schools because they do not value education. As a result, many farmers are illiterate. Although the Ministry of Agriculture develops the materials for the RFF programs, it is the responsibility of the radio listening groups to gather in the afternoons to listen to the programs. They are in charge of determining how meetings are run, how discussions are conducted, and how the discussions are recorded. They are also responsible for communicating their discussions, concerns, and questions back to the Ministry of Agriculture and actually putting what they have learned into practice. Their involvement is integral in the effectiveness of the program.

Capacity Building

Although feedback from the farmers to the Ministry of Agriculture is often delayed and sometimes lost, when it does go through it provides a means for the farmers to address the concerns of their own communities and in general, communicate with the officials at the Ministry. Also, the general framework of the programs allows for large-scale dissemination of ideas and best practices to farmers in all regions of Zambia. Each radio listening group can further disseminate the knowledge they have gained to other members of their communities thereby increasing the potential impact of the program. Finally, because of the involvement of the Ministry of Community Development and Social Services, farmers in illiterate communities are being taught functional literacy skills which provides them with valuable tools they can use to improve the quality of their own lives.

Technology

One of the best decisions made by the program was to use the radio as a means of communicating information to farmers in rural areas of Zambia. The radio is an amazing form of technology because it does not require literacy, can traverse great distances and affect large numbers of people, and is affordable to most citizens in developing countries. The radio does however require batteries and oftentimes repairs. Both of these factors posed significant problems throughout the course of the program and are discussed in greater detail in the Lessons Learned section of the report.

Finances

Besides the large amount of financial support from the government of the Republic of Zambia, the RFF program received additional funding from the Ministry of Agriculture. The Ministry of Agriculture primarily paid for radio air time, although they additionally facilitated many production tasks including recording, producing, and transmitting radio programs.

Lessons Learned Analysis

Implementation Challenges

There were many challenges faced during the implementation of the RFF. Mutava [4] and Ngangula [5] have identified the following:

Technical

The primary technical challenges of the program include the unavailability of radio batteries and the difficulty of getting malfunctioning radios repaired. The recording facilities are often inadequate and ill equipped for various aspects of the program production process. Also, the radio reception is so poor in some parts of Zambia that farmers in those areas need to tune their radios to frequencies of neighboring countries. As a result, they miss agricultural information that is geared towards their specific area.

Moral/Ethical

Members of particular religious groups object to certain RFF topics, finding them inappropriate or offensive. The Seventh Day Adventists (SDA), for example, object to RFF discussions involving tobacco or pigs.

Educational/Training

One of the key problems from the production end is inadequate training of RFF broadcasters and technicians, and other members of the production staff. On listener end, on the other hand, the main problem is illiteracy. The printed materials that are provided as part of the RFF are often useless in remote parts of the country in which peasant farmers depend solely on listening to the radio since they cannot read.

Miscellaneous

There are numerous organizations that RFF has to compete with for air time in Zambia because there is only one national broadcasting station. There is also a wide diversity in terms of language and agricultural practices in regions that participate in the RFF making it difficult to cater the program to the needs and interest of each region. Additionally, due to the inadequate staff size (i.e. number of Agricultural Extension Officers) and transportation difficulties, particularly in the rainy season, supervision of the RFFs is

difficult to establish in many regions. As a result, it is hard to assess the effectiveness of the RFFs and successful implementation of the radio messages in these regions.

There were, however, several other challenges that became evident throughout the course of the program. During the 1990's, for example, when the multi-party democracy was re-introduced in Zambia, state-oriented pricing and subsidies were abolished [5]. As a result, the Zambian National Broadcasting Corporation increased the cost of transmitting the RFF radio programs, which in turn decreased the number of RFF radio programs that were aired. The feedback forms designed as part of the RFF program were often delayed and sometimes lost in transit, which resulted in "stale" information reaching the producers at the Ministry of Agriculture. Finally, there was no provision of replaying radio programs to select groups because all radio programs are controlled at a national level.

Factors Promoting Program Development

Radio

The use of the radio as the main mode of communicating information to the farming communities has proven very successful. The radio is affordable, can reach the large farming population that the extension officers simply do not have the manpower and sometimes means of transportation to reach, and it does not require the listeners to be literate.

