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Educational research productivity road map: Conclusions from the identified research barriers and variables

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ABSTRACT.

Research has been a buzz word in Philippine education, especially in HEI's. This study was conducted to determine the barriers that undermined the research activities of the post-graduate students. A total number of 136 students were selected as respondents. The instruments used in this study consisted of a set of questionnaires containing 36 question items in perceived research barriers using 5-point likert scales and checklists for demographic profiles. The reliability value (Cronbach's alpha) instrument for all variables obtained an alpha value exceeding 0.60. The results of the study were analyzed using descriptive statistics that derived means, standard deviations and correlation coefficient. Findings reveal that respondents have poor performance in research and publication. This could be attributed to the following aspects; the respondents were not fully equipped with skills on how to do research, lack of time in doing research due to heavy teaching workload, and limited financial resources. Lack of peer support and research experts contributes to the overall research barriers. The results reflect critical attention from the university. Thus, training, workshops and mentoring should be considered a priority for promoting and elevating the research productivity of the respondents. Meanwhile, financial supports from the university could also help overcome the barriers such as lack of incentives and article processing charge.

Keywords: Research productivity, research barriers, skills development, financial supports

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1. Introduction

With the advent of globalization, the role of research within an academic institution is essential for its survival and development, and innovation-based knowledge-driven growth is imperative. Das (2017) claimed that the quality of research work translates directly into the quality of teaching and learning in the classroom, thereby benefiting the students, community and world. Several scholars (Azzam, 1995; Alzahrani, 2011; Bastow et al., 2014) have pointed out that academic research is the foundation of human activity by improving the quality of life. In addition, Sereshti (2007) stressed that research is one of the fundamental and essential steps for the development of human societies, so that any scientific and rational change is not possible without research support. Similarly, Ho (2014) claimed that academic research is about discovering the truth and new information that promotes the growth of society.

Research has played a significant role in higher education over the last few decades. Anderson (2020) concluded that academic research is the best instrument for creating awareness or improvement, and to facilitate learning. It is not only for the school, but rather for the entire scholastic world. In the Philippines, doing research has been one of the significant teacher professional development initiatives underlined by the Department of Education (DepEd) and the Higher Education Commission (CHED) (Ulla, 2017). It emphasizes the importance of higher educational research, in line with the Philippine Long-Term Higher Education Development Plan, by stressing that 'study in target fields and key areas should be pursued not only to develop educational programs but also to advance innovations and technologies' (Alcala 1997). In addition, teachers from both private and public educational institutions are required to conduct research to recognize and resolve the issues and concerns surrounding teaching and learning in their classrooms and schools. So, doing research has now become a part of the teaching curriculum and success evaluation of any teacher at the end of the school year (Ulla, 2016). Moreover, in pursuing its mandate to promote and enhance research capabilities of higher education institutions. Graduate school or postgraduate students are mandated to conduct research, in relation to their field during the course of their study. Desmennu et al. (2017) as universities and governments seek to strengthen and grow their research base, higher education, especially graduate school research is receiving particular attention. There is no doubt that postgraduate research affects a country’s research output, which in turn affects the community (Aina, 2007).

Evidence suggests that research will lead to the advancement of society and incorporate creativity to solve problems in the real world. Alternatively, low research quality can hardly lead to any progress within any organization (Easton et al. 2000). A study conducted by Biruk (2013) in Ethiopia confirmed that research studies were performed by only a few teachers due to the lack of research skills and expertise of teachers. Factors such as lack of research expertise, inadequate teacher research training programs to improve and grow their research skills, and lack of reference materials prevented them from research. Moreover, more recent studies in the ASEAN context also note the same difficulties that teachers face as researchers in Malaysia were conducted by Norasmah and Chia (2016); and Ellis and Loughland (2016) in Singapore and NSW. Similar study conducted in the Philippines, (Sabzwari, 2009; Ulla, 2018) found out that educational institutions confronted with many issues that affect research productivity, these includes the lack of financial support, heavy teaching load, lack of research skills and knowledge, and lack of research resources. Moreover, (Safdari, et al., 2018; Khalil and Khalil, 2019; Dadipoor et al., 2019) shows a similar result concluded that barriers and challengers to research exist. Although, a number of studies have examined the challenges of doing research, the findings of Ashrafi-rizi et al. (2015) have most detailed list of these challenges. On their study they identified four barriers from the perspective of the students of Isfahan University, these barriers include, organizational, cultural and social barriers, individual and economic barriers. According to their findings, individual barriers were identified as the main barrier that hinders productivity in doing research. Similar study conducted by (Alhaider et al. 2015; Wight et al. 2014; Tahir et al., 2012; Roxburgh, 2006; Farzaneh et al., 2014; Gilavand et al., 2015; Aburayya et al., 2019; Safdari et al., 2017) have concluded that individual barriers significantly undermined in doing research. Since individual barrier often reflects the skills and knowledge expected in doing research. A study conducted by Anamofa et al. (2019) has found out that individual factor hinder students to conduct research.

