

**RESEARCH PRODUCTIVITY LEVEL IN THE
TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES:
MOTIVATION PREDICTORS ASSESSMENT AND EVALUATION**

Francisco D. Esponilla II*

A B S T R A C T

The impact of productivity is not only governed by a single factor affecting the performance in every endeavour. Thus, performance measures constitute subjective critical analysis by which this research study utilized descriptive analysis converted into quantifiable formulations for SPSS particularly the regression analysis. Descriptive analysis was used for identifying research motivators that significantly influence research productivity in the university. To suit with an appropriate statistical evaluation and validate research result, the regression analysis was used in order to test the probability of the null hypothesis generated based on the result of the study. Since research motivators also comprises the research culture, the proponent also intended to inquire reasons for underperformance in research productivity anent researcher's actual experience in the conduct of the research work.

A descriptive survey questionnaire was validated utilizing Cronbach's Alpha of .871. The result of the study showed that the personal-related or intrinsic motivation variables with an average mean of 4.32 is motivating to the researcher. The institutional-related or extrinsic motivation variables however, with a mean average of 2.70 were rated slightly motivating on the part of the researcher.

* Instructor - University Research and Development Services, Technological University of the Philippines

However, ran through linear regression analysis, the study resulted that the independent variables do not have significant effect to the dependent variables. This means that whatever the number of accomplishments be made, it do not affect the productivity performance of the faculty members in the university. Thus, the hypothesis of the study is partially sustained.

INTRODUCTION

Research productivity is a continuing institutional endeavours for industrial success vis-à-vis thrust of the Public Higher Education Reform Roadmap. In pursuit of addressing this endeavour, the Commission on Higher Education (CHED), Philippine State Universities and Colleges (SUCs), and the Department of Budget and Management (DBM) being the tripartite government agency are aimed at maximizing the system's contribution towards the full service for national development. CHED, PASUC and DBM through collaborative efforts measure the SUCs indicators of research performance depending on the accreditation level (CHED Memorandum Order No. 35, s. 2012). For Level I and II SUCs, percentage of research-based were teaching materials, analyses, essays and papers. Level III and IV are on the percentage of published and presented research outputs, percentage of applied for patent and patented research outputs in the national and international levels. Percentage of completed research outputs in various areas like technology or engineering, education or institutional, economics and agriculture were also specified for level IV accredited SUCs. These are the focus of monitoring and evaluating performance of CHED, DBM and PASUC in the cascading of the 2012 Key Result Areas of the present administration that is often called "The P-noy Key Result Areas (KRA).

Background of the Study

Productivity of any State Colleges and Universities (SUCs) like the Technological University of the Philippines (TUP) is measured on its major functions in line with the vision, missions and goals. The major functions and objectives (MFOs) of the Technological University of the Philippines (TUP) were contend in Instruction, Research, Extension and General Administration. In higher education, one type of productivity is research productivity. Thus, the increase in research productivity should be directly related to an increase in organizational effectiveness

(Bean, 1982; & Braskamp, 2005). Knowledge of the research performance of the faculty will enable the faculty members and administrators to know where they stand in research collectively that would provide a range of professional services to: optimize the commercial potential of the university's intellectual property; support funding applications; and develop engagement with businesses, organizations, and strategic partners. Output of the research are tangible evidence achieved leading to concrete products like journal articles, report, monograph, books, a grant of proposal and the like (Blackburn & Lawrence, 1995).

Universities in the developing world have retained strong teaching functions and weak research functions (Sanyal & Varghese, 2006). The Philippines is experiencing this case, thus, the purpose of this research is geared towards identifying the drives that hasten capabilities and potentialities of the university, at work theoretical framework, research productive faculty members and the impact of university support to the faculty research productivity. Putting into consideration on the respondents profile, personal or intrinsic motivation and institutional support or external motivation and its influence to the research productivity of the Technological University of the Philippines, namely: research output presented, published, applied for patent and the nature of research output as to technical or engineering, institutional or educational, economics and agriculture.

