The Effects of Commitment, Health and Occupational Stressors on Individual Productivity: The Case of Malaysian Research Universities

Zafir Mohd Makhbul
Universiti Kebangsaan Malaysia

Sheikh Muhamad Hizam Hj. Sheikh Khairuddin
Kuala Lumpur Metropolitan College

Abstract

When an individual experiences work stress, it could make him/her susceptible physiologically, psychologically and behaviourally. These negative effects of stress will susceptible individual productivity. The purpose of this research was to determine the direct effects of occupational stressors on commitment, health, and individual productivity. The respondents were selected based on the proportionate stratified random sampling method. 300 questionnaires were collected from the academic administrators from 5 Malaysian research universities. The research instrument used for stress, commitment, and health component was adopted from ASSET (A Shortened Stress Evaluation Tool). The productivity component employed the criteria's from the research universities' annual performance appraisal. Occupational stressors were analysed dimensionally while commitment, health, and individual productivity aggregately. The results showed that commitment and health positively affects individual productivity. However, work relationships, work-life balance, job security, control, resources and communication, and pay and benefits significantly but negatively relate to individual productivity.

Keywords: Stress, Commitment, Health, Productivity, Academicians, Research University

Introduction

Research shows that commitment, health and occupational stressors can be associated to stress at the workplace. Work stress could disturb an individual's physiology, psychology and behaviour. This reality has attracted researchers to find ways to reduce the work stress in organizations. In the study by Jacobs et al. (2007), using self-rated productivity, occupational stressors like resources and communication, pay and benefits, and work relationships significantly impacted non-academic, academic and research (A&R) staffs' psychological well-being and commitment. Meanwhile, Donald et al. (2005) predicted self-rated productivity through occupational stressors of resources and communications, psychological well-being, and perceived commitment from the organization for the large sample. The study was carried out

using a sample of 16,001 employees from 15 different organizations in United Kingdom.

There are several foreign studies regarding stress and productivity of the academic administrators in research universities (RUs) (Gmelch & Burns 1993, 1994; Gmelch & Miskin 1993, 1995; Gmelch et al. 1999; Sarros et al. 1999; Singh & Schapper 2009; Zafir 2012a; Zafir, Zizah & Norliza 2013). For example, Australian deans faced issues of scholarly productivity declining (Gmelch et al. 1999). The reduction in productivity was associated with dual roles of these academic administrators (Gmelch & Burns 1993). This could negatively impact their performance due to the demands made upon them. The relationship between stress and productivity for this group of people are examined further within the context of Malaysian research universities (MRUs).

The issue of stress and its negative impact upon individual productivity such as academic administrators' publications in MRUs are the main concern here. The emergent of the issue of poor commitment and health in that particular relationship are also imperative. The new key performance indicators for the RUs are also creating extra pressure for the academics including those holding administrative posts. With these new key performance indicators, they are likely to face more stress. The academic administrators for example, are not only have to publish and teach but they also have to attend or chair meetings related to their administrative duties. They may not have time to excel in both areas. This can create further stress since they are all tied up to their promotion and tenure as well. The objective of the study is to determine the direct effect of occupational stressors (work relationships, work-life balance, overload, job security, control, resources and communication, aspects of the jobs, and pay and benefits) commitment and health, on individual productivity among academic administrators in MRUs.

Individual Productivity Measurement

In the past, individual productivity measurements for academics or academic administrators were lacking particularly in the area of faculty advising (Rosser & Tabata 2010), training, supervision (Crosta & Packman 2005), and service (Hassan et al. 2008). In this study, individual productivity of the academic administrators' is measured based on performance criteria stated in RUs' annual performance appraisal. These objective measures entailed teaching, supervision, publication, training, student service, administrative duties, and social responsibility outputs.