In addition, several research universities have attempted to establish factors linked to research productivity (Bland, Middle, Finstad, Risbey, & Staples, 2006; Hancock, Baum, & Breuning, 2013). Various factors, including personal & professional characteristics, were described as potentially important. Sooryamoorthy and Mtshali (2020) reported that research productivity is typically influenced by a combination of factors such as age, gender, academic age, rank, education, experience, collaboration and co-authorship. For this research age and gender (Kyvik and Teigen, 1996; Finkelstein, Seal & Schuster 1998; Teodorescu 2000; Rauber & Ursprung, 2008; Lissoni, et al. 2011; Nguyen, 2015; Ramkumar et al., 2017), academic degree (Flanigan et al. 1988; Harrington & Levine 1986; Fox and Milbourne, 1999; Brocato, 2001; Smeby & Try, 2005; Rodgers and Neri,2007), academic rank (Fulton and Trow, 1974; Bailey, 1992; Vasil, 1992; Dundar and Lewis, 1998; Kim, 2014; König et al. 2015), time in research (Ma and Runyon , 2004;Smeby & Try, 2005; Toews & Yazedjian, 2007; Bland et al., 2006; Santo, Engstrom,

Reetz, Schweinnle, & Reed, 2009), relevant trainings and seminars (Wichian, et. al. 2009; Brambila, Veloso and Morgan, 2007; Prado et al, 2020), and research publications (Radhakrishna and Jackson,1993; Roy, Roberts, and Stewart, 2006; Alzahrani, 2011; Quimbo and Sulabo, 2013; Reyes and Reyes, 2015; Xie, 2020) will be considered as predictors of research productivity of the post-graduate students.

Some other barrier that could directly or indirectly affect the research productivity is the organizational barrier (Kotrlik et al., 2002; Almonte-Acosta, et al. 2007; Farzaneh et al., 2014). Organizational barrier facilitate to implement their individual characteristics in aspect of increasing their research output. This include collaborative situation, mentoring, encouraging group environment, communication between faculty members and head of department, provision of resources and facilities for professional development of faculty members (Bland, Center, Finstad, Risbey, & Staples, 2006). Similarly, Iqbal et al. (2018) claimed that even this relatively one of the most prevalent factors was less common in practice in the organization. Hazelkorn (2004) Low level institutional set-up, no resources for research activities, stress of teaching workload, and faculty don't have required research skills contributes to barrier. In addition, universities have become a key player in the 'information-based economy' as both information generators that ultimately develop into products, services and economic development, as well as the training ground for skilled professionals. However, in terms of research funding. There is a limited allocation that researcher received. According to (Cowan et al., 2012; Aburayya et al. , 2020b; Ashrafi-Rizi et al., 2015) another variable that predicted the research productivity was economic barriers. Safdari et al. 2020 claimed that insufficient budget allocated to scientific research activities in universities had the highest and lowest influence in research activity. Research by Vlasceanu and Hancean (2015) showed that funding and incentives are predictors of research productivity.

On the one hand, research culture studies focused on the type of atmosphere that results in research productivity among faculty members at HEIs. Callo and Sahagun (2018) results revealed that the research culture influence on the relationship between the research awareness and research productivity and research beliefs and norms provide support to conduct research and determine which type of research output teachers produce and what is the reason to do it (Hill, 1999). The research culture is highly emphasized in universities, according to Sanyal & Varghese (2006), and it is the duty of university teaching staff not only to teach but also to establish study. According to Rizi et al. (2015) and Salazar-Clemena et al., (2007) socio-cultural barrier was one of the least identified barriers of the students. Hanover (2014) claimed that to have a successful research culture institution must provide significant support to faculty research efforts.

One form of productivity in higher education is the research productivity. Thus, the improved efficiency of research can be directly related to an improvement in organizational effectiveness (Bean, 1982; & Braskamp, 2005). Research productivity is an ongoing systemic endeavor to achieve economic progress through the Public Higher Education Policy Roadmap (Espinolla, 2015). In pursuit of this task, the Higher Education Commission (CHED), Philippine State Universities and Colleges (SUCs), and the Department of Budget and Management (DBM), being the tripartite government agency, strive to optimize the contribution of the program to full national development operation. CHED, PASUC and DBM assess the study output metrics of the SUCs according to the standard of accreditation through joint efforts (CHED Memorandum Order No. 35, s. 2012). In this study, the authors defined research productivity is the skills and knowledge in producing original research and publication outputs of the post-graduate students. Research productivity according to Conklin and Desselle (2006) reflects the number of initial publications published and accepted in peer reviewed journals.