Significance of the Study

The Technological University of the Philippines (TUP), a level IV accredited State University is not exempted in the plan for the national development. The trifocal functions of the university in instruction, research and extension are focused on the target-based accomplishments for providing quality education. Research in the university significantly contributes to the nation's economic activity, both directly and through its impact on the continued future growth (Cole, 2010). Hence, identification of drivers of TUP faculty members to produce research may assist in identifying individuals who are higher producers of research that contribute in building programs designed to support and enables faculty members to increase research productivity. It can be said that these productive faculty members were seen as more expert educators and often serve as a reference for faculty members and others who are developing their own research works (Levine, 1997). This research effort will serve as reference guide for further research to

measure institutional productivity in research activities and translate into practice responsive to the call of the Commission on Higher Education (CHED), Philippines State Universities and Colleges (PASUC), Department of Budget and Management (DBM) for a stronger research orientation in the State Universities and Colleges (SUCs). In addition, the end point of this research although similar to other faculty research studies on productivity, is unique in that it is investigated through of identifying drives or the motivational factors a TUP faculty member to increasing research productivity.

REVIEW OF RELATED LITERATURE AND STUDIES

The Commission on Higher Education (CHED), Philippines Association of State Colleges and Universities (PASUC) and the Department of Budget and Management (DBM) are the major government agencies tasked to work hand in hand in monitoring and evaluating the quality of education in the country in the areas of instruction, research and extension services. Under the University's (TUP) Major Functions and Objectives (MFOs), primary research information's on research productivity in terms of percentage of publications and presentations in various national and international agenda; percentage of applied for patent and patented research outputs; and percentage of the technology or engineering, institutional or education, economics, and agriculture research based on the previous year's accomplishments. In line with the Executive Order No. 80, s. 2012 issued by the Office of the President Aquino through the Commission on Higher Education (CHED), the commission issued CHED Memorandum Order no. 29, s. 2013 with the inclusion of the supplemental implementing guidelines on cascading performance targets (PTs) of the SUCs for FY 2013 for measuring research performance based on target versus accomplishments in particular. Issuance of this memorandum provided target on research productivity appropriated depending on the level of accreditation by the Accrediting Association of Chartered Colleges and Universities of the Philippines (AACUP). The Technological University of the Philippines has responded in the call for a stronger research orientation in University, and so with other Higher Educational Institutions (HEIs) in the Philippines.

Prior to the aforementioned government agencies that aid in the development of research performance in the Educational Institutions, the Technological University of the Philippines (TUP) is directly affected on the shift of the current trends in the research sector. For the last ten

years, the University has been very satisfactory in the research accomplishment due to the increasing number of research outputs that in turn contributed to the institutional research performance. For a sustained growth, TUP faculty members as the key research players developed a climate or a culture that motivated them to perform better in this area (Vinluan, 1999). The current study however, reviewed research culture in the University which resulted to a satisfactory research output performance of the TUP community for being on the fourth (4th) level of the Accrediting Association of Chartered Colleges and Universities of the Philippines (AACUP). Research is an important academic activity that is expected of every faculty members in the University. Assessment of faculty member's performance is taken in the form of input-outputs (Moravcsik, 1985). According to Moravcsik, the input constitutes the faculty members itself, the institutional resources, and the institutional financial capability, while the output refers to the intangible outcomes such as the new scientific knowledge and awareness of new methodologies in the form of theories, empirical findings and tangible evidences.

RESEARCH METHODOLOGY

The study dealt with the relation of sources of motivations of the faculty members that are considered predictors of research productivity level in the Technological University of the Philippines, Manila. The study was basically a descriptive survey to describe the present condition of the research productivity in TUP, Manila. The survey served as a fact finding for valid interpretation (Aquino, 1996). True meaning of the data was reported from the point of view of the objectives and the basic assumptions of the study.

A three-part instrument elicited the following information and was fielded accordingly after validation:

Part I is the profile of the faculty respondents related factors; Part II pertains to personal or intrinsic motivations and institutional or extrinsic motivation; and Part III deals on the research productivity in terms of the percentage of published research outputs, percentage of presented research outputs, percentage of the applied for patent and patented research outputs, and nature of completed research outputs whether technical or engineering, institutional or education, economics, and agriculture. Included in the study is the identification of possible reasons for research underperformance.