In this study, teaching was measured by the number of courses taught. Supervision was measured based on the number of students supervised. Publication productivity measurements include number of articles published in refereed journals, number of books authored/co-authored/edited/translated, and number of papers presented or published in proceedings/professional conferences/seminars. Training productivity was measured by the number of training conducted. Meanwhile, student service productivity was measured based on number of students mentored/advised formally. Administrative duties was measured by number of internal committees participated. And finally, social responsibility was measured by number of external services activities participated.

The ASSET Model of Stress

ASSET stands for An Organizational Stress Screening Tool or A Shortened Stress Evaluation Tool (Cartwright & Cooper 2002). The model was utilized to measure the stress levels of the academic administrators in MRUs. The tool is a well-known, latest construct of stress, used in many organizations as an organizational stress screening tool (Viljoen & Rothmann 2009). It has established construct validity for the measure of stress (Johnson & Cooper 2003). According to Faragher et al. (2004), it is a shortened stress evaluation tool that can provide a quick and easy test to complete and able to generate a high response rate.

ASSET model identifies the sources and outcomes of stress. Among pertinent sources of stress acknowledged are work relationships, work-life balance, overload, job security, control, resources and communication, aspects of the job, and pay and benefits. These are commonly found stressors in the workplace. Meanwhile, the effects of stress are represented by physical health, psychological well-being, commitment from the individuals, and commitment from the organization.

Commitment and Health

Commitment is defined as the perceived commitment of organization to employees and the commitment of employees to organization. According to Cartwright and Cooper's (2002) ASSET model of stress, commitment is an outcome of stress or the human consequences of stress. Individuals who suffer from stress will be less committed to their work and to their organization. Perceived commitment of organization to employee can be explained as the expectation of employees that they are trusted and respected by the employers. They also feel that it is worth "going the extra mile" for their organizations (Cartwright & Cooper 2002). Commitment of employee to the organization could be described as employers' expectations that their employees do their job at their best and expect them to be loyal and dedicated to the organizations (Cartwright & Cooper 2002). Health refers to physical health and psychological well-being.

Methodology

The total population of the academic administrators in MRUs is 903 people (UKM 2010; UM 2010; UPM 2010; USM 2010; UTM 2010). From the Krejcie and Morgan's table (Krejcie & Morgan 1970) the minimum required sample size for this population size is 274. A lump sum figure of 300 respondents was selected. However, to ensure satisfactory response rate, 800 questionnaires were distributed. The proportionate stratified random sampling technique was used to determine the size of sample for each RU. The sample size required for each research university is depicted in Table 1 below.

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Table 1: Total sample size required

Research university	Total sample size required
Universiti Kebangsaan Malaysia	(218/903) 300 = 72
Universiti Malaya	(135/903) 300 = 45
Universiti Putra Malaysia	(139/903) 300 = 46
Universiti Sains Malaysia	(268/903) 300 = 89
Universiti Teknologi Malaysia	(143/903) 300 = 48
Total	300

A pilot survey was conducted to determine the face or content validity of the questionnaire as well as the reliability of the scale used. A pilot survey of 22 academic administrators from a RU was collected. In a glance, the number of sample for this pilot study is insufficient. To overcome this matter, the researchers checked the communalities of the data. Communality determines the percent of variance in a given variable explained by all the factors jointly. It also may be interpreted as the reliability of the indicator (Garson, 2008). The communalities of the data were in between 0.6 – 07. MacCallum, Widaman, Zhang, and Hong (1999) confirmed that if all communalities are greater than 0.6, researcher(s) can use small sample size for pilot study. Preacher and MacCallum (2002) further explained that, if the communalities are high and the number of expected factors is relatively small, researchers should not worry about the small sample sizes.

