

Full Length Research Paper

Factors that motivate business faculty in Kenya to conduct research

Joash Abere Migosi¹, Stephen O. Migiro^{2*} and Paul Ogula³

¹Ministry of Higher Education, Science and Technology, Kenya.

²Graduate School of Business and Leadership, University of KwaZulu Natal, Durban, South Africa.

³Catholic University of Eastern Africa, Kenya.

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This study sought to examine the factors that influence research productivity among business academic staff in selected universities in Kenya. Survey research design was employed in this study. Questionnaire was used to collect information from 277 (70.2% male and 29.8% female) university business academic staff. The information was analysed by SPSS (Version 15) which generated descriptive statistics. Factor analysis was used for data reduction, identification and description of the major factors influencing research productivity as noted by respondents. The results from this study indicate that personal career development factors form the main factor influencing research productivity among business academic staff in Kenya. The conclusion made from this study is that the business academic staff's research productivity is heavily dependent on appropriate skills in research methodology. The main recommendation is for the development and enhancement of national and institutional research policies to guide and manage research in Kenya with clear provisions for improvement of research methodology skills for the business faculty.

Key words: Research productivity, publication productivity, research output, professional development, research.

INTRODUCTION

The current academic climate in higher education in Kenya threatens the ability of Kenyan universities to sustain the conditions that support research productivity. Increased demands on government and private funding, a deteriorating physical infrastructure, increased pressure on undergraduate programmes, university expansion strategies and the general economic climate in the country have raised concerns about the continued capacity of universities to maintain teaching, research productivity and service to the community. This mandates deliberate efforts made to find out the progress made in the research arena at all times. It is through these assessments that a nation can know whether it is making any meaningful scientific progress or not.

It is universally accepted that universities are supposed to become more efficient and effective in teaching,

research and community service. However, there appears to be many obstructions to research productivity, which in turn causes low levels of research outcomes (Lertputtarak, 2008). In Kenya, for example, the world ranking of local universities has nosedived. This has been partly due to the recent innovation of Module II (evening, weekend classes) in higher education, massification of higher education and aggressive expansion strategies employed by various universities. This has resulted in possibilities of imbalance between available time for teaching and for research roles of the business academic staff in universities.

RESEARCH IN KENYA

Kenya has been doing well in terms of research and publishing. Ngome (2003) observes that in the 1970s and early 1980s, the volume of research carried out at the University of Nairobi, the oldest and largest public

*Corresponding author. E-mail: stephen410@gmail.com.

university in the country, was one of the highest in Africa. One of the key factors that stunted the growth of research in the Kenyan university system has been lack of adequate research funds. The large portion of support (although inadequate) for postgraduate, staff training and research work came from donors and international organisations. Lack of adequate qualified researchers constituted the second major constraint to research expansion (Ngome, 2003). These are some of the constraints that have dogged higher education in Kenya over the years. This study confirms the continued challenge of these factors to the university education in Kenya.

The Government of Kenya (GoK) recognises that research and development plays a crucial role in wealth creation and enhancement of human development in the socio-economic development of the country. The importance placed upon research by the government is stated in Sessional Paper Number 1 (GoK, 2005):

Research and development (R&D) is a means of creating wealth and enhancing human development and is a critical component of higher education and training. It also plays a vital role in industrial transformation, economic growth and poverty reduction. However, quality research requires sufficient funding, availability of highly trained research staff, adequate and appropriate facilities and equipment. For Kenya to meet her needs in R&D there is a need to give R&D priority in national development.

The strategies recorded in the Sessional Paper seek to strengthen research and development through increased investment in R&D, through the creation of a strong linkage between national goals, aspirations, linkages and research, and through the wide dissemination of research findings for operational activities.

Despite this, the government acknowledges that researchers are faced with various challenges that must be overcome (GoK, 2005). One major highlight in Kenya's National Strategy for University Education reform process is the emphasis on the creation of a culture of innovation through the acquisition, creation and application of knowledge. In the strategy report, the strategic goal for quality and relevance of the university is to improve quality and relevance of learning through research for socio-economic transformation of society (Kenya) (GoK, 2007).

