

Who are More Successful Researchers? An Analysis of University Teachers' Research Productivity

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Abstract *Key objective of the study was to assess the research productivity of university teachers and to analyze the effect of demographic variables (gender, faculty, designation, age and experience) on their research productivity to ultimately explore the profile of successful researchers. Data regarding demographic variables and research productivity in last three years were collected from a sample of 200 faculty members from four public sector universities in Faisalabad, Pakistan. Findings revealed that university faculty is striving hard to contribute in the field of research. Furthermore, demographic variables (gender, faculty and designation) affect their research productivity in favor of male teachers, teachers from physical sciences and teachers with higher designation. Age and experience are not associated with many indicators of RP or they are weakly positively correlated with number of research articles and published books. Educational implications for faculty members and other stake holders are also discussed.*

Key Words
Research, Research Productivity, University Teachers, Faculty

Introduction

Twentieth century is evident of the changing role of higher education institutes from only teaching centers to teaching and research centers. 21st century is even more demanding with reference to research productivity. Universities are now moving towards creators of new knowledge through research activities (Iqbal & Azhar, 2015). Through such activities, universities are serving as feeder institutions for progress of nation (Uzoka, 2008). Government offices and other funding agencies are investing tremendously for research and development in universities.

Higher Education Commission (HEC) is striving for excellence in research in Pakistan. HEC is investing colossal for development and sustainability of internationally competitive and dynamic research sector in Pakistan. Universities are also ranked against their research productivity (Williams & Van Dyke, 2008). Teachers are the main resource of research productivity for a university. They not only bring high amount of monetary resources through funded projects but also add to the fame and respect of university which ultimately invites more students to get admission in it. In this way researchers add to the overall development of a university. Well-motivated teachers earn good reputation for themselves and for their institution. These enthusiastic teachers play significant role in accomplishing the institutional objectives as well (Zhang, 2014).

Teachers have to publish their research work in well-reputed and recognized journals for their survival (Creswell, 1986; Hadjinicola & Soteriou, 2005; Oloruntoba & Ajayi, 2006). Future allocation of funds for research projects to individual researcher depends on his/ her research profile. Those with stronger publication record are more likely to win the heavier grants. This competition among researchers increases the quality of research work. In this race, winners continuously win and less experienced or reluctant ones lag somewhere behind them (Waterworth, 2015).

Chairman HEC in his presentation on 31st December 2015 set the target of 12500 Impact factor journal publications. However, in spite of pursuing all motivational strategies and huge funding, the success rate could not be achieved fully (Mehmood, 2016). Therefore, this research aims to highlight the personal and work-related profile of university teachers who are more

research productive as compared to their colleagues who are serving in the same workplace but are not that much motivated and involved in research activities.

Review of Literature

This is a great paradigm shift from simply a university for teaching to a university involved into research (Butt & Shamas, 2013). Research is increasingly getting a major function of higher education institutes. Research productivity regulates individual faculty member's repute within university, university's external repute, funding for university from HEC and quality ranking of the university (Vilhjálmsson, 2016).

It is difficult to get a single definition of research productivity. Therefore, different criteria are used to classify the wide-ranging array of research productivities (Abramo, D'Angelo, & Costa, 2010). As said by Print and Hattie (1997), research productivity is the combination of research outputs and related contents which academicians perform in universities during a certain time period (Lertputtarak, 2008). It is calculated for individual institution and individual author on the basis of how many times its research is cited in future studies (Changsrising, 2008). According to Sridhar, Dias and Sequeira (2010), RP can be defined in terms of number of scholarly books and publications in peer-reviewed academic journals. Creswell (1986) explains that RP comprises publication of research articles in professionally recognized journals and in proceedings of conference, authoring a book or a book chapter, supervising post-graduate students' these and other class projects, winning research grants, performing editorial or reviewer duties, attaining licenses and patents, monograph writing, conducting new experiments in action research, creating some artistic works, involving in commentaries and public debates. A number of researchers agree with him (Ahmed, 2017; Lalrindika & Shukla, 2019; Vilhjálmsson, 2016)

Research productivity not only plays a vital role in the development of higher education institutes as mentioned earlier but it is also equally important for academic evolution of teachers and students. Research productivity, an important route to academic promotion, is considerably important for augmenting an institution's standing and financial status (Blackburn, Bieber, Lawrence & Trautvetter, 1991). Creamer (1998) specified that research productivity is a key to institutional prestige. In higher education institutions, faculty members' research productivity is not only a condition for academic promotion, but also rears a university's rank and heightens a university's reputation. As a result of university's higher recognition and prestige, the number of students increases and the university receives a higher income for its own further advancement (Lertputtarak, 2008).

