

Measuring the Effect of Commitment on Occupational Stressors and Individual Productivity Ties

(Mengukur Kesan Komitmen terhadap Hubungan antara Penyebab Stres dalam Pekerjaan dengan Produktiviti Individu)

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ABSTRACT

Based upon existing literature, stress at the workplace has a negative effect on commitment. The negative effect on commitment jeopardizes individual productivity. The purpose of the present study is to determine the indirect effects of occupational stressors on individual productivity through the analysis of commitment variables. The respondents were selected utilizing the proportionate stratified random sampling method. A total of 300 questionnaires were collected from the academic administrators of 5 Malaysian research universities. The research instrument used for the stress and commitment components is adopted from the ASSET (A Shortened Stress Evaluation Tool). Meanwhile, the productivity component utilized the criteria employed by the annual performance appraisal of the research universities. Occupational stressors are analyzed dimensionally, while commitment and individual productivity are analyzed aggregately. The results show that certain occupational stressors are significantly, but negatively, related to commitment, including work relationships; work-life balance; overload; control; resources and communication; and pay and benefits. The results also indicate that certain occupational stressors are significantly, but negatively, related to individual productivity, including work relationships; work-life balance; job security; control; resources and communication; and pay and benefits. Finally, the present study finds that commitment partially mediates the aforementioned relationships.

Keywords: Stress; commitment; productivity; academicians; research university

ABSTRAK

Berdasarkan kepada tinjauan literatur, stres di tempat kerja mempunyai kesan yang negatif terhadap komitmen. Kesan negatif komitmen akan menjejaskan produktiviti individu. Tujuan penyelidikan ini adalah untuk menentukan kesan secara tidak langsung penyebab stres pekerjaan terhadap produktiviti individu melalui pembolehubah komitmen. Responden dipilih berdasarkan kaedah persampelan rawak berstrata berkadaran. Sejumlah 300 borang soal selidik dikumpulkan daripada pentadbir akademik dari 5 universiti penyelidikan di Malaysia. Instrumen penyelidikan yang digunakan untuk komponen stres dan komitmen diambil dari ASSET (A Shortened Stress Evaluation Tool). Komponen produktiviti pula menggunakan kriteria penilaian prestasi tahunan universiti penyelidikan. Penyebab stres pekerjaan dianalisis secara dimensi manakala komitmen dan produktiviti individu pula dianalisis secara agregat. Dapatan kajian menunjukkan bahawa penyebab stres pekerjaan seperti hubungan kerja, keseimbangan kehidupan-kerja, jaminan pekerjaan, kawalan, sumber-sumber dan komunikasi, serta gaji dan faedah adalah signifikan dan berhubung secara negatif dengan produktiviti individu. Penemuan yang kedua ialah komitmen sebahagiannya menjadi pengantara kepada perhubungan ini.

Kata kunci: Stres; komitmen; produktiviti; ahli akademik; universiti penyelidikan

INTRODUCTION

The present study examines the issue of occupational stress and individual productivity in the context of academic administrators at Malaysian research universities (MRUs). The research focuses on occupational stressors in the workplace, such as work relationships; work-life balance; overload; job security; control; resources and communication; aspects of the job; and pay and benefits. The present study also examines the role played by commitment as a mediator in the relationship between individual productivity and the aforementioned occupational stressors. Occupational stress and its negative

impact upon facets of individual productivity, such as the publications of the academic administrators at MRUs, are of principal concern in the present study. Issues relating to other adverse effects of occupational stress including poor commitment and physical and psychological health are also imperative.

The new key performance indicators (KPIs) for MRUs are also creating extra pressure for academics, particularly those holding administrative posts. Following the emergence of new KPIs and surplus targets (i.e., excess responsibilities, additional criteria for excellent achievement or the additional objectives from their administrative posts), academic administrators are likely

to face more stresses. Associate professors or professors that hold the position of academic administrator, such as posts in the deanery office and directorships in various functional areas, must assume other tasks, such as chairing or attending meetings, and their responsibilities are not restricted to producing academic papers alone. In short, academic administrators are not likely to have the time and resources to excel in both the academic and administrative arenas. The situation can create further stress since the academic administrators are all subject to the same promotion criteria and tenure. The present study examines the indirect effects of occupational stressors on individual productivity through commitment among academic administrators at MRUs.

Several research gaps are found in previous studies concerning stress and productivity. The study of the indirect effects between occupational stressors and individual productivity are very scarce. For example, only Jacobs, Tytherleigh et al. (2007) and Donald et al. (2005) study stress and productivity directly. In addition, the study of commitment as a mediator has not yet been tested within the context of these two variables of stressors and individual productivity. Other studies, such as Glazer and Beehr (2005) employ anxiety and commitment as mediators pertaining to role stressors and turnover intention across four countries.

The examination of indirect effects in stress studies is recommended and highlighted by many stress researchers, including Donald et al. (2005); Kelloway, Teed and Kelley (2008); and Webster, Beehr and Christiansen (2009). The present study contributes to the body of knowledge regarding stress and productivity. In addition, the present study also measures the effect of commitment as a mediator in the relationship between stress and productivity. By understanding such linkages, the present study is able to provide the point of intervention required to reduce stress and improve individual productivity at the workplace.