Positive feedbacks were received from the respondents regarding the survey questions posed to them mainly on the wordings of items that are clear and understandable to them. All the items in the questionnaire were maintained, and none was dropped. The questionnaires have a good content and face validity. Meanwhile, to test for the reliability of the scale used, a reliability analysis was conducted using the SPSS version 17.0. All variables were found to have Cronbach's alphas greater than 0.70 (Table 2). To interpret these values, the George and Mallery's (2001) guide to the interpretation of Cronbach's alpha was capitalized. The scale of items used in this study was reliable. Therefore, work relationships and individual productivity scale reliabilities were found to be good; meanwhile, work-life balance, overload, job security, control, resources and communication, aspects of the job and commitment reliabilities were acceptable. The summary of the variable's sources, number of items, and reliabilities were depicted in Table 2.

Table 2: Variable, number of items and Cronbach's alpha value

Variable	No. of items	Reliability	
		α (pilot test)	α (field test)
Work relationships	8	0.89	0.88
Work-life balance	4	0.72	0.75
Overload	4	0.79	0.84
Job security	4	0.71	0.72
Control	4	0.73	0.77
Resources and communication	4	0.74	0.81
Aspects of the job	8	0.71	0.78
Pay and benefits	1	-	-
Commitment	9	0.77	0.79
Health	17	0.74	0.76
Individual productivity	9	0.83	0.84

The multivariate assumptions were also tested in this study. The results demonstrated that each of the variables was normally distributed. From the collinearity statistics, tolerance values for all independent variables were above 0.2 (Table 3). This showed that they were all free from multicollinearity problems. Their variance inflation factor, VIF, was also less than 10, indicating that multicollinearity problem was minimal among them. These results were shown in Table 3.

Table 3: Collinearity statistics (field data)

Model	Collinearity statistics	
	Tolerance	**VIF**
Work relationships	0.420	2.379
Work-life balance	0.605	1.653
Overload	0.333	3.002
Job security	0.529	1.889
Control	0.730	1.370
Resources and communication	0.431	2.319
Aspects of the Job	0.299	3.344
Pay and benefits	0.484	2.065
Commitment	0.806	1.240
Health	0.681	1.468

In the test of sampling adequacy, Kaiser-Myer-Olkin (KMO) measure of sampling adequacy was greater than 0.60 i.e. 0.912, and Bartlett's test of sphericity was significant (approximate chi-square = 20888.356; $p < 0.01$) indicating that the sample utilized here was adequate to run factor analysis (Coakes & Steed 2007). The extraction method used in this factor analysis was principal axis factoring (PAF) with varimax rotation.

According to Cavana et al. (2001) and Kerlinger and Lee (2000) significant loadings is 0.30 and above. From the results (Table 4), all the factor loadings for each variable contributed significantly at 0.30 and above. The reliability of the associated scales used is also found to be good and acceptable (Cronbach's alpha more than 0.80 and 0.70). This indicates that the construct validity of work relationships, work-life balance, overload, job security, control, resources and communications, aspects of the job, commitment, health, and individual productivity each is significant.

Table 4: Factor loadings of items

Items	Loadings	α
Work relationships		0.88
My boss behaves in an intimidating and bullying way towards me	0.614	
I do not receive the support from others (boss/colleagues) that I would like	0.664	
I feel isolated at work e.g. working on my own or lack of social support from others	0.696	
I am not sure what is expected of me by my boss	0.678	
Other people at work are not pulling their weight	0.832	
My boss is forever finding fault with what I do	0.837	
Others take the credit for what I have achieved	0.651	
My relationships with colleagues are poor	0.776	
Work-life balance		0.75
I work longer hours than I choose or want to	0.718	
I work unsocial hours e.g. weekends, shift work, etc.	0.601	
I spend too much time travelling in my job	0.726	
My work interferes with my home and personal life	0.698	
Overload		0.84
The technology in my job has overloaded me	0.627	
I am set unrealistic deadlines	0.712	
I am given unmanageable workloads	0.568	
I do not have enough time to do my job as well as I would like	0.609	
Job security		0.72
My job is unstable	0.751	
My job is not permanent	0.614	
My job is likely to change in the future	0.603	
My job skills may be redundant in the near future	0.585	
Control		0.77
I have little control over many aspects of my job	0.553	
I am not involved in decisions affecting my job	0.671	
My ideas or suggestions about my job are not taken into account	0.692	
I have little or no influence over my performance targets	0.638	
Resources and Communication		0.81
I do not feel I am informed about what is going on in this organization	0.720	
I am never told if I am doing a good job	0.618	
I am not adequately trained to do many aspects of my job	0.662	
I do not have the proper equipment or resources to do my job	0.622	
Aspects of the job		0.78
I may be doing the same job for the next 5 to 10 years	0.670	
My physical working conditions are unpleasant (e.g. noisy, dirty, poorly designed)	0.604	
My job involves the risk of actual physical violence	0.624	
My performance at work is closely monitored	0.662	
My organisation is constantly changing for change's sake	0.519	
My work is dull and repetitive	0.707	

