



SUALISA Partnerships with Business, Government Agencies, and NGO's in Tanzania

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The Sokoine University of Agriculture Laboratory for Interdisciplinary Statistical Analysis (SUALISA) has been in operation for more than two years. SUALISA was established as part of an initiative of the LISA 2020 Program, which intends to establish 20 statistical collaboration laboratories in developing countries by the year 2020. The main objectives of SUALISA are to offer walk-in consultancy services, collaboration on projects, teach short courses in Statistics, and collaborating on commissioned work from businesses, government agencies, and NGO's. Since its establishment SUALISA has collaborated on 98 projects, has been visited by over 700 clients, and has conducted over 20 short courses. SUALISA service has also reached to several NGO's, government institutions, and international organizations. The aim of this paper is to briefly describe the operations of SUALISA and to highlight partnerships SUALISA has forged with businesses, government agencies, and NGO's in Tanzania and the results of those partnerships. The paper will conclude with lessons learned via these partnerships.

Keywords: .Statistical collaboration, LISA 2020, Statistical laboratories

1. Introduction

The Sokoine University of Agriculture Laboratory for Interdisciplinary Statistical Analysis (SUALISA) was formed on the 17th March 2014 and started its operations formally on 9th December 2014. It has operated for more than two years. The SUALISA is mandated by the Sokoine University of Agriculture to offer four main services: (i) Walk in consulting (ii) Collaboration Projects (iii) Short course training and (iv) Doing any commissioned work.

A walk-in consultancy service is a quick consultation service in statistics. It is offered daily from Monday to Friday in the University main campus during specified hours. A collaboration project is distinguished from walk-in consulting in the sense that a project involves input and discussion from both the statistical collaborator and the researcher whereas walk-in consulting involves a client that receives instruction and advice from the statistician. A walk-in demands relatively less time and is normally concluded within 30 minutes. Short courses are normally offered in 2 hour sessions in the evening preferably with a statistical software so the attendees can see and practice how to implement statistical methods on their own research data.

SUALISA, is one of the very few statistical labs now existing in developing countries. The creation of SUALISA followed the initiative of LISA 2020 programme at Virginia Tech Department of Statistics (now at the University of Colorado Boulder) which has a plan to establish 20 statistical collaboration laboratories in developing countries by the year 2020. Other labs created under LISA 2020 program are in Nigeria (2), Ethiopia, and Brazil.

There were a number of motives which led to the establishment of SUALISA. One of the primary motivating reasons is the fact that most of the MS and PhD supervisors at SUA, even though they might have been trained in statistics, have their knowledge usually confined to a particular area of statistics making them disadvantaged when supervising a student whose work requires a different area of statistics. For example, a research supervisor could have been well trained in experimental designs, but not in analyzing time series data or econometrics. A statistical lab which would gather together statisticians with expertise in many areas of statistics would be an ideal place for students in developing countries to benefit.



Another reason is that although statistics as a discipline is taught to both formal statistics students and to students doing it as a course to help them in their main discipline of study, students do rarely have time to practice it. The main reason is that these students are also required to pass other courses under a semester system in which case the time is usually not sufficient. Statistical software packages are often taught too superficially and, on the other hand, statistical material is often too theoretical to the students to comprehend the knowledge to apply it in practical situations. Therefore a statistical lab which offers short courses training in practical applications of statistics was thought to be a good thing in developing and improving the practical statistical knowledge of graduate students.

Even though statistical training is provided in most universities in Tanzania and in many developing countries, the art of statistical consultancy and collaboration is never taught to the students. As a result a good number of statisticians lack the skills and techniques of offering statistical consultancy and/or collaboration. The establishment of statistical collaboration laboratories would not only teach the young statisticians how to practice their disciplines, but also may cultivate a desire for them to strive to learn on how to become good statistical collaborators. In the end, the consultancy skills may motivate them to employ themselves as consultants which would eventually reduce the unemployment problem among the statisticians.

Apart from the stated motives for establishment of statistical collaboration laboratories, there were associated benefits which could emerge from having a statistical lab at Sokoine University of Agriculture. One is the strengthening of the research capacities of researchers and graduate students in the university. Through the improvements of statistical techniques for data collection and analysis, the graduate students as well as researchers on staff would be in a position to produce high quality research output which could even be published in high impact international journals. The improvement in research capabilities could also lead to earlier completion of graduate students in the university.