Kenya's first Mid Term Plan (MTP) of Vision 2030 states thus:

The rapid increase in enrolments at all levels of education without commensurate increase in infrastructure and personnel has led to overstretched facilities, overcrowding in learning institutions and high student staff ratios. All

these challenges have had a negative effect on the quality of education. In addition, the different curriculum has not kept pace with the demands of globalization. For instance, rapid expansion in the demand for university education has strained the existing facilities and adversely affected the teaching and learning process, research productivity and the intellectual climate of universities as a whole.

Blackburn and Lawrence (1995) argues that universities in Kenya started enrolling full fee-paying students at a time when they were strained in terms of institutional capacity. There were not enough physical facilities, and most of those available were decaying following many years of neglect. They did not have enough teaching staff, which was a problem that the marketisation agenda has made worse. These views suggest that rapid university expansion in one way or another affects the core mandates of the university in Kenya.

Insights into the factors that drive differences in research performance and its dynamics have important policy implications. The government has embarked on an ambitious plan to source research and grant funds to support research. At present, about a quarter billion Kenya shillings (which is less than 0.5% of the country's GDP) are being devoted to research annually (NCST, 2009; GoK, 2009). Though the allocation of research funding is increasingly being driven by criteria of scientific excellence, this has resulted in a concentration of more research funds in fewer hands.

THE STATEMENT OF THE PROBLEM

UNESCO (2006) has raised serious concerns about the nature of university education in the developing countries. It says that most universities are under immense pressure to increase their enrolment in order to meet the human resource development targets of their respective countries. What this does is couch university objectives in economic terms and to some extent social, but excludes the pedagogical consequences of such. Therefore, the university is no longer an educational institution but an economic factory.

This has led to teaching becoming their first priority and often their only pursuit. Also, because of scarce financial resources, they are unable to adequately equip and maintain their research facilities or replenish their libraries. In addition, they are unable to recruit or retain well-qualified faculty with strong research credentials who, for various reasons, prefer to move to developed countries (brain drain). Other pertinent issues include (a) how much of the research carried out in universities in developing countries is directly or indirectly relevant to the development needs of the country, and (b) how much of the finding gets effectively transmitted to the relevant

users. This also has significant issues for research training so as to be in consistent supply of next generation's production of high quality researchers. These concerns need to be addressed urgently if the universities in third world countries are to make an impact in society in generations to come.

In most developing countries universities are the main and often the only institutions to undertake research, and if these falter, knowledge production for the country as a whole will be seriously affected. Statistics show the very poor state of research output of many developing countries, and the most disadvantaged region is sub-Saharan Africa (UNESCO, 2006).

The slogan "publish or perish" is commonly used in universities in the west and even in the third world in the quest for promotion (Mwamwenda, 1994). The universities in the developing world are also taking into consideration publications by lecturers as a requirement for upward mobility.

Despite all these concerns, and the demand by universities for business academic staff to publish, there has never been any understanding of the circumstances under which the business academic staff operate. There have never been deliberate efforts to understand the problems that business academic staff face in their quest to publish. In this regard, there are very few studies done in Kenya to analyse the factors that influence research productivity in institutions of higher learning. The published literature in Kenya to date on the factors influencing research productivity among university academics in the country is limited.

This study has sought to establish the factors that motivate the business faculty to conduct research in public and private universities in Kenya.

Research question

The following research question guided the study: what factors motivate business faculty in Kenya to conduct research?

LITERATURE REVIEW

Kyvik (1990) notes that productivity differences are the least in natural science (women published 20% fewer articles than men), while women in medicine, social science and humanities were 30 to 35% less productive than men. Academic rank has been found to be important in relation to productivity. Tower et al. (2007) reach the same conclusions in a large-scale study of Australian accounting academics. Interestingly, Kyvik (1990) observed that women publish less than men in the same positions but that they were more productive than men in lower positions. Thus female associate professors publish more than male associate professors, and female

associate professors publish more than male assistant professors.

This study has used publications in refereed research journals as a surrogate for research productivity. This approach is supported by the literature. Radhakrishna and Jackson (1993) report that publishing in refereed journals is ranked as the most important factor when agricultural and extension education department heads are asked to rank the importance of 13 factors in the evaluation of faculty. In a related study, Radhakrishna et al. (1994) conclude that publications (refereed articles in journals and paper presentations in conferences) are considered to be a very important component of faculty productivity. Wagner et al. (1994) finds that large departments, and those with more developmental grant support, have the highest publication productivity. Quantification of research output is not enough as this study has attempted to do. The present study has gone beyond quantifying the research productivity and has found out reasons that propel higher productivity of research output among university lecturers in selected public and private universities in Kenya.