I have to deal with difficult customers / clients	0.493	
I do not enjoy my job	0.728	
Commitment		0.79
I feel valued and trusted by the organisation	0.478	
I enjoy working for this organisation to the extent that I am not actively seeking a job elsewhere	0.717	
I am proud of this organisation	0.792	
Outside of my particular job, I take an interest in many aspects of the running and success of this organisation	0.664	
Overall, I am happy with my organisation	0.807	
If necessary, I am prepared to put myself out for this organization e.g. by working long and/or unsocial hours	0.885	
If asked, I am prepared to take on more responsibility or tasks not in my job description	0.430	
I feel that it is worthwhile to work hard for this organisation	0.856	
I am committed to this organisation	0.875	
Health		0.76
Lack of appetite or over-eating	0.692	
Indigestion or heartburn	0.596	
Insomnia – sleep loss	0.607	
Headaches	0.662	
Muscular tension / aches and pains	0.644	
Feeling nauseous or being sick	0.719	
Panic or anxiety attacks	0.704	
Constant irritability	0.654	
Difficulty in making decisions	0.641	
Loss of sense of humour	0.634	
Feeling or becoming angry with others too easily	0.667	
Constant tiredness	0.719	
Feeling unable to cope	0.800	
Avoiding contact with other people	0.615	
Mood swings	0.691	
Unable to listen to other people	0.688	
Having difficulty concentrating	0.758	
Individual productivity		0.84
Teaching courses	0.523	
Supervising thesis	0.547	
Publishing journals	0.431	
Publishing books	0.843	
Presenting conference papers	0.460	
Conducting training workshops	0.786	
Advising students	0.812	
Participating in internal committees	0.621	
Participating in external committees	0.556	

Result and Analysis

A 37.5 per cent response rate was achieved from 800 questionnaires distributed. The stratified sample characteristics of each RU was analysed (Table 5). Finally, the total sample of the 300 was analysed. Overall, the total sample characteristics for the MRUs showed typicality in several demographic levels: the age between 41 to 50 years old, gaining monthly income between RM5000 to RM10 000, and monopolized by male. Most of them have PhD or equivalent education attainment and are full-timers.

Table 5: Stratified sample characteristics for each MRU

DEMOGRAPHIC/ UNIVERSITY	UKM Freq.	%	UM Freq.	%	UPM Freq.	%	USM Freq.	%	UTM Freq.	%
Age (years)										
31 - 40	14	19.4	9	20.0	9	19.5	21	23.6	11	22.9
41 - 50	39	54.2	19	42.3	19	41.3	44	49.4	21	43.8
51 - 60	17	23.6	15	33.3	17	37.0	22	24.7	15	31.2
> 61	2	2.8	2	4.4	1	2.2	2	2.3	1	2.1
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0
Income (RM)										
< 5000	2	2.8	3	6.7	2	4.3	5	5.6	1	2.1
5000 - 10 000	44	61.1	18	40.0	19	41.3	54	60.7	28	58.3
> 10 000	26	36.1	24	53.3	25	54.4	30	33.7	19	39.6
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0
Sex										
Male	33	45.8	24	53.3	29	63.0	66	74.2	31	64.6
Female	39	54.2	21	46.7	17	37.0	23	25.8	17	35.4
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0
Education										
Bachelor	0	0	2	4.5	2	4.3	3	3.4	2	4.2
Master	16	22.2	10	22.2	4	8.7	16	18.0	4	8.3
PhD or equivalent	56	77.8	33	73.3	40	87.0	70	78.6	42	87.5
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0
Employment Status										
Full time	66	91.7	40	88.9	44	95.7	83	93.3	47	97.9
Contract	6	8.3	5	11.1	2	4.3	6	6.7	1	2.1
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0