In this regard, the current study aims to fill in the gaps of past research in the context of Isfahan University. Literature suggests, that no studies thus far have specifically examined the barriers in doing research from the perspective of post-graduate students at Cebu Technological University. In fact, very few studies (e.g., Acosta-Clemena , 2007; Quimbo & Sulabo, 2014, Esponilla, 2015; Aburayya et al., 2020a) have investigated the research performance of the HEI's in the Philippines and its research productivity. Investigating this population is necessary when considering research productivity of HEI's. Desmennu et al. (2017) Special attention is being provided to higher education , particularly graduate school research, as universities and governments try to improve and extend their research base. There is no doubt that postgraduate work affects the research performance of a nation, and this in effect affects the society. Aina (2007) further pointed out that universities are genuine instruments for the realization of national growth; the growth of educated citizens; and the promotion of basic research. Hence, university education is the most important and essential predictor of performance for individuals and society. Although studies have been conducted by many authors, this problem is still insufficiently explored in the context of postgraduate students. This study attempted to determine the factors affecting the research productivity among post-graduate students. The objectives of the present study were to identify the: (1) demographic profiles of the respondents (2) perceived research barriers as to individual, organizational, economic and cultural barrier (3) significant relationship between demographic profiles and perceived research barriers.

2. Methodology

This study applies a descriptive-normative method of research to determine the perceived research barrier of the post-graduate students. Descriptive research is used to describe characteristics of a population being studied (Shields and Rangarajan, 2013). The methodology used in descriptive method is a survey tool that is usually used to test views based on respondents that can represent an entire population. For this analysis the survey is acceptable as it helps the researcher to formulate generalizations. This study was conducted at Cebu Technological University, southern part of Cebu, Philippines, under Commission on Higher Education. In this study, simple random sampling has been utilized to determine the population samples. 136 students had been randomly selected as the samples of the study. Moreover, hypothesis is proposed: There is no significant relationship between respondents profile and perceived research barriers.

Three different sets of research instruments were utilized in this study, first is the student demographic profile, which aims to gather data on the respective demographic profiles of the post-grad students. This checklist collected information (research based) includes; the age and gender, academic degree, relevant trainings and seminars and research publications. Second is the perceived research barriers was adapted from the study of Rizi et al. (2015) they explore the barriers to research activities from the perspectives of Isfahan University using a 5-item Likert scale (strongly agree, agree, moderately agree, disagree and strongly disagree). Third was the institutional support instrument. This questionnaire was adapted from Iqbal et al. (2018) study “Factors Influencing Research Culture in Public Universities of Punjab: Faculty Members' Perspective”. This questionnaire was administered to the GS students to assess the level of institutional supports in terms of research productivity. When defining the different variables in this sample, percentage distribution was used for the statistical treatment to measure the respondents ' demographic profile. Weighted mean was used for Objective 2 and 4 to determine the level of perceived research barriers and the level of institutional support perceived by postgraduate students. Meanwhile, Chi-square was used for the significant relationship between the demographic profiles and perceived research barriers.

3. Results

Findings have shown that majority of the respondents were female with 89% or 121, while male consist only of 11% or 15 respondents. Recent studies have shown that age might affect gender differences. In this study, data showed that the majority of respondents were 26-30 (38%) or 52 years of age, followed by 31-35 (24%) or 33 years of age, 36-40 (18%) or 25 years of age, and finally 20-25 (18%) or 13 years of age, respectively. In the context of academic rank as predictor of research productivity data shows that majority of the respondents were teacher three (3), (49%) or 67 of the respondents, followed by teacher one (1), (29%) or 40 of the respondents, teacher two (2), (7%) of 9 of the respondents and lastly, 6 or (4%) of the respondents were principal.

Another variable that is considered as a significant indicator RP is academic degree. Data revealed in this study that (84%) or 114 of the students were master students while the remaining (16%) or 22 respondents are doctoral students. In addition, data showed that the majority of respondents (88 percent) or 119 were likely to spend 1 day in a week and (90 percent) or 122 would spend 1 hour in a day doing research. Other factors that influences research activities and productivity is the relevant training and seminars. Based on the data gathered, it shows that there were only 40% of the respondents have attended a training or seminars related to research. Most of this training and seminars were related to action research. Meanwhile, in terms of publication in a refereed journal that predict research productivity. In this study, data shows that there were no respondents were able to publish in a refereed journal (e.g., Scopus, Web of Science and Asian Citation Indexed). This indicates that none of the respondents were able to publish in a refereed journal as mention on the above lists of data base.