Research productivity is directly associated with faculty members' academic development. When they are involved in conducting research, their own knowledge increases, they become more effective teachers and they are better able to think and communicate. Teacher as a researcher gains more promotional opportunities and elevated academic reputation (Lertputtarak, 2008). Teachers' promotion, tenure, reward system, fringe benefits and salary raises depend on their research productivity (Im & Hartman 1997; Kotrlik, Bartlett, Higgins, & Williams, 2002; Read, Rae & Raghunandan 1998). Teachers' research activities affect their students as well. The teachers-cum-researcher teaches students better and help them become future researchers also. Researchers are appreciated more by the students as compared to those teachers who are not involved in research activities (Lertputtarak, 2008). Research productivity is not an isolated concept. Rather it is affected by many factors.

There are a number of motives behind working or not working for publication. As stated by Mantikayan and Abdulgani (2018), these can be individual and institutional factors. Highly productive researchers are motivated to do research work to get financial benefits, research grant, rewards, promotion, tenures and incentives (Khan, Shah, & Khan, 2018; Ulla et al., 2017) .

Individual factors, also named as personal & professional potentials, which contribute to research productivity are affiliation, self-efficacy, personality, intelligence (Bamigboye, 2015; Mantikayan & Abdulgani, 2018), motivation (Williams, 2013), attitude towards conducting research (Krokkfors, et al., 2011; Robinson & Gould, 2000), lack of time (Alghanim, & Alhamali, 2011; Angaiz, 2015; Hoffmann & Koufogiannakis, 2014; Webber, 2011), gender (Bailey, 1992; Batool, Hussain, & Ahmed, 2018; Eloy, et al., 2013; Mantikayan & Abdulgani, 2018; Nygaard, 2015), age (Bland & Berquist , 1997; Gorman & Scruggs, 1984) Mantikayan & Abdulgani, 2018; Pfeffer & Langton, 1993; Vasil, 1992), marital status (Batool, Hussain, & Ahmed, 2018; Webber, 2011), experience (Blackburn et al., 1991; Zhou, 2015) and rank (Alhija & Majdob, 2017; Jung, 2012; Kotrlik et al., 2002; Salazar-Clemeña, & Almonte-Acosta 2007; Zhou, 2015).

Lack of research competence, confidence, and academic writing skills are also commonly cited factors of research productivity (Alhija & Majdob, 2017; Kendagor, Kosgei, Tuitoek & Chelangat, 2012; Maharaj & Ramnundlall, 2016; Ulla et al., 2017).

The institutional factors include mentoring and advising, staff support, rewards, resources and sufficient work time (Fawzi & Al-Hattami, 2017; Lalrindika & Shukla, 2019; Maharaj & Ramnundlall, 2016; Mantikayan & Abdulgani, 2018; Navidad, 2019; Okendo, 2018; Okiki, 2015; Patchawong, Wangpa, & Ounjit, 2012), facilitating work culture (Kendagor, et al, 2012), institutional support for research, library resources (Hoffmann & Koufogiannakis, 2014) teaching load and extra administrative responsibilities (Alghanim, & Alhamali, 2011; Batool, Hussain, & Ahmed, 2018; Fawzi & Al-Hattami, 2017; Jung, 2012; Maharaj & Ramnundlall, 2016; Webber, 2011); faculty preferences (Kaya & Weber, 2003; Shin & Cummings, 2010), colleague collaboration (Fawzi & Al-Hattami, 2017), appreciation and reinforcement from department chair (Batool, Hussain, & Ahmed, 2018; Okendo, 2018) and faculty or discipline (Feyera, Atelaw, Hassen, & Fufa, 2017; Vilhjálmsón, 2016).

There is a great pile of research all over the world which addresses the issue of research productivity among university teachers. Still the research on factors affecting research productivity is inconclusive. In Pakistan, HEC has put enormous efforts to upgrade teachers' research profile. Still some of the faulty members are losers in this field and the others are winners. What makes them different from each other is important to be considered. Therefore, key objective of the study is to assess the research productivity of university teachers and to analyze the effect of demographic variables (gender, faculty, designation, age and experience) on their research productivity to ultimately explore the profile of successful researchers.