The collected data was analysed to search for significance of differences. The results in Table 6 showed that all the variables were not significant between the groups ($p > 0.05$). This goes to show that there is no need to control for organizations in regression analysis.

Table 6: Analysis of variance (ANOVA) between Malaysian research universities

Variable	Sum of squares	df	F statistics	Significance
Work relationships	0.476	4	0.277	0.893
Work-life balance	6.955	4	1.057	0.378
Overload	3.374	4	0.620	0.649
Job security	4.482	4	1.053	0.380
Control	1.047	4	0.321	0.864
Resources and communication	1.933	4	0.545	0.703
Aspects of the job	1.893	4	0.723	0.577
Pay and benefits	0.652	4	0.091	0.985
Commitment	1.253	4	0.759	0.553
Health	0.705	4	0.538	0.708
Individual productivity	0.431	4	0.279	0.891

Effects of Commitment, Health and Occupational Stressors on Individual Productivity

A hierarchical regression analysis was conducted to examine the direct effects of commitment, health and occupational stressors on individual productivity respectively. Table 7, 8 and 9 depict the results of each analysis. In step 1 all demographic variables were entered into the models. This was done to study the effect of these variables towards individual productivity. Then, in step 2, commitment, health and occupational stressors were entered. By doing this, the researchers could determine the effect of those variables to the individual productivity.

In short, from Table 7, we can see that 25.1% of the variance in individual productivity was explained by demographic variables. Income, education and employment status were found significant in predicting individual productivity at $p < 0.05$. When commitment was entered in step 2, the R^2 for the model was 0.451. Commitment made a significant contribution of 20.0% to model predicting individual productivity at $p < 0.01$ ($R^2 \Delta = 0.200$; F Δ statistics = 106.514). Commitment was found to be significant and positive in its prediction of individual productivity ($\beta = 0.477$).

Table 7: The summary of regression analysis for relationship between occupational stressors and individual productivity

Variable	Step 1			Step 2		
	B	**SE**	**β**	**B**	**SE**	**β**
Age	3.831	7.090	0.065	5.612	6.085	0.095
Income	28.033	11.391	0.349*	10.191	9.924	0.127
Sex	10.292	13.961	0.111	11.793	11.978	0.127
Education	- 42.482	8.517	- 0.454**	- 31.818	7.379	- 0.340**
Employment Status	25.250	10.757	0.139*	19.131	9.247	0.105*
Commitment				2.647	0.256	0.477**
R^2		0.251			0.451	
$R^2 \Delta$					0.200	
F Δ statistics		19.685**			106.514**	

Dependent variable: individual productivity; ** $p<0.01$; *$p<0.05$

Based on results showed in Table 8, income, education, and employment status were found significant in predicting individual productivity. The R^2 for Model 1 was 0.251 explaining 25.1% of variances in individual productivity. In step 2, health was added to the model. Model 2's R^2 was 0.451 explaining 45.1 % of variances in individual productivity. Meanwhile, $R^2 \Delta$ was 0.200 indicating that health has made a significant unique contribution of 20.0% to the model predicting individual productivity (F Δ statistics = 106.753; p < 0.01). Health was significant and positively related to individual productivity ($\beta = 0.474$; p < 0.01).

Table 8: The summary of regression analysis for relationship between health and individual productivity.