Descriptive statistics such as frequency, percentage, weighted mean utilizing the 5 point likert scale.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

As resulted from the presentation an analysis of data, the following are hereby concluded:

A. Respondents profile with highest weighted means:

- a. Age - Ranges from 31-40
- b. Sex - Female
- c. Civil Status - Married
- d. College Assignment - College of Industrial Technology
- e. Research Load - College of Industrial Education

College of Industrial Technology

B. Academic Rank - Instructor Positions

C. Highest Educational Level - Masters Degree

D. Specialization - Technology and Engineering

Level of motivation

The level of motivation was described based on the perceptions of the faculty members who conducted research work in the last three years. The quality of responses in the tabular presentations was interpreted into five (5) points likert scale as follows:

Mean rating	Interpretation
5 -	Very motivating
4 -	Motivating
3 -	Neither motivating
2 -	Slightly motivating
1 -	Not motivating

Overall average mean of 4.32 for personal or intrinsic motivation factors is *motivating*. However, among the ten intrinsic motivation factors, faculty respondents are undecided (*neither motivating*) on conducting research for salary, promotion and additional incentive.

Overall average mean of 2.70 is for institutional or extrinsic motivators are *slightly motivating*. This only means that the university doesn't have enough reward programs and policies regarding the conduct of research. For factor on research grants of financial assistance to various research presentation which was rated with mean average of 1.99 and interpreted as *not motivating* because the university only provides financial assistance like, accommodation, transportation and per diem allowances for the participants with no cash rewards or incentive.

Research productivity performance

Productivity performance in this study was supplemented with a secondary data based from the previous years (accumulated past three years 2013, 2012 and 2011) research accomplishment. Ninety percent (90%) or more output is accounted as best performing agency.

...see Table 1 on page after the references.

Table 1 shows that CIE (20) performed more in the presentations of research in various for a followed by CIT (15) and IRTC (12). Most copyrighted outputs were from CIE. These were the general education research outputs as product of intellectual cognition of faculty members in the College of Education.

...see Table 2 on page after the references.

Table 2 shows that highest of all accomplishment for the current year was contend in the publications, patent applications and in the copyright applications. However, the 90% target was achieved.

A. Probability test for researcher's profile

Tables 3 briefly detailed the influence of the faculty profiles.

...see Table 3 on page after the references.

Table 3 shows no predictive values in the productivity level or on the dependent variables as utilized in the study. This is due to the variations of responses based on the actual accomplishment of the respondents of the study.

B. Probability test for researcher's intrinsic motivations

Table 4 briefly detailed the influence of the researchers' personal-related factors or intrinsic motivation factors to research productivity.

...see Table 4 on page after the references.

Publication column shows that only factor number 6 (My research work would benefit the school) predicts the level of research productivity in terms of research publication at an extracted significant value of .042 predicted with sig. p -value of 0.05 or 95% confidence interval.

C. Probability test for researcher's extrinsic motivations

Table 5 briefly detailed the influence of the researchers' employers-related factors or extrinsic motivation factors to research productivity.

...see Table 5 on page after the references.

Publication column shows that items no. 4 (I received financial support for the conduct of my research presentations in various fora) with p value of .022, item no. 5 (I received financial support for the publication of my research in various referred journal publications) with p -value of 0.014, item no. 7 (I was sent to research presentation conventions as participant/observer/evaluator/member of the facilitating committee) with p -value of .047, and item no. 10 (I was given cash reward for publication of my research output in various refereed journal publications) with p -value of .041 has significant influence to the level of research productivity in terms of research publication as predicted by sig. p -value of 0.05 or 95% confidence interval.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

A. Personal-related or Intrinsic Motivation

A mean average value of 4.32 interpreted as motivating for the intrinsic motivations signifies that the indicators served as driving factors for the faculty researchers to perform well for research productivity.

E. Employer-related or Extrinsic Motivation

A mean average of 2.70 interpreted as slightly motivating signifies that indicators served no driving factors for the faculty researchers to perform well for research productivity.