Table 1. Demographic profile of the respondents (N=136)

Demographic	Frequency	Percentage (%)
Gender		
Male	15	11
Female	121	89
Age Group		
20-25	18	13
26-30	52	38
31-35	33	24
36-40	25	18
Over 40	8	6

Average Age / Std. Dev	***31.03 /*** *5.2869*	
Designation		
Principal	6	4
Master teacher	14	10
Teacher 3	67	49
Teacher 2	9	9
Teacher 1	40	29
Academic degree		
Doctorate	22	16
Masteral	114	84
Time for research		
No. of days per week		
0-1	119	87
2-3	17	13
Average Day(s) / Std. Dev	***0.75 /*** *0.6639*	
No. of hours per day		
0-1	122	90
2-3	10	7
4-5	4	3
Average Hours / Std. Dev	***0.74 /*** *0.6761*	
Relevant trainings and seminars in research		
Qualitative and quantitative	16	12
Action research	38	28
Research writing	7	5
Total	61	40
Publications		
Scopus Indexed	0	0
Wos indexed	0	0
ACI indexed	0	0
Other indexing journals	6	4

In terms of the perceived individual barriers as expressed in Table 2, the respondents agreed that one of the barriers in conducting research is heavy teaching load. Data shows that heavy teaching loads gained the highest mean score of 4.87 (sd=0.36), followed by a lack of peer mentoring and support, and lack ofskills in managing research task with a mean score of 4.28 (sd=0.68). Meanwhile, lack of awareness on research initiatives and lack of research related performance evaluation in universities got the lowest mean score of 3.12 (sd=0.66) and 3.15 (sd=0.56), respectively. Overall, the perceived individual barrier got the overall mean score of 3.72 (0.60). This indicates that respondents have agreed that they difficulty in doing research tasks.

Table 2. Perceived individual barriers

Item	Mean	Std. Deviation
Lack of training and development on research	3.62	0.80
Lack of awareness on research initiatives	3.12	0.66
Lack of motivation to carry our research activities	2.76	0.55
Lack of research skills	3.46	0.58
Heavy teaching load	4.87	0.36
Lack of support staff (academic and research staff)	3.42	0.56
Lack of peer mentoring and support	4.28	0.68
Lack of research related performance evaluation in universities	3.15	0.56
Lack of skills in managing research projects	4.28	0.64
Mean	3.72	0.60

Table 3. Perceived organizational barrier

Item	Mean	Std. Deviation
Unclear/inadequate policies on research	2.63	0.50
Lack of policy implementation	2.97	0.52
Lack of up-to-date research regulations	2.64	0.50
Lack of support	3.37	0.57
Inadequate infrastructure to carry out research activities	2.61	0.52
Lack of research experts mentorship	3.28	0.56
Lack of resources (research tool, laboratories)	2.52	0.50
Lack of facilities for the training	2.62	0.58
Slow internet connection	2.76	0.55
Lack of systematic cores for students in school	3.12	0.67
Mean	2.85	0.55

Table 3, shows the respondents' response on the perceived organizational barriers. Lack of support with a mean score of 3.37 (sd=0.57) and Lack of research mentorship with a mean score of 3.28 (sd=0.56) got the highest mean, respectively. Although the mission and vision of the university is on research, but still the respondents agreed that there is a lack of policy implementation with regards to research activities and publications which garnered a mean score of 2.97 (sd=0.52). Moreover, inadequate infrastructure to carry out research activities and lack of facilities for the training got the least mean score of 2.61 (sd=0.52) and 2.62 (sd=0.58).

Table 4. Perceived economic barrier

Item	Mean	Std. Deviation
Lack of financial resources (Article processing charge)	4.76	0.46
Lack of incentives (academic and research staff)	4.80	0.40
Improper/ no distribution of research funding	4.83	0.39
Failure to allocate sufficient funds for student research	4.88	0.51
Lack of research scholarship and publication	4.64	0.32
Lack of research awards and promotion	4.46	0.60
Lack of financial resources for data processing and data analysis	4.38	0.76
Financial support is not provided by university for research activities.	4.61	0.53
Mean	4.67	0.50

The extent to which the respondents perceived economic barriers is displayed in table 4. In terms of economic barriers for research the respondents agreed that there is a need to allocate sufficient funds for student research. Data shows that failure to allocate sufficient funds for student research got the highest mean score of 4.88 (sd=0.51), followed by lack of incentives (academic and research staff) with a mean score of 4.80 (sd=0.4). Although, lack of financial resources for data processing and lack of research awards and promotion got the lowest mean score of 4.38 (sd=0.76) and 4.46 (sd=0.60), the mean score still high in terms of financial resources in doing research tasks. Overall, the perceived economic barriers got a mean score of 4.67 (sd=0.50). This indicates that financial aspects have hindered the respondents in doing research.