The counting of total or average publications achieved is therefore a common and popular method used to assess research productivity; it is also easier to obtain such bibliographical data (Martin, 1996). This study has used publication data gathered from self-reported information from university lecturers in Kenya. It is easier to obtain this information from the lecturers themselves than from the journal publications. This is because most of the journals are published outside the country. Even those that are locally produced, they have a limited circulation. Others do not exceed a five year life span. Locating some of these journals therefore is a challenge.

When applied to research, Print and Hattie (1997) state that research productivity is the totality of research performed by academics in universities and related contexts within a given time period. Then research performance indicators can be devised by measuring that productivity in order to provide a basis for making judgements about research quality.

Lange (2001) indicates that quantitative science indicators are essential indicators for evaluation purposes. They are used for the allocation of funds, scholarships and tenures. Apart from publication lists, the most frequently used quantitative indicators for scientific performance are the citations that scientists, journals or scientific institutions receive. Author productivity, together with the type of publication and the rank of author, can be used to assess the output of a researcher (Tsay and Ming-yueh, 2004).

The number of papers published by a group, institution or nation is a partial indicator of its size and productivity, which give an indication of the research activity in a particular discipline. Therefore, the publication produced in a particular discipline needs to be determined in order to assess its productivity (Gu and Zainab, 2001).

Research performance and publication productivity by faculty members of an institute could be used as indicators for ranking institutions.

Generally, research publication is used to assess the qualifications for promotion and tenure. Scientists do research in order to get promoted to a higher rank among their colleagues. Although they prefer teaching as one of the criteria used for an evaluation process for tenure and promotion, the emphasis is placed on research (Ali et al., 1996). Thus, scientists prefer to collaborate with other researchers in order to be more productive and to produce better quality research.

In published literature there are studies that use the quantity of publication to assess research productivity. Blackburn et al. (1978) use total articles published over two years, total career publication and total books published from self-reported data to assess the productivity of 1216 business academic staff members from four-year colleges and 7484 staff from universities in the USA. The instrument they used was a questionnaire. Publication data gathered from self-reported information have been found to be a reliable indicator. Allison and Stewart (1974) found that self-reported response from chemists was correlated with publication counts obtained from Chemical Abstracts ($r = 0.94$). Publication counts have not only been used to provide productivity counts but also have been used to assess research trends in certain disciplines. There is a danger though, if the self reported data are not cross checked and verified by the research team by looking at the referred journal.

Onsongo (2005) investigated the role of research and publication in the promotion of academics in Kenyan universities. Findings from the study revealed that academic promotions were strongly linked to research and publications. Perhaps this is the only study carried out in Kenya on the area of research productivity. The sample population used here was not representative of the university business academic staff at the time. The present study increases the sample population so as to realise generalisable findings.

Maske et al. (2003) examine the factors that cause disparity between male and female publications. They find that 41.3% of the difference between male and female article production is explained by experience, number of courses taught, type of university orientation, and other control factors. They argue that the unexplained difference may be related to discriminatory practices in the publication process. Other contributory factors show that women are more involved in community service activities at the expense of research. Their statistical regression results show that females have 12.2 years experience whereas males have 17.2 years experience; the marginal year of experience is associated with an increase of 0.99 papers for males and 0.45 for females. Other significant predictive factors include a negative relationship with time devoted to administrations teaching or working in a teaching-focused institution.

Oppenheim and Ellerslie (2008) has carried out an investigation on whether a relationship exists between motivation and publication productivity of British academic information scientists. A motivational questionnaire survey was performed, and citation analyses undertaken to determine the publication and citation count of the 45 respondents. Findings of this study demonstrate significant differences in motivational levels and publication counts by age, gender, caring responsibilities and hours spent on research. The paper concludes that those likely to produce more publications are older males without responsibilities who did six to fifteen hours research per week. The conclusions of this study cannot be so useful in academic circles. The present study produces tangible conclusions on the way forward to motivate university lecturers to work even harder in their academic endeavours.

RESEARCH DESIGN AND METHODOLOGY

This study employed survey research design. This study focuses on research productivity of the university business academic staff. Therefore, the university business academic staff drawn from business faculty in the mentioned universities forms the population of this study.