Radio Listening Groups

The formation of the radio listening groups has given the farmers a sense of ownership of the project and as a result, has ensured that the farmers listen to the program and ask questions which are later answered by the staff at the Ministry of Agriculture. The radio listening groups were also really successful because they extended the traditional practice of nsaka, or coming together, which was already prevalent in many parts of the country. The radio listening programs, as a result, only enhanced the traditional nsaka and brought larger numbers of people together for the benefit of the whole farming community.

Feedback

Although the feedback to the Ministry of Agriculture was often delayed and sometimes lost, when it got through, it enabled farmers to get more information on topics covered during the program as well as get their own questions answered. This once again made the farmers feel like they were a part of something and also provided them with the means of improving their own lives and addressing many of the problems that were specific to their communities.

Partnerships

As mentioned in the Impact Analysis section, the partnerships that were formed throughout the program have been integral in sustaining the program to this day. Without

the support of the research and education institutions, the Ministry of Community Development and Social Services, and the government of the Republic of Zambia, the RFF program would probably not have been able to sustain itself for a year, assuming that it even got off the ground in the first place.

Future Outlook

The future of RFF unfortunately does not look promising. The government of the Republic of Zambia does not provide adequate funding for the program and as a result, the program will be hard to sustain. Additionally, many agricultural officers are being laid off because of the on-going restructuring of the civil service and their lack of the required qualifications without being replaced [5]. This means that ultimately, there will not be an experienced staff to produce the RFF programs.

Beneficiary Feedback

The RFF program has had an extensive amount of positive feedback from its beneficiaries and has positively changed the lives and behaviors of the farmers involved in the program. According to surveys and interviews conducted by Sibalwa [5], many small-scale farmers first got the idea of mixed farming from RFF programs. Mixed farming is especially important to the peasant farmers who depend on their crops for survival. One group of farmers who was interviewed said that before they learned about mixed farming they had only grown maize. Now, these same farmers grow groundnuts, cotton, and watermelons.

When asked about the quality of the content of the RFF programs, farmers said that they found the material presented both useful and relevant because it described and helped them cope with real-life situations. The following is a subset of some of the skills that the RFF farmers acquired and the knowledge that they gained from the program: soil conservation, agro-forestry, using the donkey as a draught animal, and constructing more durable storage barns.

In terms of the impact the RFF has had on the farmers' agricultural practices, farmers no longer feel the need to continue their slash and burn tactics, which was the main source of soil erosion. The farmers also said that it was through the RFF program that they learned how to prevent their soils from further degrading and eroding. Through the RFF program farmers were introduced to the concept of growing drought-resistant crops in areas that are prone to droughts. If it weren't for the RFF program, many of these farmers would have probably died during the next drought season because all of their regular crops would not have been able to survive the extreme heat and lack of water. These examples are just a few of the ways in which the RFF program has positively affected its intended targets.

Conclusions and Recommendations

The establishment of the Radio Farm Forum (RFF) has provided a means of disseminating agricultural information to farmers in remote areas of Zambia and has provided the farmers with a mechanism through which to communicate their knowledge, concerns, and questions to the officials at the Ministry of Agriculture. The program has been largely successful thus far with about 1,440 RFFs in existence in the country.

One of the main factors that contributed to the program's success is strong program partnerships, especially with the government of the Republic for Zambia, who provided both technical and financial support. Another key component to success was the involvement of the rural farmers through the radio listening groups. The radio listening groups provided the farmers with a sense of ownership of the program and a sense of empowerment since the farmers could have their specific questions answered and concerns addressed through the communication link to Ministry of Agriculture officials.

Although the RFF program has been largely successful thus far and has positively impacted the lives of many rural farming communities in Zambia, the project lacks sustainability because of inadequate funding from the government. There are many lessons to learn from this case study but one of the most important ones is that to implement a large scale successful ICT program in Zambia, one has to have a long term plan of sustainability, including the sources of the financial support necessary for the program's continuation and expansion. Once that task is complete, program participants can focus on how to overcome the many challenges covered in detail in the Lessons Learned Analysis to improve the effectiveness, efficiency, and impact of the program.