Table 5. Perceived socio-cultural barrier

Item	Mean	Std. Deviation
Lack of research culture in the school	2.21	0.46
No proper place in society for research	1.46	0.56
Not effect of the results of research activities in public life	1.18	0.41
Not counting the researcher as a business society	1.43	0.53
No need of people to research results	1.14	0.35
Lack of appropriate scientific and research space	2.62	0.53
Lack of support from the research experts in the school	2.63	0.52
Lack of connections between professors and students	2.81	0.64
Professor's knowledge is limited in terms of research and publication	2.74	0.56
Mean	2.03	0.51

The last factor which considered as a barrier in research is socio-cultural. Table 5 shows the barriers perceived by the respondents. The finding show that socio-cultural barrier got an overall mean score of 2.03, which described as disagree. The data shows that all perceptions were in low effect on respondents' research performance. Lack of connections between professors and students got the highest mean score of 2.81, (SD=0.64). Followed by, professor's knowledge was limited in terms of research and publications with a mean score of 2.74, (SD=0.56).

Meanwhile, no need of people to research results and not effect of the results of research activities in public life got the lowest mean score of 1.14 (sd=0.35) and 1.18 (0.41), respectively. Apart from that, not counting the researcher as a business society and no proper place in society for research got also a low mean score of 1.43 (sd=0.53) and 1.46 (sd=0.56). Overall, perceived socio-cultural barrier in research got a mean score of 2.013, which indicates that respondents believed that research is a necessity.

Table 6. Significance relationship between individual barriers and perceived profile

Pearson r = 0.226 R square = 0.051

Std Error of Estimate = 0.1867

Individual Barriers VS	**r**	**coef**	**p - value**	
Age	-0.192	-0.029	0.025	Significant
Gender	0.111	0.063	0.198	
Academic Rank	-0.057	0.006	0.510	
Academic Degree	-0.011	0.000	0.896	
Research Days/Week	-0.011	0.004	0.897	
Research Hours/Day	0.025	0.013	0.772	
Research Training Attended	-0.036	-0.003	0.682	
Publication	0.049	0.039	0.573	
Constant		3.635	0.000	

As displayed on Table 6, there is a weak relationship between the identified profile and the perceived barriers for one to do research. The coefficient of determination provides that about 5% of the factors contributory to individual barrier perception were from the profile while 95% were not included in the study. Individual correlation describes that age and gender of the respondents contribute much with age on a negative end. This indicates that as age accumulates the less the barrier becomes. On gender part, the data describes that the barrier is felt more by the females rather than males. At 0.05 level of significance, it is said that such relationship is significant.

As shown on Table 7, there is a weak relationship between the identified profile and the perceived barriers for one to do research at the organizational level. The coefficient of determination provides that about 5% of the factors contributory to such barrier perception were from the profile while 95% were

not included in the study Individual correlation describes the type of research training attended and genders of the respondents' negatively associate such barrier. This triggers a notion that for one to go deeper on research there is a need to select proper and appropriate type of research training upon which the females were more responsive. At 0.05 level of significance, such association of the type of research training to attend is significant.

Table 7. Significance relationship between organizational barriers and perceived profile.

	Pearson r = 0.231	R square = 0.054		
	Std Error of Estimate = 0.1573			
Organizational Barriers VS	**r**	**coef**	**p - value**	
Age	-0.048	-0.005	0.578	
Gender	-0.108	-0.055	0.212	
Academic Rank	-0.033	-0.003	0.700	
Academic Degree	0.007	0.008	0.939	
Research Days/Week	0.071	0.015	0.414	
Research Hours/Day	-0.03	-0.017	0.728	
Research Training Attended	-0.188	-0.027	0.029	Significant
Publication	-0.014	0.003	0.872	
Constant		3.015	0.000	

Table 8. Significance relationship between economic barriers and perceived profile

	Pearson r = 0.194	R square = 0.038	
	Std Error of Estimate = 0.1914		
Economic Barriers VS	**r**	**coef**	**p - value**
Age	-0.081	-0.008	0.350
Gender	0.134	0.081	0.121
Academic Rank	-0.099	-0.013	0.252
Academic Degree	-0.019	-0.003	0.823
Research Days/Week	0.003	0.014	0.970
Research Hours/Day	-0.028	0.000	0.747
Research Training Attended	-0.08	-0.014	0.352
Publication	0.034	0.038	0.698
Constant		4.547	0.000

Table 8, provides that there is a weak relationship between the identified profile and the perceived barriers for one to do research economically. The coefficient of determination provides that about 3.8% of the factors contributory to economic barrier perception were from the profile while 95% were not included in the study. It is notably evident on Individual correlation describing gender of the respondents directly affects the situation. Though non-significant yet, it is dominant.

