

Does Academics' Workload Affect Research Performance?

Abstract: Academics are facing increasing demand not only to teach, to do research, to provide community services but also to perform administrative tasks. Such demands lead to unresolved dilemma of paradoxical nature of workload versus research performance. Thus, this paper focuses on determining the effects of academic workloads on academics' research and publication performance. Using secondary data from several institutional data sources, this study found that academics with higher workload, do more research and publish more. Moreover, there are no significant differences in research and publication performance between gender and across different knowledge disciplines (engineering, science and technology and social science). This study indirectly validates the linkage between workload and research performance. More importantly, it contributes to performance management in terms of how and what components of academic workload should be weighted for performance appraisal and career advancement.

Index Terms: Academics, research grant, research performance, teaching quality.

1. INTRODUCTION

RESEARCH performance has received significant attention from both researchers and higher education institutions as institutional research performance becomes one of the important criteria for international rankings (e.g. THE-Times Higher Education) and global recognition. University ranking considers both teaching and research performance as the basis. Vernon, Balas and Momani (2018), found that majority of the thirteen ranking systems analysed to confirm that research performance is widely used to rank university and reputation, only 24% of them are linked to teaching quality in the US. Also, Delgado-Márquez, Escudero-Torres and Hurtado-Torres (2013) found that internationalisation positively influences reputation and moderates between reputation and universities performance in research quality, teaching quality and employability of graduates in Europe and the US. Consequently, research performance has also become a key performance indicator for academics' performance appraisal and promotions. In retrospect, research performance is a subjective term that has been debated by many in the academic spheres. Some researchers are of the understanding that research performance refers to a number of publications (Bergal-Mirabent, Lafuente & Solé, 2013; Tochkov, Nenovsky & Tochkov, 2012; Kounetas et al., 2011; Abbott & Doucouliagos, 2009). While others are in the opinion that publishing in high ranking journals is what gives quality to any research (Cook, Raviv, & Richardson, 2010; Moore, 2015; Barnabe, 2011). The number of research publications seems very shallow to measure its quality because of neither its contributions to society (Moore, 2015) nor the quantum of citations is considered. Others consider track of staff publications (Palali et al., 2018) to be one indicator of research performance. Research grants are cited as one of the major determinants of research activities and publications. Perhaps it is why some scholars considered the amount of external grant given to researchers or higher education institutions as a measure of research performance (Lodewijks, Stokes & Wright, 2016; Laszkiewicz, Zemtsov & Barinova, 2016; Cantele, Campedelli, & Guerrini, 2016; Duh et al., 2014; Agasisti & Pérez-Esparrells, 2009). To some extent, accessing grants could mean a research proposal attained a certain standard, this is considered a fair measure of research quality. However, it might still be argued that awards represent research process input. According to Lodewijks et al. (2016), the majority of academics engage in research because of the funds attracted to it. Agasisti and Salerno (2007) went on further to argue that the grants accessed should not be used

on individual effort; instead it should be based on the total amount of grants institutions accessed by the number of academic staff (per capita). Again, consultancies and or entrepreneurial activities are some of the incentives for conductive research (Agasisti & Pérez-Esparrells, 2009; Laszkiewicz et al., 2016). Basing on the most common measures of research performance in literature, and a study done by Sheridan et al. (2017), this study defines research performance as the number of publications and number of research grants received from 2014 to 2017. The escalating interest to study the effect of academic workload on research performance arises from several issues. Firstly, studies have shown a global increase in academic workload. Academics are expected to do more teaching, research and services (Soliman & Soliman, 1997) which in turn affects their work-life balance, stress (Naylor, 2001; Duze, 2011), job satisfaction (Collie, Shapka & Perry, 2012) and productivity (Layzell, 2017). According to Morgenbesser (2013), academics devote 42% of their time to teaching; 36% of their time for research activities, 9% for community service volunteering and the remaining 5% of such time are spent on consulting (Morgenbesser, 2013). The percentages represent the global average, which varies across countries. It also varied predictably among different types of higher education institutions with faculty at research universities spending more time than average in research and faculty at comprehensive institutions spending more time than average in teaching activities. Secondly, understanding whether workload influence on research performance has direct implications for performance management in terms of how and what components of academic workload should be weighted for career advancement. Thirdly, there is a need for a fair assessment of individual performance and equitable allocation of workloads in faculties to reduce conflict and ensure organizational justice. In terms of empirical gaps, there are still limited studies on the effect of workload on research performance despite significant revenues generated from research. Therefore, this study aims to examine differences on academic workloads and research performance among gender, academic ranks and knowledge disciplines and to determine the influence of academic workload on research performance. The remaining of this paper is organized as follows: Section 2 presents the literature reviews related to performance assessment. Section 3 presents the methodology of conducting the performance assessment. Section 4 presents the findings and finally, Section 5 concludes with some indication for future work.

