STATISTICAL HUMAN RESOURCE DEVELOPMENT: THE CASE OF BUKIDNON STATE UNIVERSITY, PHILIPPINES

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ABSTRACT

Two trainings on Confirmatory and Exploratory Data Analyses and Data Mining were conducted to enhance capacity of faculty and step up their development in basic and advanced statistical methodological skills, so with their research capability. Training designs were perceptively prepared to address the variability of the participants' educational status. Issues and challenges raised during the trainings include among others: existing researches are limited and confined only within the parameters of the workplace, wanting for a more in depth and comprehensive research utilizing data mining as a tool, and aggressive collaboration efforts and linkage among funding institutions. The training likewise motivated and enhanced faculty skills in the use of appropriate statistics methods useful in their research undertakings. Initial results revealed a significant increase in the number of quality and collaborative researches consistent with the vision of the university and established linkage from the local support institutions.

I. INTRODUCTION

Statistics plays a significant and vital role in various aspects of our society including among others policy-making processes. They are needed for assessing the current situation, objectives setting, targets, as well as measuring progress and development. There is however a very significant mismatch between the demand for information and the ability of most countries to supply the required statistical information, to effectively address the need for policy making processes among others. Strengthening national statistical capability is therefore necessary to enable countries to satisfy their own needs.

The United Nations Statistical Institute for Asia and the Pacific (UNSIAP) for example revealed that training has been the main engine of personnel development in government administration in general and that statistical training, has contributed much to the development of National Statistical Agencies (NSAs). Accordingly, training helps in enhancing statisticians' capabilities to achieve their goals in the changing and dynamic environment in which they operate. To respond to the training requirements, training institutes created their own statistical training mechanisms which can be described as: identifying training needs, designing training delivery, actual training process, evaluation of training and follow up activities/actions (Chultemjamts, UNSIAP).

One of the primary goals of Philippine Higher Education Institutions specifically the Higher Education Research (HER) component, is to take a significant part in the crucial function of enhancing research culture. HER addresses specific problems in industry, business,

government and community as problem solvers. It contributed to the formulation of policies, strategies, development programs and decision making at different levels. HER, if effectively carried out including the timely dissemination of results, will contribute significantly to the national development agenda (de la Pena, 2007).

Locally, the Bukidnon State University (BSU) as a premier institution of higher learning in teacher education, sciences and humanities committed to its mission to develop competitive professionals who are committed to build a sustainable life for all through quality instruction, research, extension and production. It continuously assumed the challenge to develop creative, highly specialized, independent and critical thinking professionals, to make them a well spring of knowledge that contribute not only to the university's development, but also for the welfare of the society.

The University's Research and Development Unit likewise assumed the challenge of providing knowledge when and where it is needed. In the year 2007, BSU signed a memorandum of agreement with Statistical Research and Training Center (SRTC), a government institution and a training arm of the NEDA, to enhance capacity of faculty and step up their development in basic and advanced statistical methodological skills that will be responsive in supporting information-for-planning and decision-making requirements. Two trainings were conducted consecutively to BSU faculty on Confirmatory and Exploratory Data Analysis (CDA & EDA) and Data Mining. Training designs were prepared based on the result of the Training Needs Assessments designed to address the variability of the educational status among its participants.

Consequently, this paper examines the initial results of statistical trainings conducted geared towards the research productivity and enhancing the research culture of the institution. Section II discusses the issues on statistics and research before the conduct of the trainings. Section III presents the results of the training which include the training design, major topics, sustainability of the training, and challenges. Finally, section IV provides conclusions and policy recommendations for consideration for the institution as well as the SRTC.

II. ISSUES

Varied issues generated from the broader spectrum of statistics and research were identified during the conduct of the study, shared by the participants with varied specializations.

On statistics, the following issues were presented: fear and limited knowledge of statistics resulting to less appreciation to do research, and appropriate statistical tools to use on data analysis, processing and interpretation. Accordingly, they find statistics difficult due to the numerous formulas; the need for constant consultation with statisticians and confusions specifically on exploratory data analysis such as association, path, cluster and discriminant analyses among others.

On research, concerns include: lack of confidence to do research due again to limited

knowledge on statistics, determination of researchable topics, no experience in the preparation and submission of research proposal before, perception that research is an intellectual exercise for professors only, limited skills and trainings, and the seeming confusion about exploratory data analyses used in research among faculty members. One interesting issue raised is the challenge for an educator to encapsulate the real essence of "research culture" to the students especially on research ethics and the love of doing research as a way of life.