Stratified random sampling is used in this study. A total of 400 questionnaires were administered to the university business academic staff.

The sampled universities consist of five private and six public universities. For ethical issues the universities were randomly assigned alphabetical letters A to L. Letter I was skipped in this naming. This confidentiality was maintained due to the sensitivities associated with performance at universities. Other universities in the sample also made requests for this confidentiality. This was partly informed by lack of publicly available national reporting of university performance in disciplines. Therefore, results of such a study could come out as a surprise to unprepared audience.

The questionnaire was used as the main research instrument for this study. It had both open- and closed-ended items. Most of the studies done in this area have used this instrument for data collection. It has also been proven that self-reported data have correlated positively with the information collected from journal publications. The instrument was developed and pilot tested to ensure that it was valid and reliable. The instrument covered the demographic information of the respondents, number of published articles, list of items to elicit information on the factors affecting research output and reasons the academics feel impacts on research output.

DESCRIPTION OF DATA ANALYSIS PROCEDURES

Descriptive and inferential statistics are used to analyse the data. Quantitative data from responses to closed-ended type of questions in the questionnaire are coded into the computer by applying the Statistical Package for Social Sciences (SPSS) Version 15.

Factor analysis is employed in data reduction. It reduces a large number of factors influencing research productivity into a small number of factors that explain most of the variance observed in a much larger number of variables (Obure, 2002; Child, 2006).

The results are presented in frequency and percentage tables, graphical representations and pie charts. Means and standard deviations are also computed to determine the respondents' attitudes towards research productivity. Data collected from the open-ended items were analysed by grouping similar answers together across respondents in order to form emerging themes/factors. The emerging theme that has many respondents thus forms the main factor influencing research productivity. Other themes have attracted very few responses and are therefore regarded as minor factors. These factors are sorted in a descending format for ease of interpretation, and the factors are presented in a tabular form.

RESEARCH FINDINGS AND DISCUSSION

Principal component analysis

This method has been used by various studies focusing on research productivity in the recent past. The investigations have been designed with the sole purpose of establishing factors that determine the productivity of scientists. The past studies found Principal Component Analysis (PCA) to be the best statistic to reduce the large amounts of variables into smaller variables that contribute to a higher variation to the dependent variable (Babu and Singh, 1998; Brocato and Mavis, 2005; Cepero, 2007). This study had a total of thirty three variables which had to be reduced through several iterations. The variables were reduced to significant fourteen variables that have been listed in the next sub heading.

Selecting the variables for PCA

The variables below have high factor loadings and therefore contribute more variation to the dependent variable. These variables were arrived at after the several iterations that were performed on all the initial 33 variables in the study. Therefore, these variables were found to have the greatest impact on research productivity of the business academic. These variables were further grouped into components. It is the components that expose the underlying factors contributing to research productivity. For example, these variables are automatically grouped into three categories/components, namely personal career development, institutional, individual and factors. These 14 variables are age of the business academic staff, academic rank, highest degree obtained, years since last highest degree, self-motivation, research content knowledge, research skills gained, early orientation to research work, personal work discipline, resources for research, rewards, teaching load, availability of technology and availability of equipment for research.

The factor loadings of the variables of the three

components are presented in Table 1. This table shows the factor loadings of each variable. Those variables that have the highest weights are the most important variables accounting for the highest variations in the principal components. For example, research content knowledge accounts for a high variation to the first principal component. This is followed by research skills gained, then the rest in that order. For principal component two, highest variations are accounted for by equipment for research, availability of technology, in that order. In the last principal component, highest variation is provided by position held in the university, age group and highest degree obtained.

Further assistance is given in the interpretation of the three components, and this involves performance of several rotations. The three components explain a total of 63.2% of the variance in the data with the first, second and third components contributing 29, 20 and 14%, respectively. The factor loadings of the variables of the three components are presented in Table 2.

The Eigen values extracted are 4.06, 2.82 and 1.96 for components 1, 2 and 3, respectively. These values are above the acceptable eigenvalue of 1. This is a clear indication that the data were sufficient for this analysis. It is these values that were used to construct the scree plot.

The Kaiser-Mayer-Olkin (KMO) measure of sample adequacy is 0.770 (Table 3), indicating that the data matrix has sufficient correlation to justify principal component analysis. Furthermore, the Bartlett's test of sphericity has produced a high value and is statistically significant, which also means that the data matrix was sufficient for PCA.