Methodology

Research Design

This study was descriptive in nature. The quantitative approach was used in this research.

Sample

A sample of 200 teachers from four public universities in Faisalabad participated in this study. They belonged to Government College Women University Faisalabad (14%), Government College University Faisalabad (42%), University of Agriculture Faisalabad (33%) and University of Education Faisalabad (10%). They were from physical sciences faculty (48%) and social sciences faculty (52%). Among them some were Associate professors (10%), most of them were assistant professors (55%) and many others were lecturers (34%). Both male (56%) and female (44%) teachers participated in this research. Teachers' age ranged from 24 years to 58 years with $M=37.41$ and $SD=6.018$. Finally, their teaching experience ranged from 1 years to 23 years with $M=7.79$ and $SD=4.302$.

Research Instruments

Corresponding to quantitative approach, questionnaire was used to measure university teachers' research productivity in last three years in addition to a demographic sheet. Research productivity was measured through 18 indicators such as number of research papers, book, book chapters, papers presented in conferences, PhD and M Phil supervisees, patents and projects in last three years.

Data Collection

Data were collected from university teachers with prior permission from universities' administration. Later, Teachers' informed consent was pursued. They were debriefed about research objectives and other relevant details. Researchers themselves visited the universities to distribute the questionnaire. From 300 questionnaires, only 200 were completed and returned which indicates 67% response rate.

Data Analysis

In addition to descriptive analysis, data were analyzed through the application of independent sample t-test, one-way ANOVA and Pearson r according to the research questions.

Results

Table 1. Descriptive Analysis of Research Productivity in Last Three Years N= 200

S. No	Indicators of Research Productivity	Min	Max	M	SD
1	Total Research Publications in HEC Recognized Journals	0	40	6.32	6.83
2	Publications in Impact Factor Journals	0	56	5.32	8.53
3	Papers Presented at Conferences (in Pakistan)	0	20	2.78	3.42
4	Papers Presented at Conferences in Countries other than Pakistan	0	10	.87	1.67
5	Research Project (Completed)	0	13	.86	1.41
6	Research Project (In-Process)	0	12	.91	1.45
7	Published Book	0	6	.30	.88
8	Published Book Chapter	0	10	1.16	2.09
9	Patents	0	6	.13	.682
10	Number of Supervised Ph.D. Thesis (Completed)	0	15	.93	2.29
11	Number of Supervised Ph.D. Thesis (in Process)	0	05	1.34	2.02
12	Number of Supervised M.Phil. Thesis (Completed)	0	40	7.89	8.92
13	Number of Supervised M.Phil. Thesis (in Process)	0	15	4.93	6.01

Table1 indicates that in last three years, teachers have published more articles in the HEC recognized journals as compared to the impact factor journals in which publication is a more challenging task. They have presented more research papers in local conferences as compared with those presented in conferences in foreign countries. More of the research projects are in progress. They have published more book chapters as compared to complete books. Patents submission is very rare among them. They are supervising a great number of M Phil and PhD supervisees.

Table 2. Descriptive Analysis of Research Productivity in Last Three Years N= 200

S. No	Indicators of Research Productivity	Frequency	Percentage	
1	Performing any Editorial Duties	No	110	55.0
		Yes	90	45.0
2	Performing as Reviewer in any Journal	No	71	35.0
		Yes	129	64.5
3	Working as PhD Theses Evaluator	No	142	71.0
		Yes	58	29.0
4	Working as M.Phil. Theses Evaluator	No	75	37.5
		Yes	125	62.5
5	Won any Research Award	No	141	70.5
		Yes	59	29.5

Table 2 points out the results of some more indicators. It displays that more than a half of teachers are not performing editorial duties in any journal but they are working as reviewers for certain journals. Majority of them are not working as PhD theses evaluator rather they are M.Phil. theses evaluator. Among them, some few have won research awards as well which is very encouraging for the higher education institutes in Faisalabad.