Case Study Two: Inter-Africa Network for Human Rights and Development (Afronet)

Introduction

As in many of the cases concerning the use of ICT in developing societies, Non-Governmental Organizations often take the initiative to incorporate ICT-led initiatives into society. Most organizations, however, believe that the implementation of such an initiative requires much funding, time and a highly skilled labor force. This case study attempts to dismiss this notion by studying a resource-deprived NGO – Afronet Zambia – that takes a very small-scale ICT initiative and sees an enormous return from that investment.

The case study focuses on the use of ICT by the Inter-Africa Network for Human Rights and Development (Afronet), a vast umbrella organization for human rights in Zambia. Afronet leverages the potential of ICT by using it in numerous ways, enabling it to increase its internal efficiency while reaching a much larger client base.

Inter-African Network for Human Rights and Development (Afronet)

Afronet was founded in London as a result of the 1993 World Summit on Sustainable Development. Growing concerns that African human rights concerns were always expressed by non-Africans provided an opportunity for Afronet to be grounded in Africa. Thus, Afronet was established in Nigeria and Zambia.

The goals of the organization are as follows:

- To create a common network for human rights activities and organizations all over Africa.
- To gather and disseminate information on the enhancement of human rights in Africa.
- To challenge corruption by initiating programs of empowerment and instituting accountability at all levels of the African society.
- To enable African NGO's to be heard in front of international bodies, institutions and gatherings devoted to human rights.

In achieving these goals, Afronet is placed in a difficult position where its day-to-day activities involve facilitating both networking amongst NGOs within Africa and communicating effectively with international bodies outside of Africa.

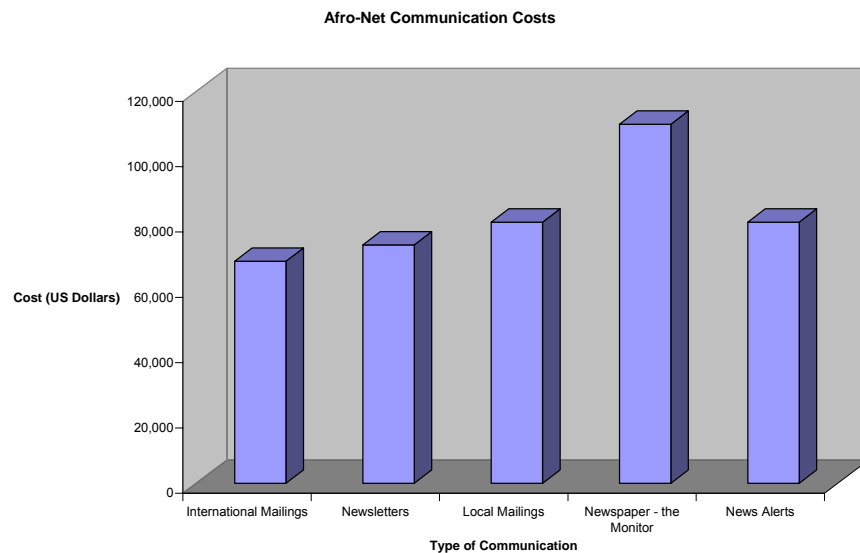
The Communication Challenge

In overcoming this communication challenge, Afronet published an enormous amount of literature to be sent to its clients across the world. The major ways in which it communicated with the various stakeholders in the project are:

- Regular position papers that updated its clients on Afronet’s current activities and future plans.
- Human rights reports that were published to provide a detailed view of different human rights issues.
- Quarterly magazines – *The Human Rights Observer* and *The Southern African Human Rights Review*, both of which are distributed across the world.
- Human Rights alerts and press releases were issued for more urgent news. These were published at an average rate of once a month.
- Until recently, Afronet also owned a *Zambian newspaper*, called the *Monitor*, which disseminated human rights information across Zambia.

All these publications required printing, processing and mailing. An enormous budgetary constraint was placed due to the fact that most of these materials were to be distributed across Africa, and sometimes, across the world. The annual budget of Afronet was valued at 1 million dollars, 50% of which was dedicated towards disseminating human rights information across Africa through the means listed above.

The graph below represents the costs incurred by Afronet in communication with its extensive clientele base across the world.