Further interpretation of the PCA

A total of 33 variables are used to extract the three components that affect research productivity in this study. After severally removing variables that do not meet the requirements, 14 variables have been finally selected and used to extract three components that reflect various diversities of research productivity. They form the basis to judge the factors influencing research productivity among business academic staff in Kenya.

The first component can be interpreted as personal career development factors that have contributed much in this component number one. This is in agreement with a study by Blackburn and Lawrence (1995). This component explains the highest variance of 29% in the data. The second component, contributing 20%, can be interpreted as institutional factors. The third component, contributing 14%, can be interpreted as demographic of the individual researcher. Components one and three are closely related in this analysis. This may mean that it is the individual's self-determination, commitment, motivation and stamina that do count in establishing whether an individual researcher is able to publish or not.

Table 1. Rotated component matrix (a).

Parameters	Component		
	1	2	3
Age group of respondent	-0.014	0.072	0.850
Position held in the University	-0.035	0.033	0.895
Highest degree obtained	0.016	0.043	0.808
Years since you obtained last highest degree	0.055	0.013	0.771
Extent to which research productivity is affected by self-motivation	0.807	0.133	0.054
Extent to which research productivity is affected by research content knowledge	0.858	0.096	0.005
Extent to which research productivity is affected by research skills gained	0.830	0.163	0.053
Extent to which research productivity is affected by early orientation to research work	0.655	0.109	0.005
Extent to which research productivity is affected by personal work discipline	0.720	0.181	-0.078
Extent to which research productivity is affected by resources available for research	0.141	0.766	0.141
Extent to which research productivity is affected by rewards for research output	0.097	0.683	0.025
Extent to which research productivity is affected by teaching load	0.089	0.722	-0.156
Extent to which research productivity is affected by availability of technology (for example, internet and computers)	0.229	0.744	0.031
Extent to which research productivity is affected by equipment for research	0.129	0.803	0.013

Extraction method: principal component analysis; Rotation method: Varimax with Kaiser normalization; A rotation converges in 4 iterations.

Table 2. Correlation matrix and rotation.

Components	Extraction sums of squared loadings		
	Total	percent of variance	Cumulative percent
1	4.061	29.0	29.0
2	2.818	20.1	49.1
3	1.964	14.0	63.2

Table 3. KMO and Bartlett's test.

Kaiser-Meyer-Olkin measure of sampling adequacy		0.770
Bartlett's test of sphericity	Approx. Chi-Square	1506,680
	df	91
	Sig.	0.000

The institutional component, explaining 20% of the variance in the data, involves all those resources, equipment or rewards that are supposed to be supplied by respective institutions.

The significant result of his study is that research content knowledge, research skills gained, self-motivation and early orientation to research work contribute a great deal to research productivity of the individual business faculty's research productivity. This is in agreement with studies carried out by Ramsden (2005), Williams (2003) and Suwanwala (1991).

CONCLUSION

On the basis of the findings of this study, the following

are some of the conclusions that can be drawn. Research content knowledge, research skills gained, self-motivation and early orientation to research work are the key factors among individual factors that have the greatest influence on research productivity of business faculty in Kenya. In aggregate, these factors have been referred to as professional staff development.

RECOMMENDATION

On the basis of the results of this study, the recommendation drawn is for the development and enhancement of national and institutional research policies to guide and manage research in Kenya with clear provisions for improvement of research

methodology skills for the business faculty.