Table 3. Effect of Gender on RP

S. No	Indicators of Research Productivity	Gender	N	M	SD	T-Value
1	Total Research Publications in HEC Recognized Journals	Male	111	7.85	7.82	3.66**
		Female	89	4.39	4.70	
2	Publications in Impact Factor Journals	Male	111	6.87	10.39	2.94**
		Female	89	3.36	4.71	
3	Papers Presented at Conferences (in Pakistan)	Male	111	3.00	3.52	1.02
		Female	89	2.50	3.30	

4	Papers Presented at Conferences in Countries other than Pakistan	Male	111	.95	1.75	0.73
		Female	89	.77	1.58	
5	Research Project (Completed)	Male	111	.78	1.14	-0.90
		Female	89	.97	1.69	
6	Research Project (In-Process)	Male	111	1.00	1.21	0.98
		Female	89	.80	1.71	
7	Published Books	Male	111	.33	.96	0.49
		Female	89	.27	.77	
8	Published Books Chapters	Male	111	1.35	2.27	1.44
		Female	89	.92	1.82	

First eight indicators of research productivity were further analyzed for effect of demographic variables. Table 3 determines that gender is a source of dissimilarity in number of research publications both in HEC recognized $t(198) = 3.66, p = 0.00$ and impact factor journals $t(198) = 2.94, P = 0.00$ in favor of male faculty members. Male teachers have published more research articles in HEC recognized journals ($M = 7.85, SD = 7.82$) and in impact factor journals ($M = 6.87, SD = 10.39$) as compared to their counterparts. Insofar as other indicators of research productivity are concerned, both the groups are not significantly different.

Table 4. Effect of Faculty on RP

S. No	Indicators of Research Productivity	Faculty	N	M	SD	T-Value
1	Total Research Publications in HEC Recognized Journals	Physical Sciences	96	7.73	7.64	2.86*
		Social Sciences	103	5.00	5.70	
2	Publications in Impact Factor Journals	Physical Sciences	96	7.46	10.89	3.50*
		Social Sciences	103	3.33	4.74	
3	Papers Presented at Conferences (in Pakistan)	Physical Sciences	96	2.90	3.28	0.46
		Social Sciences	103	2.67	3.57	
4	Papers Presented at Conferences in Countries other than PAKISTAN	Physical Sciences	95	.80	1.7	-0.55
		Social Sciences	103	.93	1.59	
5	Research Project (Completed)	Physical Sciences	96	.80	1.07	-0.60
		Social Sciences	103	.92	1.67	
6	Research Project (In-Process)	Physical Sciences	95	.98	1.28	0.65
		Social Sciences	103	.84	1.60	
7	Published Books	Physical Sciences	94	.24	.65	-0.88
		Social Sciences	101	.36	1.05	
8	Published Books Chapters	Physical Sciences	96	1.18	2.15	0.10
		Social Sciences	102	1.15	2.05	

Table 4 determines that faculty is a source of dissimilarity in number of research publications both in HEC recognized $t(198) = 2.86, p = 0.00$ and impact factor journals $t(198) = 3.50, P = 0.00$ in favor of faculty members who belong to faculty of physical sciences. They have published more research articles in HEC recognized journals ($M = 7.73, SD = 7.64$) and in impact factor journals ($M = 7.46, SD = 10.89$) as compared to their counterparts. Insofar as other indicators of research productivity are concerned, both the groups are not significantly different.

Table 5. Effect of Designation on RP

S. No			SS	DF	MS	F	Sig.
1	Total Research Publications in HEC Recognized Journals	Between Groups	1535.47	2	767.73	19.51*	.000
		Within Groups	7709.57	197	39.33		
2	Publications in Impact Factor Journals	Between Groups	1517.79	2	758.89	11.52*	.000
		Within Groups	12907.62	197	65.85		

3	Papers Presented at Conferences (in Pakistan)	Between Groups Within Groups	172.87 2155.39	2 197	86.44 10.99	7.86*	.001
4	Papers Presented in Countries other than Pakistan	Between Groups Within Groups	17.71 536.87	2 197	8.85 2.75	3.21*	.042
5	Research Project (Completed)	Between Groups Within Groups	3.73 391.60	2 197	1.86 1.99	.93	.395
6	Research Project (In-Process)	Between Groups Within Groups	15.14 403.21	2 197	7.57 2.06	3.66*	.027
7	Published Books	Between Groups Within Groups	12.51 138.63	2 197	6.25 .72	8.66*	.000
8	Published Books Chapters	Between Groups Within Groups	98.89 765.93	2 197	49.44 3.92	12.58*	.000