The remaining the paper is organized as follows. The section continues with review of previous studies which provide as theoretical and empirical basis for the development of the hypotheses in this study. The discussion continues with a section which explains the methodology employed to achieve the objectives of the study. Next, a section is devoted to reports of the results and finding of the study. Finally, the paper wraps up with a section on discussion of the results and conclusion.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

ACADEMIC ADMINISTRATOR'S STRESS AND PRODUCTIVITY

Several studies examine stress and productivity in relation to academic administrators in research universities (Gmelch & Burns 1993, 1994; Gmelch & Miskin 1993,

1995; Gmelch et al. 1999; Sarros et al. 1999; Singh & Schapper 2009). Issues relating to scholarly productivity are also found to affect Australian deans as reported by the national dean's survey study (Gmelch et al. 1999). Academic administrators are challenged by the dual roles of fulfilling administrative duties and academic obligations (Gmelch & Burns 1993). The stress resulting from fulfilling the dual roles could impact their performance due to the demands made upon them. The relationship between stress and productivity among academic administrators is examined further within the context of MRUs.

MALAYSIAN RESEARCH UNIVERSITIES

Currently, there are five research universities in Malaysia: the National University of Malaysia (UKM), University of Malaya (UM), University Putra Malaysia (UPM), University of Science Malaysia (USM), and University of Technology Malaysia (UTM). The history of their development as research universities can be traced back to the inauguration of the first research university in Malaysia in 2007 (Maah & Muhamad 2009). The National Higher Education transformation roadmap is embodied within two strategic documents: The National Higher Education Strategic Plan; and The National Higher Education Action Plan, launched on August 27, 2007. The goals of MRUs are to be leaders in innovation; to establish and enhance centers of excellence in prioritized areas of the nation; to produce world class research outputs; to generate high impact research publications; to attract graduate students of high standard; and to provide a conducive environment for research (Ministry of Higher Education (MOHE) 2004). MRUs are established on the basis of key performance indicators by the MOHE, such as quantity and quality of researches or publications.

OCCUPATIONAL STRESSORS AND WORK ENVIRONMENT AS THE SOURCE OF JOB STRESS

Occupational stressors are defined as the sources of stress commonly found at the workplace. It is generally accepted that job conditions are the principal cause of stress at the workplace (Spector, Dwyer & Jex 1988). According to the Beehr and Newman's (1978) general model of stress, the environmental facet consists of the employee's work environment that is likely to be involved in job stress. In the present study, the ASSET (Cartwright & Cooper 2002) model of stress is utilized. It is the latest and mostly adapted model of stress that evaluates the employee's perception of work place stressors; and the employee's attitude towards the organization. According to the model, there are eight commonly found stressors in the workplace: work relationships; work-life balance; overload; job security; control; resources and communication; aspects of the job; and pay and benefits.

Work Relationships Work relationships are operationally defined as relationships at work between colleagues and/or superiors. Most jobs demand working with people.

Thus, poor or unsupportive colleagues, subordinates and superiors will be a potential source of stress (Cartwright & Cooper 2002).

Work-Life-Balance In the present study, work-life balance is defined as balancing the differing demands of home and work. The demands of work have the potential to spillover and interfere with one's personal life (Cartwright & Cooper 2002).

Overload Overload in the present study is defined as unmanageable workloads and time pressures, which can be sources of stress (Cartwright & Cooper 2002). The Trade Union Council's (2000) survey, for example, identifies high workload as the main cause of stress for employees.

Job Security Expectations concerning lifelong employment is the definition of job security in the present study. Fewer employees expect life time employment today, but the fear of losing a job still remains a potential source of stress (Cartwright & Cooper 2002).

Control The definition of control in the present study is the perception of control over the environment, such as how work was organized and performed. The experience of stress is strongly linked to perceptions of control (Cartwright & Cooper 2002).

Resources and Communication Resources and communication are defined as the appropriate training, equipment and resources, as well as adequate information and appreciation. To perform their jobs effectively, employees need to feel that they have appropriate training, equipment and resources. They also need that they are adequately informed and are valued (Cartwright & Cooper 2002).

Aspects of the Job Aspects of the job in the present study are defined as factors derived from the job, such as physical working conditions, type of tasks (e.g. dealing with difficult clients) and the amount of satisfaction (Cartwright & Cooper 2002). The potential sources of stress can be related to the fundamental nature of the job itself.

Pay and Benefits Pay and benefits are defined as the financial rewards that work provides. The financial or monetary rewards are obviously important since remuneration determines the kind of lifestyle that an individual can lead. In addition, pay and benefits often influence the individual's feelings of self-worth and value to the organization (Cartwright & Cooper 2002).