Information and Communication Technology: Overcoming the Challenge

In meeting its ever-growing communication requirements, Afronet published more materials. This involved offering contracts to more printing presses, and doubling its already-mass mailings across Africa. Mailing difficulties between Asia and Africa caused even more difficulties, as the rapidly growing number of information requests from Asia could never be met effectively. Seeing the fast approaching budgetary deficit, Afronet approached a local Technology consulting firm – Command Technologies – to devise a

solution. After discussions with the consulting firm, the following ICT initiatives were taken to alienate the communication challenge:

- Web-based Information dissemination – *in order to disseminate vast amounts of information on human rights across the world, a web-site would be constructed and updated regularly.*
- E-mail Alerts and Newsletters – *For the more urgent news, e-mail notifications would be sent, instead of having physically-mailed Human Rights alerts. Instead of annual magazines, recipients would subscribe to e-mail newsletters.*
- Internal use of PC's, LAN and Internet – *located across Africa, Afronet needs to coordinate well with its various locations. This would be done by using PCs, LAN and wide-area networking.*

These initiatives helped overcome some of the growing challenges faced by Afronet. Even with the implementation of ICT, paper-based communication still plays a vital role in disseminating human rights information across Africa, since many of its rural clients do not have access to the internet.

A. Web-based Information Dissemination

The first major step taken in constructing this website was identifying a capable webmaster. Mbinji-Tange Mufalo, the present webmaster and the person responsible for overall ICT within Afronet, is at the same time environmentalist and lecturer at the University of Zambia Computer Science Department. Once the website was constructed, it was hosted by ZAMNET communication systems, the first and the pioneer Internet Service Provider in Zambia.

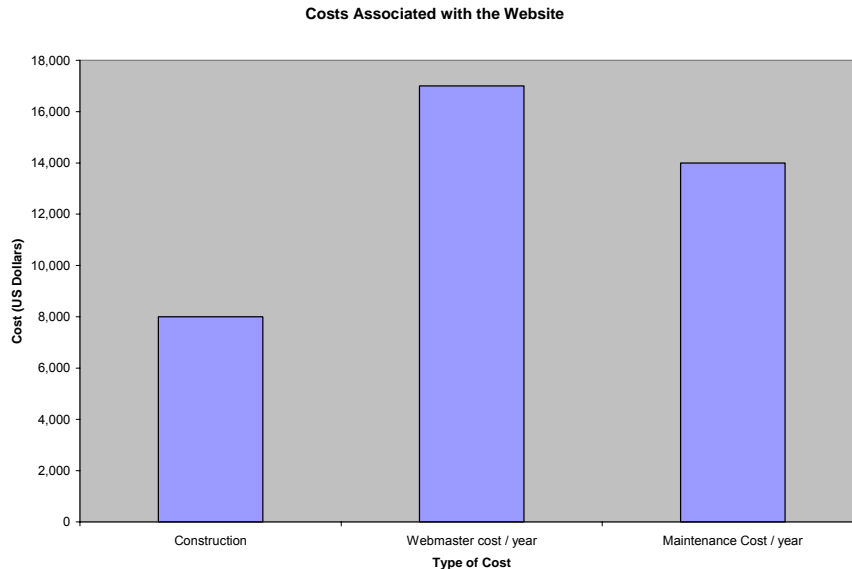


Web-site design by ZAMNET & UNZA

Afronet began to realize the importance of the website very soon. The website was an effective and an inexpensive tool for communicating human rights alerts to people from across the world. This provided motivation for expanding the website and increasing its functionality.

Benefits of the website

While overcoming the difficulties in constructing a reasonably functional website was fairly challenging, the benefits due to the website were many. Significant cost reductions were seen when the website was made public. The costliest mailings were the ones going to Asia, Europe and North America. Now, all the information could be viewed at the click of a button. The costs associated with the website are described in the graph.



Additionally, the website provided opportunities for numerous volunteers to volunteer in Zambia. At this point, Afronet has about four or five volunteers at any given time of the year; all these are made aware of volunteering opportunities through their website.

Donors and national governments are finding it much easier to find Afronet and place trust in it. Having a public domain for disseminating information increased its credibility in the eyes of donors.