Recommendations:

As identified in the research study, the following recommendations are suggested:

1. The university should provide financial assistance to the faculty researchers in the publication, presentation, application for patent and for copyright;
2. The university should provide rewards and incentive scheme;
3. The university should conduct research on identifying reasons for under performance in research;
4. The researcher should also make initiative to look for proper venue for publications, presentations considering the quality of research output;
5. Further study can be generated to update some issues regarding research performance in the university;
6. A regular assessment and evaluation study on the research performance in the university should be conducted.

REFERENCES:

A. Books:

- Aquino, G. V. (1996). Essentials of research and thesis writing. Philippines: Phoenix Publishing House, Inc.
- Blackburn, R. T. & Lawrence, J. H. (1995). Faculty at work. Baltimore, MD: Johns Hopkins University Press.
- Moravcsik, M.J. (1985). Applied scientometrics: an assessment methodology for developing countries. *Scientometrics* vol.7, no.3-6: 165-176.
- Bean, J. P. (1982). A causal model of faculty research productivity. Journal paper presented at the Annual meeting of the American Educational Research Association (New York, NY, March 19-23). (ERIC Document Reproduction Service No. ED216661).
- Braskamp, L. A. (2005). How college fosters faith development of students. *Spirituality in Higher Education Newsletter*.
- Meho, L. I. & Spurgin, K. M. (2005). Ranking the research productivity of library and information science faculty and schools: An evaluation of data sources and research methods. *Journal of the American Society for Information Science and Technology*, 56(12), 1314-1331.
- Board Resolution No. 1, s. 1997. Technological University of the Philippines.
- Freedenthal, S., Potter, C., & Grinstein-Weiss, M. (2008). Institutional supports for faculty scholarship: A national survey of social work programs. *Social Work Research*, 32(4).
- Glassick, C. E., Huber, M. T., & Maeroff, G. I. (1997). Scholarship assessed: Evaluation of the professoriate. Special report. Jossey Bass Inc.
- Implementing Order No. 6, s. 2006. Technological University of the Philippines.
- Levine, J. (1997). Research and the practitioner, proceeding of the annual midwest research to practice conference in adult, continuing and community education, East Lansing mi 16, 127-132 (Eric Document Reproduction Service No. Ed 412 370).
- Porter, S. & Umbach, P. (2000). Analyzing faculty workload data using multivariate modeling. Paper presented at the Annual Forum of the Association for Institutional Research (40th, Cincinnati, Ohio, May 21-24).
- Sanyal, B.C. & Varghese, N.V. (2006). Research capacity of the higher education sector in developing countries.

B. Unpublished Materials:

Vinluan, D. C. (1999). Research productivity in selected Technological State Universities and Colleges (SUCs) in the Philippines. Dissertation, TUP Manila.

De lara, G. O. (2004). Predictors of extension program effectiveness of the Technological University of the Philippines. Dissertation, TUP Manila.

C. Webliography:

Australian Research Council(2009). Retrieved September 26, 2013, from [vca.unimelb.edu.au/research/ definition](http://vca.unimelb.edu.au/research/definition).

Cole, (2010). Improving measurement of productivity in higher education. Retrieved September 23, 2013, from biblioteca.ucv.cl/site/colecciones/ manuales_u/13417.pdf.

CHED Memorandum Order No. 29, s. 2013. Retrieved from www.ched.gov.ph Home > Information > CHED Memorandum Orders.

Executive Order No. 80, s. 2012. Retrieved September 25, 2013, from www.gov.ph/2012/07/20/executive-order-no-80-s-2012/.

Public Higher Education Roadmap (2010). Retrieved September 25, 2013, from <http://www.ched.gov.ph/chedwww/index.php/eng/Information/CHED-MemorandumOrders/2012-CHED-Memorandum-Orders>.

Ohio State of Legislative Office of Education Oversight (1993). Retrieved September 23, 2013, from www.forumonpublicpolicy.com/archive07/schiferl.1.pdf.

Shuttleworth, M. (2008). Definition of research, Experiment resources. Retrieved September 23, 2013, from Experiment-Research.com.