Since its establishment SUALISA has been visited by over 700 clients in walk in consultancy, collaborated in 98 projects and has conducted over 20 short courses. It has also been commissioned by five different partners (NGO and Business Companies) to carry out research activities.

The aim of this paper is to briefly describe SUALISA partnerships with businesses and NGO's in Tanzania, its achievements and challenges, as well as outlining lessons learned from these partnerships

2. Methodology

The study was done at the statistical lab at Sokoine University of Agriculture. The study used secondary sources of data as provided by SUALISA. It also made observation on SUALISA practices and experience to derive its inferences.

3. SUALISA Collaboration with Businesses and NGO's

3.1 SUALISA partnership with Leo Energy Solutions LTD

Leo Energy Solutions LTD is a clean energy development company which combines technical, social and entrepreneurship expertise to provide renewable energy services and support sectors related to renewable energy. At two different occasions SUALISA was contracted by Leo Energy Solutions to carry out studies on willingness to pay for improved cook stoves and solar systems in the Morogoro region rural areas as well as in the Songea region. The study involved questions asking the households on their social demographic characteristics as well as indicating whether they were willing to pay (YES/NO) for Leo company goods and services at different range of prices (5 USD, 10 USD, 15 USD, 25 USD). Using binary logistic regression on each price level, SUALISA established factors influencing willingness to pay for improved cook stoves and solar systems as, age, education, sex of the head of the household as well as income level and family sizes of the households. From these results SUALISA created a business plan for the company. It was recommended that in areas where



most households were female headed, aged and having little income, the company should sell cheap cooking stoves and cheap solar systems.

3 2 SUALISA partnership with MVIWATA

MVIWATA is a farmers' NGO based in Morogoro, Tanzania. MVIWATA is an NGO which is meant to unify Tanzanian farmers so as to have a common say on the defense of economic, social, cultural and political interests of small holders farmers in Tanzania. This NGO was established back in 1993 with assistance from Sokoine University of Agriculture. It has researchers and students some of whom studying at Sokoine University of agriculture. In two different occasions these researchers and/students reached out to SUALISA for research consultancy. SUALISA decided for to hold up a joint research with MVIWATA fellows to assess (1) The impact of Farmers Field School (FFS) on maize yield by farmers participating in FFS as compared to those not participating in FFS. (2) Factors causing conflicts between farmers and pastoralists in Mvomero district

3.2.1 Impact of FFS on maize yield

It is unfortunate that farmers had already been assigned in FFS, so SUALISA had no control on selection of farmers into FFS. In view of that, SUALISA decided to use propensity score matching method to assess the impact of FFS on maize yield. The farmers involved were those in FFS during 2014/2015 and the maize yield was the production in July 2016. The results of the study showed a statistically significant moderate improvement in maize yield by the farmers in FFS. The result of this study led to a more encouragement of FFS to farmers in rural areas, not only by MVIWATA but also by many organizations which have visited SUALISA.

3.2.2 Factors influencing conflicts between farmers and pastoralists

SUALISA in collaboration with researchers from MVIWATA researched factors influencing conflicts between farmers and pastoralists in Mvomero district in the Morogoro region. This problem in Tanzania is quite very big and usually leads to human deaths, injuries and loss of both crops and cattle. The government has spent a lot of efforts in preventing these conflicts, but these efforts have not ended the problem. The study using binary logistic regression on household incidence of conflict has established a number of factors leading to conflicts between farmers and pastoralists. Notable factors leading to conflicts include excessive number of cattle, having huge family size, and absence of land conflicts resolution committees.

3.3. SUALISA partnership with ATONU project

Agriculture to nutrition (ATONU) is a project being implemented by FANRPAN and six consortium members (CMs) to improve nutrition outcomes through optimized agricultural investments. The six CMs are the Africa Innovations Institute (AfriI – Uganda), the Agribusiness Systems International (ASI, an affiliate of ACDI/VOCA – USA), Farm Africa (UK), the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH)/London School of Hygiene and Tropical Medicine (LSHTM – UK), the Natural Resources Institute (NRI – UK) and Sokoine University of Agriculture (SUA – Tanzania).

SUALISA came to participate through SUA where its collaborators were sent to join a team of statisticians who participated in the design of the project. The suggested design was a cluster randomized design (CRT) which was adopted to minimize contamination among individuals so as avoid spillover effects. This was so because the nature of the intervention was based on educating farmers on best practices to improve household nutrition.