As shown on Table 9, there is a weak relationship between the identified profile and the perceived barriers for one to do research at the organizational level. The coefficient of determination provides that about 5% of the factors contributory to such barrier perception were from the profile while 95% were not included in the study. Individual correlation describes the type of research training attended and genders of the respondents' negatively associate such barrier. This triggers a notion that for one to go deeper on research there is a need to select proper and appropriate type of research training upon which the females were more responsive. At 0.05 level of significance, such association of the type of research training to attend is significant.

Table 9. Significance relationship between socio-cultural barriers and perceived profile

	Pearson r = 0.231	R square = 0.054		
	Std Error of Estimate = 0.1573			
Organizational Barriers VS	**r**	**coef**	**p - value**	
Age	-0.048	-0.005	0.578	
Gender	-0.108	-0.055	0.212	
Academic Rank	-0.033	-0.003	0.700	
Academic Degree	0.007	0.008	0.939	
Research Days/Week	0.071	0.015	0.414	
Research Hours/Day	-0.03	-0.017	0.728	
Research Training Attended	-0.188	-0.027	0.029	Significant
Publication	-0.014	0.003	0.872	
Constant		3.015	0.000	

4. Discussions

The descriptive findings shows that most of the respondents were female with 89% or 121, while male consists only of 11% or 15 respondents. Thus, it entails that most students who pursue advance studies were female students. Recent research conducted in the Council of Graduate Schools (CGS), United States (2017) revealed that women earned majority of post graduate degrees in 2017 for 9th straight year and outnumber men in grad school 137 to 100. Moreover, in terms of field of study, men were also outnumbered by women. However, in terms of research productivity, Kaya & Weber (2003) found that, when the variable of academic discipline is controlled, female study productivity is significantly lower than its male counterparts. Female academics often face more tension than their male counterparts, as they often interpret demands for improved work output when having to carry out family obligations concurrently (Zhang, 2010). On the other hand, many researchers found connections on gender gaps for senior scientists, so the gender gap in productivity could decline from time to time (Cikara et al . 2012; Joy 2006; Leahey 2006). Past studies have shown differences in gender can be caused by age. Due to the rise in female scholars over the past two decades, female researchers' average age/career age is lower than the average age of male researchers, so not accounting for (career) age would result in an overestimation of gender's direct effect on productivity (Dufy et al. 2011; Frensch 2013; Larivière et al. 2011; Sax et al. 2002).

In addition, several earlier studies have shown a strong association between career age and research productivity. In this report, data revealed that the majority of respondents were 26-30 (38 percent) or 52 of respondents , followed by 31-35 (24 percent) or 33 of respondents, 36-40 (18 percent) or 25 of respondents, and lastly, 20-25 (18 percent) or 13 of respondents, respectively. Recent study of Ramkumar & Nammalvar (2017) shows a remarked undulating pattern. Their analysis showed that there were two peaks in the research success score for scientific publications, in age interval > 55 and another in age interval 25-30, the former being the higher of peaks. In comparison, the masculine teaching staff pattern reveals an inverted U curve. A 31-35 yrs decline that is steeped in 36-40 and 41-45 yrs, only to rise gradually in 46-50 yrs, 51-55 yrs and > 55 yrs. Consequently, the age groups < 30 yrs and that starting from 46 yrs onward constitutes the most productive time for scientific publications. Likewise, research by Fursov et al. (2016) has shown that older scholars are more successful than their younger peers and publish one to two papers more. Younger scholars are more active and more influential on international publications.

