Fostering a collaborative approach to research through the University of Zimbabwe Laboratory for Interdisciplinary Statistical Analysis (UoZLISA)[1]

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Abstract

Statistics, being a cross cutting applied science and a decision tool; upon which all evidence based decisions rely, is subject to misuse. Not unique to Zimbabwe only but most developing countries, often individuals serve as statisticians and they publish and support researches basing in most cases on the minimal training in Statistics they would have received in the one statistics component of their course. In most cases there is a ripple effect where the Statistics instructor is an individual who also received minimal Statistics training. Type I and Type II errors are committed unconsciously and the effect is transferred into policies and decisions. In most cases no one is available to validate and critique the robustness of most statistical methodologies in researches, save for a few that are published on international journals.

The University of Zimbabwe through its Statistics Department aspires to be part of the LISA 2020 vision to build Statistics capacity in developing countries through collaborative statistical laboratories. The University of Zimbabwe (UZ) is the oldest and largest tertiary institution in the country. UZ thrives to uphold an International Academic Brand by maintaining excellence in teaching, learning, research and service to the community towards sustainable development in Zimbabwe. The birth of **University of Zimbabwe Laboratory for Interdisciplinary Statistical Analysis (UoZLISA)** will go a long way in improving the learning and application of Statistics in all other fields, starting with graduate students and making statistics more practical in solving real life problems. The base plan for UoZLISA is anchored on correct teaching of Statistics in all Faculties and Departments at the institution. Under this model the teaching of all Statistics courses should be offered from the Department of Statistics and should be handled by qualified Statisticians. A positive development in that direction is that for the just ended semester (February-June 2017), the Statistics Department taught 3 Statistics courses for Economics Degree programme(s).

Keywords: LISA; STEM; capacity.

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[1] **A future member of the worldwide LISA 2020 Network of Statistical collaboration laboratories**

1. Introduction

In line with the Sustainable Development Goal number 17; which calls for global partnerships and cooperation and the African Union's Agenda 2063, the University of Zimbabwe is aspiring to be part of the LISA 2020 program established by the Laboratory for Interdisciplinary Statistical Analysis (LISA) at the University of Colorado Boulder, USA to train statisticians from developing countries to become collaborative statisticians who will help enable and accelerate research to solve real-world problems and build a network of 20 statistical collaboration laboratories by 2020.

2. The need

Policies are formulated and decisions are made in most cases basing on substandard statistical methodologies. There is great need to equip graduates with real world challenges and help develop them in critical thinking on handling statistical data. In line with the national agenda for socio-economic transformation, Zim ASSET, a sound statistical backing for decisions and policies that promote sustainable development even around the four strategic clusters which are; Food Security and Nutrition, Social Services and Poverty Eradication, Infrastructure and Utilities and Value addition and Beneficiation is critical. A good understanding of Statistics is a required for setting up effective monitoring and evaluation systems.

3. Solution : UoZLISA Plan

There is need for establishment of centres of excellence such like UoZLISA, which will offer statistical support by promoting the proper use of statistics, best practices and ethics in Statistics. Plans are to establish a centre of interdisciplinary statistical analysis utilising the already available infrastructural and human resources pooled at the University of Zimbabwe. The University of Zimbabwe is the first institution to have a standalone Statistics Department in Zimbabwe and has current collaborations with NGOs, representation on the national statistics agency, ZIMSTAT.
 The lab will reach out to all faculties at the university, rope in data producers, data consumers and research institutions, and mainstream practical examples into statistical degree programmes through collaborations to ensure production of a graduate who is able to handle applied research. For sustainability; source of funds will be income generating activities like short courses and consultancy services. The establishment of UoZLISA underpins on the vision to emphasise statistical capacity building to harness statistics for informed decision making.

4.Challenges

When in one country a Statistician is listed among the top paying jobs, the story is different in developing countries where the profession is among the invisible on the job market and probably the least paid. With the limited students taking on Science Technology Engineering Mathematics (STEM) subjects at Advanced level and the invisibility of the Statistics profession at grassroots, the uptake of Statistics degrees in Zimbabwe has been dwindling over the years. In January 2016 the Ministry of Higher and Tertiary Education, Science and Technology Development, launched the A-Level STEM Initiative. The Initiative seeks to encourage students who pass their 'O' Level examinations with a Grade 'C' or better in Mathematics, Biology, Physics and Chemistry to take a combination of these STEM subjects at A-Level (Lower Six).
Due to the increasingly deteriorating economic conditions prevailing in the country over the past two decades , the statistics profession has suffered a lot from the brain drain and it has been difficult to attaract experienced researchers and professors to the institution. UoZLISA will provide a platform for effective and enhanced collaboration and consulting to ensure proper use of statistical concepts and methods in research with researchers from other fields. Through such collaboration and partnerships we hope to build statistical capacities, share best practices, upcoming methodologies, through the network of Statisistical laboratories in other developing countries and with developed countries. UoZLISA will increase visibility of the statistics profession. This synergy will improve both the quality and volume of research and also helps in ensuring that proper data warehousing is instituted, a

major challenge in developing countries. Mainly statistical analysis has been used as a means to an end, but with collaboration and consultation, the involvement of Statisticians will be emphasized from the commencement of a study, from design to analysis and presentation of results, this will also help widen the scope of statistical applications appreciation in the Statistics Department at the University of Zimbabwe. One area that we need to improve is on the proper use of statistical packages, because of the economic constraint we cannot purchase licences of such packages as SAS, and STATA, most research has been limited to SPSS, of which in most instances it has been viewed as a blackbox to produces p-values (which of late have been questioned in their use for research); we seek to emphasis on open software such as R hence there is a need for intense training on programming and the intensive use of R within the research community in Zimbabwe in the long term. Much of social and economic research in Zimbabwe has been driven by Non-Governmental Organizations and Government departments who have an interested stake in the findings, but the presence of UoZLISA will provide an platform that will spearhead and facilitate independence in research.

5. Conclusions : Way foward Beginning this year 2017 the Statistics Department has received requests from other departments to teach all Statistics courses. This came as a resolution from the institution's Academic Committee where it has been noticed that the students performances in the Statistics courses was poor mainly due to the fact that the then instructors were specialists in their own areas and would teach statistics components basing on the 'limited' statistics knowledge they received when themselves were students. This new development provides a magnificent base for establishment of UoZLISA since this will cultivate a collaborative culture, where different departments input their specialities into a graduate to produce into the market a relevant and a well applied product..

  The interaction with other Statistical Labs from offers a platform to share and learn from other labs' experiences and can open chances of international collaboration with other well developed institutions for skills sharing, exchange programmes and partnerships hence enhancing capacity building. In the long run with increased volumes of research, it is envisaged that an Institute review Board will be established to ensure that ethical considerations are met in the conduct of research and the presence of UoZLISA can provide considerable resource for this endeavour to be achieved.

References
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