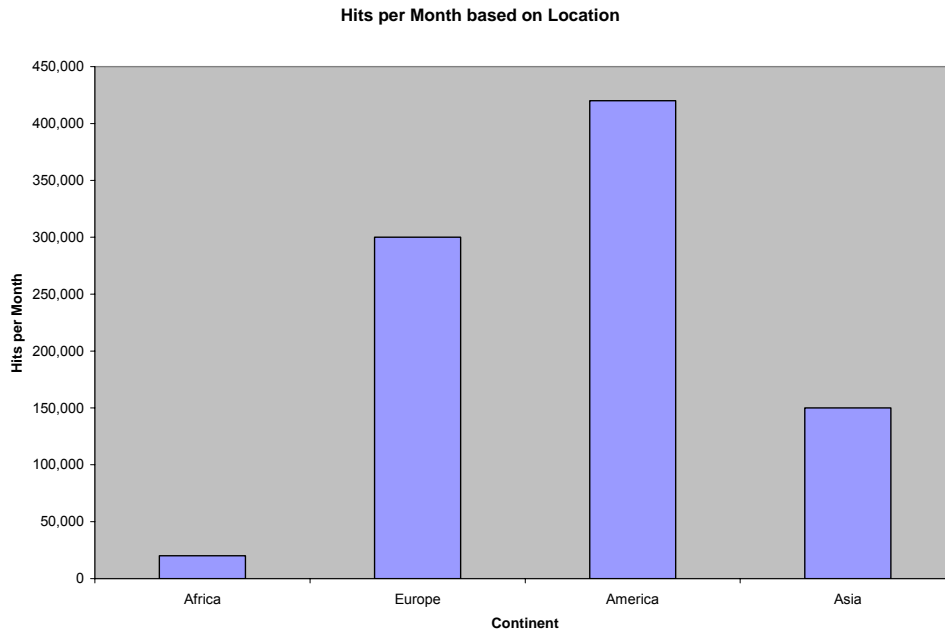
Hindrances in web-based Information Dissemination

Since many of the challenges surrounding the setting-up and maintenance of the website were dealt with effectively, it may be easy to conclude that web-based information portal was a completely successful story for Afronet. However, being based in a developing country, numerous other factors played a role in hindering the progress made with the website.

Since the site was hosted by Zamnet, a local organization, the government used its power to tamper the material on the website, especially the content that it viewed as critical. This forced Afronet to change ISP to *OneWorld*, which offered its space for free. This, however, added difficulty since connecting with an external server required much more time. In order to solve this problem, Afronet commissioned SANGONeT to mirror the website. While this reduced transaction time, it did not prevent the occasional substantial delays in processing a maintenance request.

Another fundamental problem is keeping the website is that it only addresses a fraction of its intended audience. Local Zambian cannot be the target of the site, since they do not have internet access and may not understand English. Therefore, the site was primarily viewed by Zambians living abroad, academic institutions, human rights NGOs, students from tertiary institutions, inter-governmental organizations and civil society. This

nevertheless does not solve the problem of disseminating information through mass mailings for the local constituency. While this helped reduce the costs of its newsletters and international mailings, it nevertheless did not offer a solution to the astronomical costs involved in local and rural mailings.



Regardless of the practical benefits of website, some executive officers at Afronet still argue about the viability of the website. Ingrained in the culture is a strong sense of satisfaction from reading physical material that it is oftentimes impossible to view a website as being a substitute for that. Yuyo Nachali-Kambikambi, the information officer of Afronet doesn't see the website as an alternative for physical information "*most people like hard copy instead of a website*". *There is no need for cost reduction, since the publication and dissemination of our quarterly magazines are funded anyway and there is no subscription fee*". However, others in the executive body disagree with her opinion completely. As the webmaster says "*Afronet is the most famous human rights organization in Southern Africa now, and I suppose that is because of the website as well*".

Institutional rigidities also reduce the effectiveness of the website. Whenever a change needs to be made to the website, there has to be a majority vote in the executive body. This tremendously reduced the pace at which the website was updated. For the first two years, the website was updated once every six months since institutional rigidities simply would not allow for more frequent changes. This hindered the organization and its goals, since viewers were discouraged from the infrequent changes to the website. This forced Afronet to impose a once-in-a-quarter-change, whereby its website would be updated once every three months.

B. E-mail and Newsletter Alerts

The use of the website was expanded to including e-mails and e-newsletters. Instead of weekly mailings to its constituents, Afronet sent its subscribers e-mail newsletters, which became very popular. Immediately following the dissemination of a newsletter, the Information officer receives around 800 e-mails from people requesting more information about topics covered in the newsletter. On days that the newsletter was not sent, the average e-mail influx would be 300 per day.