Steppingstones. (2004). Research using secondary data sources. Retrieved September 23, 2013, from http://steppingstones.ca/artman/publish/article_60.shtml

Zeichner & Klehr (1996). Teacher Research Spurs Professional Development. Retrieved September 26, 2013, from http://www.wcer.wisc.edu/news/coverStories/teaching_research_spurs.

LIST OF TABLES:

Table 1.*Comparative presentation 2014 accomplishments*

Research Productivity Indicators	2014	2013*	Percentage of Accomplishment:
A. Research publications	18	17	106%
B. Research presentations	58	62	94%
C. Research outputs applied for patent/patented	8	3	267%
D. Research outputs applied for copyright/copyrighted	10	3	333%

*accumulated accomplishment in the past three years

Table 2.*Comparative presentation 2014 accomplishments*

Research Productivity Indicators	2014	2013*	Percentage of Accomplishment:
A. Research publications	18	17	106%
B. Research presentations	58	62	94%
C. Research outputs applied for patent/patented	8	3	267%
D. Research outputs applied for copyright/copyrighted	10	3	333%

*accumulated accomplishment in the past three years

Table 3.*Regression analysis in terms of researchers profile to productivity.*

Research Profile	Coefficient of Determinations (Sig. value = p-0.05 or 95% Confidence Interval)			
	Publication	Presentation	Application for Patent/Patented	Application for copyright/copyrighted
Constant:	.780	.967	.730	.171
1. Age of Respondent	.775	.680	.598	.463
2. Sex of Respondent	.083	.988	.663	.397
3. Civil Status of Respondents	.100	.163	.901	.569
4. College Assignment	.335	.243	.310	.079
5. Research Load	.746	.777	.246	.897
6. Academic Rank	.190	.354	.934	.263
7. Highest Educational Level	.591	.399	.344	.590
8. Specialization	.983	.257	.892	.665

Table 4.

Regression analysis in terms of researchers intrinsic motivation factors to research publications, presentations, application for patent/patented, and applications for copyright/copyrighted

Research Profile	Coefficient of Determinations (Sig. value = p-0.05 or 95% Confidence Interval)			
	Publication	Presentation	Application for patent/Patented	Application for copyright/ copyrighted
Constant:	.161	.282	.660	.819
1. My research output increases in a particular query	.748	.605	.527	.244
2. My research accomplishment my self-confidence	.755	.260	.305	.609
3. I feel fulfilled when my is applied in my research	.519	.494	.134	.361
4. My research output s to an increase in my salary and	.160	.890	.877	.583
5. My research outputs updates atest trends of technology	.970	.835	.507	.963
6. My research work would school	.042	.661	.899	.795
7. My research work would community	.322	.237	.508	.779
8. My research accomplishment y cognitive awareness in my ng taught	.573	.379	.479	.627
9. My research output adds up n top of my regular salary, thus ther financial expenditures	.477	.219	.511	.517

Table 5.

Regression analysis in terms of researchers extrinsic motivation factors to research publications, presentations, application for patent/patented, and applications for copyright/copyrighted

Research Profile	Coefficient of Determinations (Sig. value = p-0.05 or 95% Confidence Interval)			
	Publication	Presentation	Application for Patent/Patented	Application for copyright/copyrighted
Constant:	.696	.713	.384	.723
1. I enjoyed leave with pay during the conduct of my research project	.094	.532	.452	.156
2. I enjoyed study grants with pay during the conduct of my research project	.123	.396	.562	.043
3. I was deloaded in my academic subjects in the conduct of my research	.841	.960	.477	.257
4. I received financial support for the conduct of my research presentations in various fora	.022	.266	.976	.229
5. I received financial support for the publication of my research in various referred journal publications	.014	.388	.736	.091
6. I was sent to attend to various research-related trainings and seminars	.210	.161	.059	.742
7. I was sent to research presentation conventions as participant/observer/evaluator/member of the facilitating committee	.047	.092	.505	.250
8. I was given cash reward for my completed research output	.459	.138	.120	.525
10. I was given cash reward for publication of my research output in various refereed journal publications	.041	.071	.154	.269