2 RELATED WORK

2.1 Academic Workload

Academic work is complex and in some instances, paradoxical in nature. Corpus on academic work tends to delineate the workloads into teaching, research and services. Teaching includes not only time spent on lecturing, tutoring and conducting seminar but also supervising postgraduate students and developing new academic programmes (Soliman & Soliman, 1997). On the other hand, the research includes activities related to grant applications, conference presentation to editing and reviewing scholarly articles. Services, on the other hand, include administrative jobs, consultancy, professional activities and community services (Soliman & Soliman, 1997). In the context of Malaysian universities, the workloads of academics are grouped into at least five categories which are teaching and supervision, publication, research and consultation, administrative work and community services (Basarudin et al., 2016). Most literature claimed that teaching is usually rank high in the list of academic responsibilities based on the increasing number of hours spent on teaching compared with other activities. Moreover, the result of the data envelopment further revealed that universities efficiency is driven by an average of 0.78 teaching-related activities and 0.48 research-related activities, which means there is a strong relationship with teaching than research-related activities (Duh et al., 2014). Nevertheless, Jordan and Layzell (1992) argue that academics would spend more time on any specific activities based on their priority and not from what is expected from them. Thus, academics who incline to do research, are more likely to spend more hours on research and vice versa. The paradoxical nature of academic workloads is evident in terms of teaching and research. Barrett and Milbourne (2012) found that research performance has a negative effect on the students' perceived satisfaction of good teaching. They maintained that student's satisfaction was high for universities that emphasise on teaching. Similarly, a non-significant relationship was established between research output and teaching quality from a study conducted by (Wagner, Rieger, & Voorvelt, 2016) in the Netherlands. The quantity of publication has a negative relationship with teaching quality. However, a positive effect of research on teaching quality was found in Slovenia (Cadez, Dimovski & Groff, 2015) but study results show only a positive relationship between high-quality research publication and teaching quality among post-graduate students in the Netherlands (Palali et al., 2018). Jørgensen and Hanssen (2018) claimed that the type of research employed by academics often influences the courses they teach in the university. As found by Braganza, Akesson and Rothwell (2017), qualitative research used by PhD candidates in Canada have a significant effect on the lecturers capacity and resolve to teach research methodology. Morgenbesser (2013) found out from a study on 20 countries that 42% of the time is given to teaching as against 36% for research. His findings further showed that a strong continuity existed between the subject/interest of research and what is being taught in the class.

2.2 Research Workload and Research Performance

Differences of research performance are attributed to several factors such as academics' knowledge, skills, values, education, and training (Porter & Umbach, 2001; Becker, 1993). Academics with more research skills and training are

more likely to have better research performance. Faculty members who had worked as research assistants in graduate school or obtained a post-doctoral fellowship also tend to have higher research performance (Porter & Umbach, 2001; Zou, Tsui, & Peterson, 2018). As experience increases with age, some studies have found a significant relationship between age or years of experience with research performance (e.g., Perry, Hall & Ruthig, 2005; Perry, Clifton, Menec, Struthers, & Menges, 2000). Personal preference also plays significant influence on research performance. Academics who claim "conduct research" as a motivation for remaining in academia than "teach/work with students," have higher research performance. Attitudes toward teaching and research have also been shown to vary by career status (Baldwin & Blackburn, 2006). Several studies such as Bellas and Toutkoushian, 1999; Harter, Becker & Watts, 2011) found that academics with higher rank are more productive as they are required to demonstrate their scholarship and research performance throughout their tenure process. However, Gentry and Stokes (2015) found that professors perform more in teaching and other responsibilities than research. Majority of studies found that female academics spend more time in campus service and that this difference becomes more pronounced as faculty move along in their careers and focus more on teaching and teaching-related activities (Carrigan, Quinn & Riskin, 2011; Misraet et al., 2013; Winslow, 2010) while men spending more time on research (O'Meara, et al., 2017). However, a study by Sheridan et al. (2017) found that females academics published less and awarded fewer research grants than male academics only during baseline period and no difference was observed in subsequent years of tenure. Similarly, Lee and Bozeman (2005) found that there is no difference between female and male academics when other variables were controlled. Previous studies have found inconsistent findings between the academic workload and research performance. For example, Nader, Pietschnig and Voracek (2012) found that total working hours did not predict concurrent or near-future research output even when teaching load was controlled. Meanwhile, Duze (2011), found a significant effect of workload on quality of research. Kim and Choi (2017) claim that workload pressures were directly correlated with total self-reported publications. Steenkamp and Roberts (2018) found that workload pressures faculty to seek for alternative job as against teaching and research – their findings impliedly means workloads affects research performance negatively. These contradictory findings seem to stem from different methods being used, controlling for different sets of variables, and not accurately accounting for all kinds of academic labour. Thus, the present study would provide empirical support on the existing knowledge gap.