III. RESULTS

TRAINING DESIGN

Based on the result of the training needs assessment (TNA) conducted, training designs were formulated. The training designs effectively consider selection of participants who have manifested interest in doing research based on the program for training developed by SRTC. On March 10-12 and April 14-17, 2008, some 30 faculty members with varied field of specialization participated in the two trainings conducted respectively, represented by the 6 colleges of the university. The medium of instruction was in "english" and local dialect (bisaya) to ensure deeper understanding and open communication among the participants including the use of computer software for hands-on activities.

The methodology was participative and collaborative in nature ensuring active participation among participants with great emphasis on the information collected made before the conduct of the training. Focus group discussions (FGD) and Focus Group interviews (FGI) with the respondents were done to validate the issues raised by the participants during and after the trainings. Participants were grouped headed by a senior faculty and were tasked to develop a research proposal which shall formed as one of the training output.

MAJOR TOPICS

For the first training, topics discussed include, 1) Overview of Data Analysis in Research; 2) Quantitative Research; 3) Theory Formulation: Factors and Variables; 4) Descriptive Statistics; 5) Sampling and Sample Size Considerations; 6) Statistics for Comparing Variables; 7) Analysis of Variance Techniques; and 8) Regression Analysis. The second training focused on the topics: 1) Conceptual and Philosophical Differences of CDA and EDA; 2) Association Analysis; 3) Cluster Analysis; 4) Discriminant Analysis; and 5) Principal Components Analysis. These topics were discussed with varied forms of techniques like workshops, demonstrations and lectures making the participants fully engaged in various activities. Sufficient time was given for open forum for the participants to clarify gray areas and for them to share their ideas related to the topics. After a series of interaction, evidences show that participants have gain interest and gave priorities to develop research proposals.

SUSTAINABILITY OF THE TRAINING

Sustainability of developed programs under SRTC and learnings after the training was a major concern (Padua, 2004). In response to this concern, a small research group among participants was organized who shall meet once a month to keep abreast of the new research trends, develop new research proposals and sustain the momentum. Result of the discussion revealed a substantial thought sharing and generation of ideas concerning the following: 1) Peer Review of Researches and Refereeing; 2) Recent Advances in Health and Environment; 3) Common Problems in Graduate Education; 4) English Language: Trends and Issues; and 5) Some Issues in Science Education Research. The group likewise agreed to give priority to the mentoring endeavours for junior researchers.

INITIAL RESULTS

Data gathered for the last 5 years (2004-2008) include numbers of research proposals submitted for institutional funding, published researches to the BSU journal, faculty researchers and collaborative researches. Based on the data gathered as shown in table 1, revealed that there is a significant increase in number in all aspects of research activities conducted in the year 2008, as against the average number taken from the year 2004 to 2007. Notably, the increase happens after the intervention was conducted which were mostly generated proposals as a result of the training. Figure 1 likewise showed the significant increase and graph of indicators .

Table 1.
Data of Indicators for 2004-2008

Indicators	Year				
	2004	2005	2006	2007	2008
Number of Research Proposals	9	9	7	9	22
Number of Published Researches	12	10	10	10	-
Number of Faculty Researchers	21	22	21	16	50
Number of Collaborative Researches	9	8	6	6	20

In summary, significant outcomes were noted as initial results after the training. Among them are the following: (1) Collaborative Researches was done through mentoring, thereby increasing the involvement of junior researchers to do research; (2) Awareness and interest among participants to disseminate research results in local, national and international fora; (3) Secured funding assistance for two commissioned researches and ten institutional research proposals developed based on the knowledge gained during the training, (4) Served as external reactors and referees to nearby institutions; and (6) formulated four research programs concerning Sustainable Development and Environment, ICT Capacity-Building for vulnerable groups, Innovations in Higher Education and Culture and development among Mindanao Indigenous

Peoples.