REFERENCES

- Ali NS, Young HC, Ali NM (1996). Determining the quality of publications and research for tenure or promotion decisions: A preliminary checklist to assist. *Library Rev.* 45(1):39-53.
- Allison PD, Stewart JA (1974). Productivity among scientists: evidence for accumulative advantage. *Am. Soc. Rev.* 39:596-606.
- Babu AR, Singh YP (1998). Determinants of research productivity. *Scientometrics* 43(3):309-329 November.
- Blackburn RT, Lawrence JH (1995). *Faculty at work: Motivation, expectation, satisfaction.* London, England: The John Hopkins University Press.
- Blackburn RT, Behymer CE, Hal DE (1978). Research notes: correlates of faculty publications. *Soc. Educ.* 51:132-141.
- Brocato JJ, Mavis B (2005). The research productivity of faculty in family medicine departments at US medical schools: a national study. *Academic Medicine: J. Assoc. Am. Med. College* 80(3):244-252.
- Cepero MCG (2007). Institutional and individual factors associated with faculty scholarly productivity. PhD thesis, University of Connecticut, Mansfield USA.
- Child D (2006). *The essentials of factor analysis.* 3rd edition. London: Continuum.
- Government of Kenya (2005). Sessional Paper No. 1 of 2005 on a policy framework for education, training and research: meeting challenges of education, training and research in Kenya in the 21st Century. Nairobi: Government Printer.
- Government of Kenya (2009). Africa union scientific awards. Call for Proposals. Ministry of Higher Education, Science and Technology. www.scienceandtechnology.go.ke.
- Gu Y, Zainab AN (2001). Publication productivity of Malaysian researchers in the field of computer science and information technology. *Malaysian J. Lib. Info. Sci.* 6(1):1-23.
- Kyvik S (1990). Motherhood and scientific productivity. *Soc. Stud. Sci.* 20(1):149-160.
- Lange LL. (2001). Citation counts of multi-authored papers – First-named authors and further authors. *Scientometrics Vol. 52, No. 3* (2001):457-470.
- Lertputtarak S (2008). An investigation of factors related to research productivity in a public university in Thailand: a case study. PhD dissertation, School of Education, Faculty of Arts, Education and Human Development, Victoria University, Melbourne.
- Martin BR (1996). The use of multiple indicators in the assessment of basic research. *Scientometric* 36(3):343-362.
- Maske KL, Durden GC, Gaynor PE (2003). Determinants of scholarly productivity among male and female economists. *Econ. Inquiry* 41(4):555-564.
- Mwamwenda TS (1994). Academics' stance on the slogan "Publish or Perish". In Onsongo J. (2005). *The role of research and publication in the promotion of academics in Kenyan universities.* Eastern Afr. J. Humanities Sci. 5(2):1,3: Catholic University of Eastern Africa.
- NCST (2009). Call for Proposals. National Council for Science and Technology. www.ncst.go.ke.
- Ngome C (2003). "Kenya". Country higher education profiles. Teferra, D. & Altbach, PG (eds). *African higher education: an international reference handbook.* Bloomington: Indiana University Press: pp. 359-371.
- Obure MJ (2002). *Handbook on data analysis using SPSS version 10.* Nairobi: M and O data Experts Training and Consultants.
- Oppenheim C, Ellerslie S (2008). The effect of motivation on publication productivity of UK LIS academics. *Lib. Info. Res.* 32(101):61-62.
- Print M, Hattie J (1997). Measuring quality in universities: an approach to weighting research productivity. *High. Educ.* 33(4):453-469.
- Radhakrishna RB, Yoder EP, Scanlon DC (1994). *Determinants of faculty productivity: perspectives of agricultural and extension education faculty.* Dallas: National Agricultural Education Research meeting. ERIC document reproduction service number ED 380 549.
- Radhakrishna RB, Jackson G (1993). Agricultural and extension education department heads' attitudes of journals and importance of publishing. *J. Agric. Educ.* 34(4):8-16.
- Ramsden P (2005). Describing and explaining research productivity. *J. Higher Educ., Netherlands: Springer.* 28(2):207-226.
- Suwanwala J (1991). *The road of university.* Bangkok: Chulalongkorn University Press.
- Tower G, Plummer J, Ridgewell B (2007). A multidisciplinary study of gender-based research productivity in the world's best journals. *J. Diversity Manag.* 2(4):3.
- Tsay, Ming-yueh (2004). Literature growth, journal characteristics, and author productivity in subject indexing, 1977 to 2000. *J. Am. Society Info. Sci. Tech.* 55(1):64-73.
- UNESCO (2006). Forum on higher education, research, and knowledge. Global colloquium on research and higher education policy. Universities as centers of research and knowledge creation: an endangered species? Paris.
- Wagner PJ, Hornsby JL, Talbert FS, Hobbs J, Brown GE, Kenrick J (1994). Publication Productivity in Academic Family Medicine Departments. *Fam. Med.* 26(6):366-9.
- Williams A (2003). A mediated hierarchical regression analysis of factors related to research productivity of human resource education and workforce development postsecondary faculty. PhD dissertation, Louisiana State University and Agricultural and Mechanical College. Retrieved from UMI database.