Variable	Step 1			Step 2		
	B	**SE**	**β**	**B**	**SE**	**β**
Age	3.831	7.090	0.065	8.353	6.096	0.141
Income	28.033	11.391	0.349*	22.010	9.786	0.274*
Sex	10.292	13.961	0.111	-1.243	12.025	- 0.013
Education	- 42.482	8.517	- 0.454**	- 34.069	7.350	- 0.364**
Employment Status	25.250	10.757	.139*	17.449	9.256	0.096
Health				1.474	0.143	0.474**
R^2		0.251			0.451	
$R^2 \Delta$					0.200	
F Δ statistics		19.685**			106.753**	

Dependent variable: individual productivity; ** $p<0.01$; *$p<0.05$

In Table 9, the R^2 for model 1 was 0.251 explaining 25.1% of the variances in individual productivity. Demographic variables of income, education, and employment again were controlled as they were found significant in the model. In step 2 occupational stressors variables were entered. In model 2, the R^2 was increased to 0.462 whereby explaining 46.2% of the variances in individual productivity. The model's $R^2 \Delta$ was 0.211 indicating that occupational stressors in combination made a significant unique contribution of 21.1% to the model predicting individual productivity (F Δ statistics = 14.031; p < 0.01) after controlling demographic variables. Individual stressors that were found significant and negatively related to

individual productivity were work relationships, work-life balance, job security, control, resources and communication, and pay and benefits. The highest contributor was work relationships (β = -0.231), followed by job security (β = -0.224), pay and benefits (β = -0.187), control (β = -0.182), work-life balance (β = -0.177), and resources and communication (β = -0.176). However, overload and aspects of the job were found not significant.

Table 9: The summary of regression analysis for relationship between occupational stressors and individual productivity

Variable	Step 1			Step 2		
	B	**SE**	**β**	**B**	**SE**	**β**
Age	3.831	7.090	0.065	- 0.504	6.183	- 0.009
Income	28.033	11.391	0.349*	18.440	9.986	0.230
Sex	10.292	13.961	0.111	11.676	12.184	0.126
Education	- 42.482	8.517	- 0.454**	- 29.906	7.562	- 0.320**
Employment Status	25.250	10.757	.139*	22.893	9.348	0.126*
Work relationships				- 1.115	0.491	- 0.231*
Work-life balance				- 2.060	0.642	- 0.177*
Overload				- 2.399	0.983	- 0.041
Job security				- 1.330	0.467	- 0.224*
Control				- 1.398	0.541	- 0.182*
Resources and communication				- 0.996	0.525	- 0.176*
Aspects of the job				- 0.296	0.542	- 0.051
Pay and benefits				- 1.268	0.673	- 0.187*
R^2		0.251			0.462	
$R^2 \Delta$					0.211	
F Δ statistics		19.685**			14.031**	

Dependent variable: individual productivity; ** $p<0.01$; *$p<0.05$

Discussion and Conclusions

Commitment positively affects individual productivity. Past researches had also shown the same finding (Becker et al. 1996; Benkhoff 1997; Fink 1992; Jacobs et al. 2007; Jauch et al. 1978; Qaisar et al 2012). Due to occupational stress, low levels of commitment led to low levels of individual productivity for the academic administrators in MRUs. For example, due to occupational stress, they might feel reluctant to teach a new course. This would affect the number of courses taught. Number of students advised/mentored could also decrease because of poor commitment. They are not prepared to take on more responsibility too. And lastly, they are not willing to take up outside jobs such as consulting companies. This will decrease the number of external services participated.

There were also challenges for MRUs to set new key performance indicators. Increase in the quantity and quality of researchers, could mean pressure for academic administrators to find their replacement due to increase in sabbatical leaves. Increase in the quantity and quality of research could lead to pressure of publishing in high impact journals (publication productivity). Increase in the quantity of postgraduates would mean an increase of pressure in supervision productivity. This implicates for

MRUs to maintain or improve the academic administrators' commitment levels so as to be reflected in their individual productivity levels. MRUs must also re-evaluate their current key performance indicators. Reducing the amount of journal publications would serve for better quality researches for example. The academic administrators must also have their own KPIs since their job is different from their colleagues.