C. Internal Use of PC's, LAN and Wide Area Networking

Apart from communicating with its constituents using e-mail and web-based information dissemination, Afronet also implemented an internal ICT initiative to increase its own efficiency. With a USAID donation of \$165,000, Afronet invested in 12 workstations, 4 laptops and 2 servers. Afronet uses an IBM proxy server for instituting its Local Area Network. Moreover, all Afronet staff have access to a PC with standard Microsoft software, with the exception of accountants, who have special accounting software and graphic designers, who may have special programs to aid them in their work. Where needed, open source software is used to reduce costs. All service stations are connected through internet service provided by a Zambian ISP called UUNet. The monthly fee for this connection was \$4,000, with a set-up fee of \$8,000.

Access to the Local and Wide Area Networks has largely expanded the horizons of the Afronet staff. Now, Afronet is able to communicate as effectively with staff from across the continent, as it is with workers in the near-by villages. It has also largely increased efficiency, since the staff from across the continent are able to coordinate their efforts.

Lessons Learned

In this highly experimental venture to introduce ICT for human rights activism in developing countries, a number of valuable lessons have been learnt. These lessons will benefit not only the larger Afronet in redesigning its ICT-structure, but also the larger NGO-community that is considering the use of ICT.

Technical Factors

Technical challenges were often hard to overcome. In implementing its infrastructure, Afronet realized that constructing a website and disseminating information online is not easy. This factors involved here are the maintenance of the server, connection with internet gateway and of course, a reliable internet service provided. These are imperative to implementing a web-base information portal.

Institutional Factors

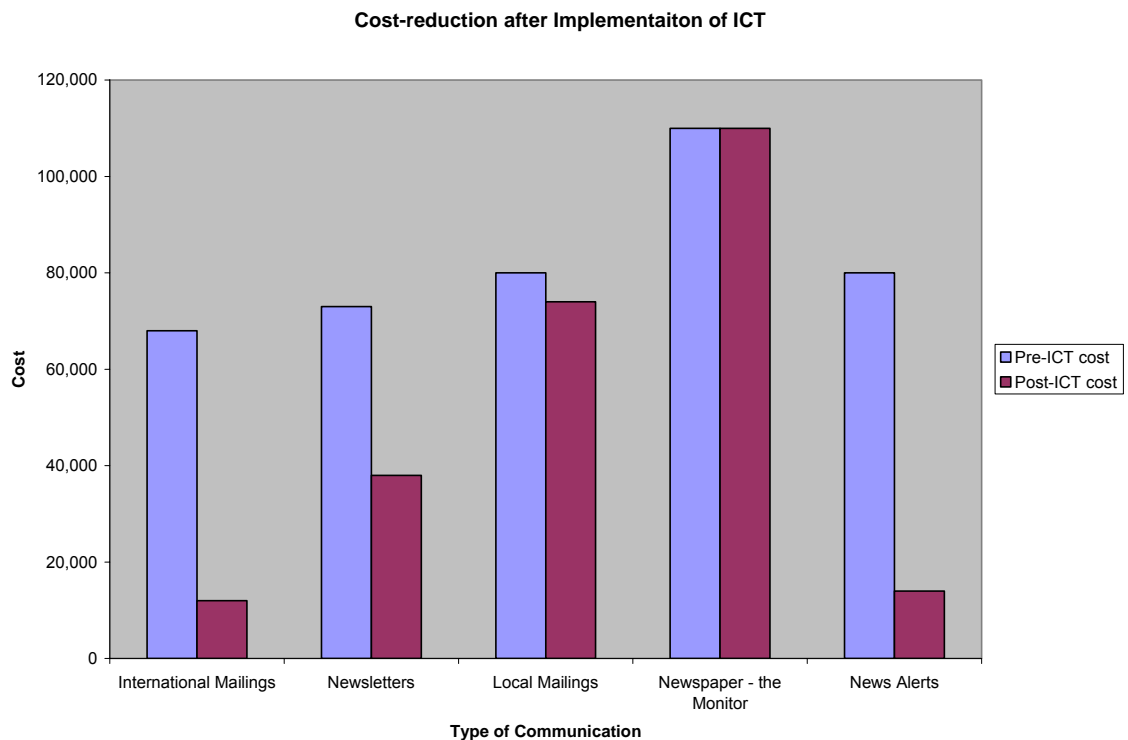
Even after witnessing the benefits of website and newsletters, some executives in Afronet believed that the best way to communicate was still the paper-based information. This shocking reflection is an example of a rigid institutional sclerosis. Institution-wide acceptance of ICT is needed in order to successfully implement an ICT project.