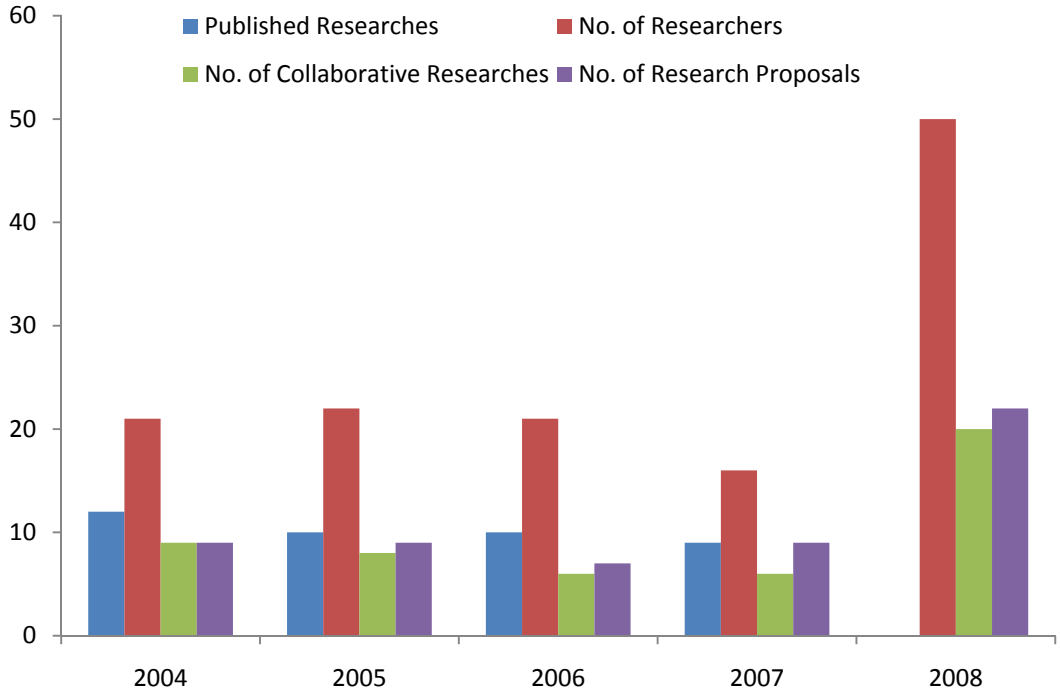

Figure 1.
Graph of the indicators from 2004-2008

CHALLENGES

1. There is a need for further collaboration among faculty and establish mechanisms to increase monitoring with participants particularly on research activities.
2. Sustained program for updating particularly on the latest trends in research.
3. Sustained guidance and mentoring among junior researchers becomes a challenge to senior researchers.
4. Mechanism to institute a multiplier effect among faculty members who were not participants in the trainings conducted.

IV. IMPLICATIONS

1. Statistical training is an essential means for ensuring improvements of BSU's research culture.
2. The importance of the administration to support statistical human resource development and provides an environment that is conducive to research and development.
3. Sustained endeavors to establish linkage with partners.
4. Programs supporting research will re-down to increase in number of research proposals.

POLICY RECOMMENDATIONS

1. Mainstreaming statistical human resource development program to the university's faculty Capacity development program.
2. Increase personnel component of the Research and Development Unit to include services for linkage with local government units and external support institution.
3. Engage services of external statistical experts to further motivate and update the faculty's technical capacity.
4. Make mandatory for each university to conduct dissemination at least twice a year to local policy and planning bodies particularly on researches relating to environment and local governance.
5. Allocate at least 10% of the university's resources generated for research and procurement of equipment and softwares.
6. Develop incentives mechanism for all well-meaning and pro-active research and development studies.

VI. REFERENCES

Chultemjamts, D. *Human Resources and Training for National Statistical Offices.* United Nations Statistical Institute for Asia and the Pacific. http://www.unescap.org/STAT/apex/2/APEX2-S.1_STAP.pdf. Retrieved on February 5, 2009.

De la Pena (2007). "*Enhancing Research Culture in Philippine Higher Education Institutions*". A paper presented during the 42nd Annual Assembly of the Philippine Association for Graduate Education. September 24-27, 2007, Manila Hotel, Manila, Philippines.

Hewitt, L. (2002). *Promoting Statistics Literacy: New Opportunities for the Training of Institutional Research Professionals.* http://www.stat.auckland.ac.nz/~iase/publications/1/4k2_hewi.pdf. Retrieved on February 5, 2009.

Padua, N. (2004). *Human Resource Capability Buiulding in Statistics: Lessons from Experience.* http:www.nscb.gov.ph/ncs/9thncs/papers/capacity Human Resource.pdf. Retrieved on January 23, 2009.

Promoting Statistics Literacy: New Opportunities for the Training of Institutional Research Professionals. http:www.stat.auckland.ac.nz/~iase/publications/1/4k2_hewi.pdf. Retrieved on January 4, 2009.

Training, Capacity Building and Development at IBGE – The Role of the National Schools of Statistical Sciences. http://www.unce.org/stats/documents/ece/ces/ge.50/2008/mtg1/zip.63.e.pdf. Retrieved on December 27, 2008.

Training Programme in BPS-Statistics Indonesia. www.unsiap.or.jp/completed_prog/workshop/fpw/fpw3_thai_2007/cpi/p_indonesia.doc. Retrieved on February 5. 2009.