3 MATERIALS AND METHODS

This study used secondary data derived from several institutional databases. The Research and Management Centre (RMC) and the Centre for Academic Development (CAD) were the main sources of data for this study. Types of the databases that were used consists of academician database from 2014 - 2017 which include a number of the research grant (principal investigator), number of publication (publication performance) and academic workload. This study focuses only on the research grant that either been externally funded or internally funded. Out of 781 data in the system, only 398 data that met the above criteria had been analyzed in

this study. Academics who were not active during this period were also excluded from the study. This study includes all ten faculties at the university. These faculties were then regrouped based on the knowledge disciplines of engineering, social science and technology. A t-test had been used to determine any significant differences of academic workload, research grants and publications performance between male and female. The one-way ANOVA test had been conducted to determine the significant differences across different types of academic ranks and field of expertise on the academic workload, research grant and publication performance. The effect of academic workloads on research grants and publication had been assessed using linear regression.

TABLE 1
DESCRIPTIVE RESULTS

Variable	Sample (N=396)		Academic Workload		Research Grants		Publications	
	%	(f)	M	SD	M	SD	M	SD
Gender								
Male	234	59.1	413.75	137.15	7.50	7.19	2.31	4.37
Female	164	40.9	403.63	137.38	7.38	8.08	2.48	4.26
Academic Ranks								
Professor	28	7.1	508.50	155.06	12.89	10.60	2.07	2.72
Associate Professor	138	34.8	480.47	114.48	11.62	8.40	3.87	6.46
Senior Lecturer	166	41.9	381.56	115.61	5.55	4.44	1.75	2.14
Lecturer	64	16.2	286.31	106.23	1.00	1.46	0.92	1.76
Discipline								
Engineering Science & Technology	247	62.4	374.12	116.76	7.64	7.84	2.57	5.05
Technology	61	15.4	386.52	113.91	7.48	8.33	1.49	2.13
Social Science	88	22.2	525.24	143.00	6.89	6.12	2.47	2.95

4 RESULTS AND DISCUSSION

Table 1 shows that profiles of samples in this study and their respective means (M) and standard deviation (SD). An independent t-test was used to determine if there were any statistically significant differences of academic workload, research grants and publications between male and female academics. The test result indicated that there was no significant difference in academic workload for male (M=413.75, SD=137.15) and female (M=403.63, SD=137.38); $t(394)=0.722$, $p = 0.471$. This result implied that male and female academics have similar academic workloads in terms of teaching, research and services. Similarly, there was no significant difference in number of research grant secured between male (M=7.5, SD=7.19) and female (M=7.38, SD=8.08); $t(394)=0.146$, $p = 0.884$ and publications ($t(394) = -0.369$, $p=0.712$). It is evident that both genders are equally productive in terms of securing research grants and publishing in journals. A series of one way ANOVA was performed to determine the significant differences among different types of academic ranks and fields of expertise. There were a statistically significant difference among academic ranks in terms of academic workload ($F(3,392) = 50.454$, $p < 0.001$). A Tukey post hoc test revealed that lecturer (M=286.305) and senior lecturers (381.563) had lower academic workloads while professors and associate professors' workload were equivalently high. In terms of research grants, there were statistically significant differences among academic ranks ($F(3,392) = 52.784$, $p < 0.001$), where lecturers and senior lecturers had lower number of grants secured compared to professors and associate professors. Whereas academic workloads and research grants indicated that lecturers and senior lecturers are in need to improve their research

productivity, the publications showed a different result. Despite One-way ANOVA showed that there was a statistically significant difference in terms of publications among academic ranks ($F(3,392) = 9.714$, $p < 0.001$), only associate professors were found to be statistically different while other academic ranks are similar. In fact, associate professors had the highest mean in publications. Results of one-way ANOVA revealed that only academic workloads differ significantly across fields of expertise ($F(2,393) = 50.539$, $p < 0.001$) while number of research grants and publications are not significant ($F(2,393) = 18.633$, $p=0.325$); ($F(2,393) = 1.541$, $p = 0.215$) respectively)