Similar to most of other findings (Aronsson et al. 2000; Brouwer et al. 1999; Heuval et al. 2010; Jacobs et al. 2007; Schultz & Eddington 2007; Winefield et al. 2003, Zafir & Fazilah 2007; Zafir et al. 2011; Zafir 2012b), this research also found that health positively affects individual productivity. Due to occupational stress, low levels of health led to low levels of individual productivity for the academic administrators in MRUs. For example, academic administrators will not be able to participate in a meeting (decrease in the number of internal committee participated) or supervise a student (affecting the number of thesis supervised) if he/she is feeling nauseous, sick, panic or anxiety attacks. This positive relationship implies that MRUs has to maintain and improve their staff's health levels as to reflect upon their individual productivity level. They can have frequent wellness program or stress management training programs in order to educate and check on their staff's health from time to time so that their individual's productivity will not be in jeopardy.

Occupational stressors such as work relationships, work-life balance, job security, control, resources and communication, and pay and benefits significantly but negatively affect individual productivity. Previous studies have also addressed this issue (Abramis 1994; Edwards et al. 2007; Gmelch & Burns 1993; Gmelch et al. 1999; Jacobs et al. 2007; Jamal 1984; McKeachie 1983). High levels of these occupational stressors of the academic administrators in MRUs led to low levels of their individual productivity.

This study also implies for organizations, mainly for MRUs to acknowledge the importance of all the stressors identified in this study that were found to be significant i.e. work relationships, work-life balance, overload, job security, control, resources and communication, aspects of the job, and pay and benefits to improve on that. They are encouraged to improve or eliminate these occupational stressors in particular as they were the commonly found stressors at the workplace. According to Cooper et al. (2001), improving or eliminating of stressors is the primary intervention strategy in organizational stress management that is the most effective. Secondly, if we are not able to apply the first theory, there is always the secondary intervention strategy, that is by improving the intervening variables. They are commitment and health. Thirdly, and finally, is the tertiary intervention strategy, whereby it involves the counselling of individuals personally who are severely stressed-out that were found to be affecting their productivity.

Overall, this study had discovered that stress was affecting the academic administrators in five Malaysian research universities. Occupational stressors such as work relationships, work-life balance, overload, job security, control, resources and communications, aspects of the job, and their pay and benefits were the causes of these stresses. They were either directly or indirectly affecting their commitment levels, but also their health and individual productivity levels. Therefore, organizations particularly, MRUs have to take action in order to alleviate stress at

their workplaces and improve the academic administrators' commitment, health, and individual productivity.

In summary, this study provides knowledge for practitioners to improve on stress and productivity at their workplaces. They were to embark on stress intervention programs that will eliminate and improve stressors from their workplaces. This also provides human resource practitioners to act on their policies and practices so as support these ideas further. This study supported the general theories of stress such as Beehr and Newman's (1978) general theory of stress and Beehr's (1995) occupational stress theory as well as expanded the stressors-strain theory of stress such as Cartwright and Cooper's (2002) ASSET model of stress. Theory about stress, commitment, health, and productivity at the workplace in this study provides the evidence on how stress was affecting commitment, health, and individual productivity of the academic administrators in MRUs.

Implications for Future Research

More research should be done to replicate this study to strengthen the theory further. This could be done in other types of universities such as the medical universities, etc. Furthermore, other types of stressors such as challenge and hindrance stressors have yet to be studied of within this context. Besides that, other productivity variables such as medical cost, absenteeism or even presenteeism is scarce in this area. Finally, new mediators such as emotions should be tested in order to explain the linkages between stressors-productivity relationships. Clinical research on stress should also be carried out since research in this area is lacking in development.

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