Table 5 demonstrates that designation is a major source of statistically significant difference in three groups (lecturers, assistant professors and associate professors) as far as majority of research productivity indicators are concerned such as total research publications in HEC recognized journals $F(2, 197) = 19.51, P = 0.00$, publications in impact factor journals $F(2, 197) = 11.52, P = 0.00$, papers presented at conferences (in Pakistan) $F(2, 197) = 7.86, P = 0.00$, papers presented in countries other than Pakistan $F(2, 197) = 3.21, P = 0.04$, research project (In-process) $F(2, 197) = 3.66, P = 0.03$, published books $F(2, 197) = 9.66, P = 0.00$ and published books chapters $F(2, 197) = 12.58, P = 0.00$. They did not differ significantly as far as number of completed research project is concerned.

Table 6. Post Hoc Analysis of Effect of Designation on RP

S. No	Indicators of RP	(I) Designation	(J) Designation	Mean Difference	P-Value
1	Total Research Publications in HEC Recognized Journals	Lecturer	AP	-7.52	0.00
2	Publications in impact factor journals	Lecturer	Assoc. Prof.	-5.38	0.00
		Lecturer	AP	-6.12	0.003
3	Papers presented at conferences (in Pakistan)	Lecturer	Assoc. Prof.	-5.79	0.00
		Lecturer	AP	-2.03	0.00
4	Papers presented in countries other than Pakistan	Lecturer	AP	-0.62	0.02
		Lecturer	Assoc. Prof.	-0.88	0.00
6	Research project (In-process)	Lecturer	AP	-0.59	0.009
7	Published books	Lecturer	Assoc. Prof.	-0.88	0.00
		AP	Assoc. Prof.	-0.72	0.00
8	Published books chapters	Lecturer	Assoc. Prof.	-2.48	0.00
		AP	Assoc. Prof.	-1.97	0.00

Note: Associate Professor = (Assoc. Prof.) and Assistant Professor = (AP)

Table 6 further explains the pair wise differences research productivity of three sub groups. I am clearly revealed that lecturers are the least research productive faculty members. The level of research productivity

increases with an elevation in designation as in many instances, associate professors are more productive than assistant professors are.

Table 7. Relationship of Research Productivity with Age and Experience

S. No	Indicators of Research Productivity	Age	Experience
1	Total research publications in HEC recognized journals	0.20**	0.14*
2	Publications in impact factor journals	0.08	0.05
3	Papers presented at conferences (in Pakistan)	0.04	0.04
4	Papers presented at conferences in countries other than Pakistan	0.01	0.05
5	Research project (completed)	0.02	0.08
6	Research project (In-process)	0.01	0.03
7	Published book	0.20**	0.17*
8	Published book chapter	0.08	0.05

Table 7 specifies that there is a weak positive relationship among age and total research publications in HEC recognized journals and published books and experience and Total research publications in HEC recognized journals and published books. On rest of the indicators this correlation is not statistically significant.

Discussion

The study reveals that on average, university teachers produce 2 articles per year in both impact factor and HEC recognized journals. They more actively participate in conferences in Pakistan than in foreign countries. They are less involved in research projects which are a more challenging task as compared to publications. They prefer to write book chapters as compared to complete books. Patent submission has proved to be the most challenging and avoided research work category. Majority of the faculty members are fully involved in supervision of M Phil and PhD scholars. Many of them are working as reviewer of journals and some are performing editorial duties. They are also serving as M Phil and PhD evaluators. Most significant among them are those few researchers who have won some research awards. The findings are corresponding to Mehta, Mehta and Kikani's results (2017) who decalred that faculty members were more engaged in writing research papers as compared to paper presntations in conferences. Okendo (2018) in his study in Tanzania professed that research productivity over there was at fairly acceptable level. Lalrindika and Shukla (2019) also concluded that AP's preferred to publish their articles in Journals, write book chapters and present papers in conferences respectively whereas while Associate Professors wrote articles and book chapters merely. Professors wrote articles and book chapters followed by Paper presentations and text books writing. Few were interested in publishing technical reports. Consistent with the findings of current study, they (2019) further revealed that teachers had supervised a greater number of Ph. D. and M. Phil. scholars as compared to those whose degrees were in progress. Their ongoing funded research projects were less than completed projects during the specified period. Okiki, (2015) also authenticated the results by declaring that, in Nigeria, teachers were producing journal publications followed by technical reports, working papers, conference papers, and occasional papers orderly.