TABLE 2
RESULTS OF LINEAR REGRESSIONS

Variable	Research Grants				Publications					
	B	SE B	β	R ²	F	B	SE B	β	R ²	F
Gender										
Male	0.023	0.003	0.437**	0.191	54.753	0.008	0.002	0.265**	0.070	17.537
Female	0.032	0.004	0.543**	0.295	67.046	0.009	0.002	0.302**	0.091	16.091
Academic Ranks										
Professor	0.004	0.003	0.214	0.046	1.254	0.027	0.012	0.391*	0.153	4.700
Associate Professor	0.013	0.005	0.231*	0.053	7.675	0.023	0.006	0.307**	0.094	14.138
Senior Lecturer	0.003	0.001	0.172	0.029	4.971	0.010	0.003	0.258**	0.067	11.713
Lecturer	0.006	0.002	0.369*	0.136	9.800	0.003	0.002	0.249*	0.062	4.114
Discipline										
Engineering Science & Technology	0.039	0.004	0.576**	0.332	121.524	0.016	0.003	0.360**	0.129	36.368
Technology	0.054	0.006	0.740**	0.547	71.232	0.004	0.002	0.211	0.044	2.743
Social Science	0.019	0.004	0.439**	0.193	20.525	0.005	0.002	0.261*	0.068	6.295
Overall	0.027	0.002	0.483**	0.233	119.684	0.009	0.002	0.279**	0.078	33.298

Linear regressions were performed to determine the effect of academic workloads on research grants and publications as shown in Table 1. Academic workload explained 23.3% of variance in research grants and 27.9% variance in publications. These results suggest that increase of academic workload would increase research grants and publications, which is contrary with several past studies (e.g. Nader et al., 2012; Duze, 2011; Steenkamp & Roberts, 2018; Kim & Choi, 2017). The regressions were also performed within specific demographic groups to further elucidate the results. Academic workloads surprisingly did not affect research grants for professors and senior lecturers. Moreover, for those who worked in science and technology faculties, an increase in academic workload does not affect their publications.

5 CONCLUSIONS

It is found that gender of academics does not influence their research performance which is aligned with previous studies by xxx. This might be attributed to distributive justice in terms of allocation of academic workloads among academics. However, research performance does differ among academic ranks. Yet, rather than professor has higher research performance, it is the associate professors that perform better in terms of research performance. Majority of professors were holding administrative posts such as deans or directors and therefore have limited time to spend on publications and research grants applications. Associate professors, on the other hand, have not reached the pinnacle of their career advancement and strive to perform despite being burdened with administrative tasks. This is especially critical since career advancement rubric prioritize research performance over teaching. This research validates the contention that workload (input) should translate into research performance (output). This indicates that academics who have higher workload

publish more and has more research grants. It also substantiates previous studies by Kenny (2017); Teater and Mendoza (2018). However, this finding should be treated with caution. It is believed that the workload-linkage relationship very similar to Yerkes–Dodson law on a stress-performance relationship. Reasonable workload (as in stress) is imperative to boost performance but excessive amount of workload would impair performance and has other undesirable side effects such as burnout and depression. As evident from the descriptive mean, the mean of workload per semester across all academic ranks was 51.7 hours per semester which was considered slightly above 40 hours. These findings are important for several reasons. First, it provides additional support for the increasing workload among academics. Secondly, it validates the current workload calculation of workload used by the university. It indicates that the workload weightage calculation is a valid measure of academic activities. Thirdly, this study lays a foundation for subsequent studies to validate the performance appraisal rubrics. This study enables the university management to ascertain objectives measure of individual performance and how it could be linked with the organizational KPIs particularly in the context of research performance. However, this study is not without limitations. Perhaps the most important limitation is the type of secondary data used. As mentioned earlier, this study used institutional data which were collected independently. As data were merged, several incomplete data were discovered and thus excluded from this study. This, in turn, reduces the number of samples and generalizations of findings. This study used accumulated measure of workloads which include all types of academics activities. Therefore, results need to be interpreted in the context of all types of academics workloads. Nonetheless, as most of academics activities are interrelated to a certain extent, the use of overall workload is deemed appropriate. The university where this study was conducted was classified as Malaysian Technical Universities Network. Thus, it differs starkly from research universities (RU), APEX universities and comprehensive universities. Future research should include both individual and organizational variables to be studied in relations to the existing variables..

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