Previous study has shown a strong association between the rank of academics and their research productivity within the academic rank as a predictor of research productivity. In this study, data shows that majority of the respondents were teacher three (3), (49%) or 67 of the respondents, followed by teacher one (1), (29%) or 40 of the respondents, teacher two (2), (7%) of 9 of the respondents and lastly, 6 or (4%) of the respondents were principal. Smeby and Try (2005) pointed out that most professors are often more active in research than associate professors and assistant professors. Likewise, Tien and Blackburn (1996) also indicated that academics, especially high-ranking academics such as professor, continued to be highly productive in research after obtaining tenure. However, Shin, Jung, and Kim (2014) argued that although higher rank faculty are continue to be highly productive in research, their results contradict to the former findings, they found out that many junior academics have seen to be productive compare to the higher rank, their results supports that junior academics strived hard for the purpose of successful career and promotion. In addition, rank was found to contribute to RP in many

studies (D'Amico, Vermigli, & Canetto, 2011; Hesli & Lee , 2011). D'Amico, et al . (2011) found that full professors published more in local outlets than assistant professors but not more than associate professors, while full professors published more in international outlets than both assistant professors and associates. In addition, it has been found that high academic ranks are more interested in networks known to support publications and are more likely to have research resources to stimulate publication. In addition, they are more likely to receive external grants, which are considered one of the best predictors of productivity (Lee & Bozeman, 2005).

The academic degree is another attribute which has been seen as a major indicator of research productivity. For this report, data revealed that (84 percent) or 114 of the students were Master students while the remaining students (16 percent) or 22 respondents were doctoral students. According to Bailey (1999), higher-level academics are more dedicated to study and more self-efficient about their research problems competency than others are. Likewise, doctoral holders are typically more competitive than their Master's degree counterparts (Smeby & Try, 2005).Rodgers and Neri (2007) have also discovered that the most successful period in the life of an academic is the first five years after they are granted a doctor degree. Similarly, Fursov et al . (2016) found that doctoral degree holders demonstrate the highest level of productivity, both by overall publishing activity and the number of publications in peer reviewed scientific journals. Their result indicates that of all the determinants evaluated as a predictor of research productivity, this variable was significant.

Meanwhile, Toews & Yazedjian's (2007) study stressed that time for research is a major problem for all faculty members, as they must fulfill teaching and service responsibilities simultaneously. For this sample , the researcher measures the respondents' availability for terms of number of days a week and number of hours a day while doing research. Date revealed that there are majority of the respondents (88%) or 119 were likely to spent 1 day in a week and (90%) or 122 would spent 1hour in a day in doing research. According to Bland et al. (2005) devoting sufficient time for research is associated with greater research productivity. Hence, data shows that the respondents have difficulty doing research due to time constraints. Santo et al. (2009) claimed that one reason of insufficient time of conducting research and publications is the heavy teaching load. Hence, these findings could explain the limited performance of research activities and publications of the respondents. Moreover, Morales (2016) claimed that time constraints make it impossible for teachers to do research as they have so much teaching hours to do and they rarely have time to do research.

According to Sheikh, Kaleem, and Waqas (2013), the participation to research seminars, symposiums, and courses would have a positive impact to the researchers as they would be exposed to different methodologies, styles, and concepts of doing research. In this study, the researcher assesses the relevant training and seminars attended by the respondents relating to research. Based on the data gathered, it shows that there were only (40%) or 61 respondents have attended a training or seminars related to research. Most of this training and seminars were related to action research conducted at school. Nguyen (2015) further points out that postgraduate education are one of a university's most relevant indicators. In addition, academics have more opportunities to instruct and supervise post-graduate students by training programmes. Marsh & Hattie (2002) indicated that most postgraduate students , especially doctoral students, are being trained to become researchers at this level of teaching in the future. As postgraduate teaching is a process where academics as well as students can learn from one another, academics can benefit from teaching or supervising postgraduate students. A high number of university research students will build a research-led-teaching atmosphere within the institution that increases academic research productivity (Times Higher Education, 2014)

Among the factors that predict research productivity, publications in a refereed journal is one of the great considerations. In this study, data shows that there were no respondents were able to publish in a refereed journal (e.g., Scopus, Web of Science and Asian Citation Indexed). Nguyen (2015) recognized research publication is widely utilized as metrics to determine academics and researchers' work effectiveness around the world. Today, research productivity, especially publishing outputs, is becoming a criterion in hiring, providing tenure, promoting, and retaining tenure (Cummings & Shin, 2014). This implies that there is a need for the respondents to allocate time and resources in order for them to elevate their research productivity.

The Pearson correlation was used to evaluate the hypothesis, as seen in Tables 6, 7, 8, and 9. Table 6 demonstrates a strong association between age and individual barriers. Hedjazi and Behravan (2011) discovered that chronological age can positively or negatively influence research performance, and the literature supports contradictory hypotheses about this influence (Angaiz, 2015). Stafford's same findings (2011) pointed out that many older faculty members remain involved in study, and their productivity is equal to or higher than that of younger faculty members. Similarly, Fursov et al. (2016) study demonstrated that the higher the age the more they are productive to do research and publications than their younger colleagues. Furthermore, the findings confirm that high-research faculty members tend to be male, and men seem to sustain higher rates of productivity during their careers than their female counterparts do (Callaghan, 2017 and Albert et al., 2016). Overall, the study of the impact of respondent

profile variables on individual barriers showed that gender has only proved important out of the seven factors considered.