Furthermore, gender has proved to be a source of dissimilarity in number of research publications both in HEC recognized and impact factor journals in favor of male faculty members. These findings are supported by many previous studies (Bailey, 1992; Batool, Hussain & Ahmed, 2018; Eloy, et al., 2013; Mantikayan & Abdulgani, 2018; Nygaard, 2015). Kyvik and Teigen (1996) explained this phenomenon with reference to three factors which might affect female teachers' disadvantage in terms of research productivity. They negatively influence females' scholarly productivity which might significantly help them staying on an academic career path. First, an unfriendly institutional climate impedes women's integration in professional set-ups. Subsequently, women get less motivated and they enjoy fewer prospects to become productive scholars. They do not make efforts to access the resources or assistance in research and enjoy less encouragement and support from colleagues. Second, they have to face more work family conflict while trying to build a family and getting tenure at the same time. Her research career interferes with childbirth and increased child care duties (Prozesky, 2008). Third, a restrictive and biased research culture, especially of male dominated departments, makes it challenging for women to attain research grants and build

collaboration (Williams & Ceci, 2012). Additionally, Sutor, Mecom and Feld (2001) declared women to be less persistent in their struggles to get their articles published. Therefore, they are unable to compete with male counterparts who have fewer responsibilities at homes.

In addition, faculty is also a source of dissimilarity in number of research publications both in HEC recognized and impact factor journals in favor of faculty members who belong to faculty of physical sciences. Feyera, Atelaw, Hassen, and Fufa (2017) in their study compared the research productivity of teachers who belonged to life sciences and natural sciences with those who belonged to social sciences and revealed that publication productivity was higher among the former faculty members. Vilhjálmsson (2016) also authenticated these findings.

Likewise, designation or rank is a major source of statistically significant difference in three groups (lecturers, assistant professors and associate professors) as far as majority of research productivity indicators are concerned such as total research publications in HEC recognized journals, publications in impact factor, papers presented at conferences (in Pakistan), papers presented in countries other than Pakistan, research project (In-process), published books and published books chapters. They did not differ significantly as far as number of completed research project is concerned. The level of research productivity increases with an elevation in designation as in many instances; associate professors are more productive than assistant professors are and assistant professors are more productive than lecturers are. There are mixed findings in previous studies with reference to effect of rank on research productivity (Alhija & Majdob, 2017; Jung, 2012; Kotrlík et al., 2002; Salazar-Clemeña, & Almonte-Acosta 2007; Zhou, 2015). Kotrlík et al. (2002) did not find significant influence of rank whereas findings of the study of Jung (2012) support findings of the current study.

As a final point, there is a weak positive relationship of age and experience with total research publications in HEC recognized journals and published books. No other indicator of research productivity is associated with both age and experience. Previous studies have ended up with contrary results regarding these factors. Bland and Berquist (1997) concluded that research productivity decreased with an increasing age. He did not blame age for it rather increasing administrative duties cause low research productivity among senior faculty members. Kotrlík et al. (2002) agreed with them whereas some other researchers found positive relationship between age and research productivity (Blackburn et al., 1991; Gorman & Scruggs, 1984; Pfeffer & Langton, 1993; Vasil, 1992). With reference to experience, Pfeffer and Langton (1993) testified that it was significantly correlated with total number of research publications but not with recent ones.

Recommendations

Findings of the research may be generalized with caution as the study was limited to only one city i.e. Faisalabad in the Punjab, Pakistan. Faculty members, university administration and funding agencies may be potential stakeholders of the current study who may check the current faculty research productivity level. The strong profile of male and physical science faculty members may motivate female and social science faculty members to compete them. University administration may take some steps to establish a stronger research culture in the institution and to make its faculty more productive in the field of research. University administration may establish a stronger university-industry linkage for a mutual benefit. Rewards and incentives may be given on successful publications. Senior staff may be appointed with eminent research record. Training sessions for improving academic writing skills, publication skills and grants / funds seeking skills may be provided for faculty members. Most important of all is monitoring, encouragement and moral support from the university.

This study may be replicated on larger population and larger geographical area to increase its generalizability. Further studies may be conducted on individual institutions as case study so that its research productivity could be completely assessed and related issues could better be addressed. Future studies may add some more personal and institutional factors which may affect research productivity.

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