3.4 SUALISA partnership with Japanese International Cooperation Agency (JICA)

Talks are underway between SUALISA and JICA to see the possibility of SUALISA being contracted by JICA to do the following (i) situation analysis on the use of data at local governments in Tanzania (2) to deliver appropriate Statistical short courses to agricultural officials in the ministry of



Agriculture. The current agreement is that SUALISA would do a survey in all the districts of Tanzania on the use of data and start training the officials in the said ministry.

4. Challenges and achievements

SUALISA has made a number of achievements since its establishment. First SUALISA partnerships with NGO's has made it known both within the SUA community and the outside community. On top of that these partnerships do provide some little funds for SUALISA to sustain itself, especially now when SUALISA is not funded by any donor. Second, SUALISA has brought awareness among graduate students and researchers at the University on the importance of using statistics in all phases of research. It has also simplified works for both graduate students and their supervisors by helping them understand statistical techniques. Some of the graduate students do even claim to graduate earlier due to SUALISA services.

On the other hand, SUALISA faces several challenges which could be viewed in two perspectives. First are challenges similar to those in developing countries and these have to do with the very art of statistical consultancy. Second are challenges owing to the peculiarity of developing countries where there is little experience of consultancy (Awe and Oguntuase, 2013) and where lack of experts and facilities is among the common problems (Awe and Vance 2014)

One of the challenges facing SUALISA consultants, especially the fresh ones, is how to communicate with the client to understand the client problem, which is a very common problem (Moolan, 2010). Damakos (nd) seems to share the same opinion as he asserts that often problems arise when either or both parties fail to set some mutually agreeable guidelines and standards of communication. The end result may be a disappointed, dissatisfied, client who may not seek consultation services in the future and a stressed, overworked consultant who may feel that her/his services are not appreciated. Emir et al (2013) points out that effective communication between a consulting statistician and the client is the foundation of successfully collaboration. The same argument is shared by Awe (2012) who stresses on the points raised by Moolan (2010) regarding the need by the client to bring out problems to the statistician by explaining its background and the variables needed for analysis.

Hand and Eviritt (1987) argues that the problem of statistical consultancy lies on the relationship between the consultant and client which depend on the personalities, preconceptions of the role of the other party and the nature of the relationships between the individuals concerned. Some specific issues affecting this relationship includes how much statistics the client knows, whether he is prepared to accept the advice or he is confident he knows the answer and is just seeking confirmation, whether the exercise is a genuine collaboration or a statistician is to be acknowledged and whether a statistician is perceived as a scientist in his own right?

Challenges facing SUALISA owing to it being in a developing country includes a lack of reliable electricity and internet, lack of experienced statisticians and software, poor funding, lack of time by the collaborators, bureaucracy from the universities' administration and lack of cooperation from the students' supervisors.

Some of these challenges have also been experienced by other institutions sometimes before SUALISA. According to a report by Partners in Statistics for Development in the 21st century which also includes the African Development Bank (ADB) produced in 2006, there several challenges associated with capacity building in statistics for Africa. Some of these include shortage of qualified staff at managerial and professional levels in national statistical offices, poor remuneration for statisticians, delay in release of funds for specific activities—particularly surveys, and decreasing financial assistance for student scholarships and for infrastructure.



Nevertheless, SUALISA has been making attempts to solve these challenges. For electricity problem solar power is sometimes used in case there is power cut. While for internet problems sometimes private modems /mobile phone are used. Funding problem is the most serious one. Initially SUALISA was being funded by a US project known as innovative Agriculture Research Initiatives (iAGRI), but now it is not funded even by the university itself. It is through doing commissioned works that SUALISA attempt to solve this problem. Unfortunate these works are not frequently available. For bureaucracy challenge, SUALISA experiences it mainly from the University administration where in each day it receives promises of being funded, but the funding has yet to materialize. The best that SUALISA has been doing to address this challenge is to keep reminding the authority regarding the promises it has made.

5. Conclusion

SUALISA has learned a number of lessons for the services it provides to its clients including both students and NGO's. First is clients do not look for statistical services unless they are students or researchers. Therefore most clients have to be found through advertising yourself. Telling them who you are, what you are doing and the benefits of what you are doing. It was through such ways that SUALISA came into contact with JICA and Leo Energy Solutions Company.

Second, a time delivery of services, effective response of letters and emails is a very important practice to acquire more customers and partnerships. Usually your services sell themselves.

Third, a statistical consultancy need not worry much about expertise or facilities, for most of the statistical needs in the community do not need complicated statistical techniques and facilities. In some case a Microsoft excel software with simple descriptive Statistics could help solving such kinds of problems.

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