Moreover, table 7 shows that the coefficient of determination provides that about 5% of the factors contributory to such barrier perception were from the profile while 95% were not included in the study. Individual correlation describes the type of research training attended and genders of the respondents' negatively associate such barrier. A study of Cocal et al. (2017) have found out that participation in training and seminar related to research will make a person understand what they should do and how they should do research. Overall, the analysis of the effects of respondents profile factors on organizational barriers revealed that out of the seven factors considered, training and seminars has only shown to be significant. Hence, training and seminars has significant influence on research activities and productivity.

Moreover, previous studies have similarity results in table 8. Results of Loan and Hussain (2017) study found out that there is a variation in research productivity available in research world, their finding depict that comparatively male have a higher average productivity than female this leads to the reason that men have received research grants, whereas less presentation coming from the women side. Ebadi & Schiffauerova (2016) concentrated on Canadian scientists working in science and engineering and assessing the role of gender in scientific development, funding and study. The findings showed that male researchers published and earned nearly five (5) times more research funding than their female counterparts. Likewise, Witteman et al . (2019) concluded that findings across countries and disciplines indicate that male researchers receive more support for work than their female peers. However, Wenneras & Wold (2000) argued that the weak research performance of women and the slow development are in fact rooted in the unbalanced allocation of budgets between men and women. Leta & Lewison (2003) show that women have less chance of winning scholarships. Lariviere et al (2011) show that, in Canada, women professors receive less research funding than men on average. Van Dijk, Manor, & Carey, (2014) revealed that men are more frequently than women being the principal investigator of research projects. Equal distribution of research grants and special research grants for women can have a positive influence on female research productivity. Although it was perceived that identified profile and the perceived barriers has less influence economically, however, gender have significantly contributed to the barriers.

Meanwhile, table 9 shows a weak relationship between the identified profile and the perceived barriers for one to do research socio-cultural aspects. Previous study shows that socio-cultural factors include collaborative situation, mentoring, encouraging group environment, communication between faculty members and head of department, provision of resources and facilities for professional development of faculty members are more significant for female respondents (Bland, Center, Finstad, Risbey, & Staples, 2006). Moreover, the data further revealed on individual test of relationship is that the number of days per week and number of hours per day intended for research is highly correlated with Gender 0.252, 0.003 and 0.221, 0,01 respectively. This clearly manifest that females were more responsive in the conduct of research by spending more time in writing and attending trainings that further enhances one's capability and prowess in research. Hardre et al. (2011) stated that time and departmental duties affect their research and time is allocated for both research and teaching activities. Hence, the significant of time and research productivity is very important. In addition, recent research shows that in today's generation women work 10 percent harder than men (Marrone, et al., 2018). However, the research has difficulty of finding a literature review or previous research shows that those women are more productive in terms of handling time in conducting research. Hence, a future study of this result will be highly recommended.

5. Conclusions

Results from this current study indicate that respondents have low productivity rate for research. It may be attributed to the following aspects; respondents were not adequately equipped with skills in conducting research, financial resources in conducting research and publication, and lack of time due to the heavy workload of teaching. Those cumulative results compromised the respondents' research productivity. The results reflect a critical attention from the university. Among the four perceived research barriers, economic got the highest mean score. This indicates that there is a need for the students to be supported financially along the process of research and publication. Although the respondents were given an access to different scholarly tools, but still, the knowledge and skills of the researcher would prevail in doing quality research. Furthermore, the results show that there is a crucial need for respondents to receive research workshops, training and mentoring from research experts focused on high-quality, publishable research.

6. Recommendations

The results of this study have provided an overview of the perceived research barriers of the post-graduate students. The researchers recommend that a massive research training, workshops and mentoring from the research experts inserted on the free time of the post-graduate students will be

highly recommended. Moreover, researchers also recommend a further research on the drives and motivation of the post-graduate students to conduct research and publish in a refereed journal. Lastly, financial supports from the institution or graduate school department should be carrying out to elevate students' research productivity.

7. Limitations

The data from this study were gathered from a single university. Further access to data from other universities around the Philippines is therefore strongly recommended. Another limitation from this study was, researchers have not been able to measure the professors' skills and knowledge in terms of research and publication. Based on the results of this study, the researchers believe that professors must have the ability and experience in research and publication in order to guide the students.

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