Administrative Factors

The website that was constructed was changed only 4 times in the next two years. This is a factor associated with administrative rigidities. Since the board needed to approve any changes to the website, the website could only be modified when the entire executive board was present. This happened only twice or thrice a year.

Impact of ICT and Sustainability

There is no doubt that Information and Communication technology has been highly impactful in Afronet's case. The associated cost reduction is portrayed in the graph below:



The graph shows that Afronet's international mailing costs have decreased substantially, while the costs associated with its local mailings and newspaper publications haven't changed much. The cost of news alerts, which mainly benefited the rural community, was also substantially decreased.

This case also shows that very little initial investment in ICT can lead to very large returns and high efficiency gains.

Cost/Year	39,000
Returns/Year	163,000

The direct beneficiaries of Afronet's ICT initiative are civil society organization, academics, students and donors with internet access. Other beneficiaries are Afronet staff. With ICT and Wide Area network, they are able to coordinate efforts and disseminate information to a much larger recipient base. They are also able to discuss issues of Human Rights with people from across the world. The website also seems to attract donors and volunteers from across the world, without much effort from Afronet.

Until the use of ICT, sustainability was an issue. The ever-growing need for paper-based communication required more funding. Donor support was guaranteed till a certain point; after that point, donors withdrew their funding, affecting the sustainability of the organization. The use of ICT limited this, since donors now saw a reason to invest more heavily into an organization that not only reached a wider audience, but reached it more cost-effectively.

Concluding Remarks

As these two case studies have shown, ICTs can have significant positive effects if they are implemented within the right context and under the appropriate conditions. The ICT use in Afronet led to a reduction in the company's costs while the ICT use in the RFF program provided a means of disseminating agricultural information to rural farming communities dispersed throughout Zambia.

Although these two programs had different overall goals – the Afronet program mainly focused on cost reduction while the RFF program aimed at enabling program expansion - there are many lessons one can learn on what factors are integral for a successful implementation of a general ICT program in Zambia. In both cases, the correct choice of technology had played a significant role in the respective program's success. In Afronet, the realization that the customers already had access to email led to the effective use of the internet as a cost-reducing information dissemination tool. As for the RFF program, the use of the radio, which was low cost, had a large possible area of impact, and did not require literacy, led to its success as a information dissemination tool to the target poor and lowly educated rural farming communities.

Another important factor contributing to both programs' successes was the effective partnerships formed by the program implementers. In RFF, the right partnerships included the government of Zambia, who provided the financial and technical support necessary for the large scale expansion of the program. For Afronet, on the other hand, the government would not have been the correct partner because of the type of information that the program wanted to disseminate. The appropriate partnership with the University of Zambia was integral to the program's success.

For the RFF specifically, creating a sense of involvement and empowering the target groups largely contributed to the success of the program. Along the same lines, in both cases, the problem came from within a group in Zambia. In ICT and international development projects in general, many potential project ideas come from outside the country of interest and from people who can only remain part of the project for a limited amount of time. As a result, the projects have a much higher chance of failure because the people who are directly affected by the project are not involved in its implementation and hence do not have a vested interest in ensuring its sustainability.

Finally, and perhaps most importantly, the key factor for ensuring the success of a ICT project in Zambia and perhaps in developing countries in general, is a plan for sustainability, which includes how the program will be funded in the future. The Afronet project, fortunately, aimed at reducing program costs, and since it achieved its goal, it actually made a profit through the use of ICTs. Most other ICT projects are not so lucky and require a significant source of financial assistance to ensure their continuation and expansion. In RFF, the lack of adequate funding from the government is what prevents it from being as effective and as efficient as it can be.

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21G.034 / CMS.930 Media Education and the Marketplace
Fall 2005

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