COMMITMENT AS THE HUMAN CONSEQUENCES OF JOB STRESS

Commitment is defined as the perceived commitment of the organization to the employee and the commitment of the employee to the organization. According to Cartwright and Cooper's (2002) ASSET model of stress, commitment is the 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. The perceived commitment of organization to employees can be measured based upon how far the employees expect to be trusted and respected; and want to feel that it is worth "going the extra mile" for their organization. The perceived commitment of employees to the organization measures the extent to which the employers expect their employees to do their job as best they can; and expect them to be loyal and dedicated to the organization (Cartwright & Cooper 2002).

INDIVIDUAL PRODUCTIVITY AS ORGANIZATIONAL CONSEQUENCES OF JOB STRESS

Individual productivity is defined in the present study as the teaching, supervision, publication, training, student service, administrative duties, and social responsibility outputs. The performance of academics at MRUS and academics with administrative duties (i.e., academic administrators) are evaluated annually using the seven aforementioned outputs, which are utilized as KPI criteria at MRUS. The occupational stressors from the work environment cause human consequences that result in organizational consequences. This is called the stress process. According to Beehr and Newman's (1978) general theory of stress, organizational consequences consist of key aspects of organizational effectiveness that may be affected by job stress. In the present study, the focus of organizational consequences is on individual productivity. Only output measures are quantified.

Teaching Teaching is labeled as a "local phenomenon", meaning that a faculty member's teaching reputation rarely extends beyond the faculty's campus or even receives recognition for teaching excellence at the national level (Blackburn & Lawrence 1995). Malaysian public academics perceived teaching as the most productive role compared to research and administration roles (Hassan, Tymms & Ismail 2008). Therefore, teaching productivity is measured in terms of the number of courses taught.

Supervision The supervision of student research projects is a specialist form of teaching, but others view the activity as a part of research (Ketteridge & Shiach 2009). According to James and Baldwin (2006), supervision involves the fundamentals of good teaching, including concern for students; interest in their progress; and the provision of thoughtful and timely feedback. Therefore, the number of theses supervised is used as the measure of supervision productivity.

Publication The most popular or commonly used measure of publication productivity is the number of published articles in journals (Creswell 1985; Mamiseishvili & Rosser 2010). The most recent measurement is the qualitative nature of publication productivity, such as publication in peer-reviewed journals (Print & Hattie 1997). According to Middaugh (2001), even though the number of books and journal and conference papers are quantifiable, they are also

considered as the qualitative measures of publication productivity because they reveal information about the quality of those activities. Therefore, the three measures of publication productivity in the present study are number of articles published in refereed journals; the number of books authored, co-authored, edited and/or translated; and the number of papers presented or published in proceedings, professional conferences, and/or seminars.

Training A faculty can also be involved in conducting training (e.g., in the use of analytical instruments) (University of Nevada 2007), such as mediational analysis techniques. Training productivity is therefore measured by the number of training conducted by the academics.

Student Service Compared to other dimensions of academic productivity, student service has received little attention from the academe (Rosser & Tabata 2010). According to Kennedy (1997), the mission of the university and the duty of the faculty are to work close with the students. Furthermore, research demonstrates that working with the students improves satisfaction among the faculty members (Hagedorn 1996). In the present study, student service productivity is defined as the activities of advising and mentoring of students' academic matters (i.e., as an academic advisor). Therefore, the number of students mentored and advised formally is measured.

Administrative Duties Administrative duties are considered as a service that should be extended by the academics (Blackburn & Lawrence 1995) and the importance of such duties cannot be denied. Administrative duties are defined elsewhere as commitment to the academy. In the present study, administrative duties are defined as the activities that involve work with internal committees work (e.g., the hiring committee and the senate committee, irrespective of whether chairing or serve as a member). According to Miller (2003), university committee positions are created at all levels of university administration (i.e., programs; departments or schools; colleges; and university). Therefore, the number of internal committees within which an academic participates is used to measure administrative duties.

Social Responsibility Social responsibility refers to the activities of academics involving participation in external committees or organizations outside the university. These activities include services extended to the government; professional associations; public and community organizations; other universities; and activities such as the external examination of theses, consultancy work and appearances as an invited expert at media events. According to Middaugh (2008), public services include faculty extension and outreach activities, such as civic service; community workshops; invited talks to community groups; seminars; lectures; and demonstrations. In the present study, the number of external services and/or activities is the measure of social responsibility.

RELATIONSHIP BETWEEN OCCUPATIONAL STRESSORS AND COMMITMENT

Interactional theory (Beehr & Franz 1987), a generally accepted theory of stress, is a stressor-strain approach which posits that stressors are related to strains. Strain can be defined as the individual's psychological, physical, and behavioral responses to stressors (Cooper, Dewe & O'Driscoll 2001). Any negative reaction from job stressors is referred to as a strain, but the most commonly studied is psychological strain, which is normally associated with job attitudes such as organizational commitment (Jex & Beehr 1991; Sulsky & Smith 2005). Jackson and Schuler (1985) also report that organizational commitment is used as a psychological strain in stress studies. Organizational stressors, such as work relationships, can impose psychological strains on job attitudes, such as low or negative commitment. Empirically, studies using ASSET on the relationships between the eight dimensions of stressors demonstrate their negative effects on commitment (e.g. Mostert et al. 2008; Viljoen & Rothmann 2009). Therefore, H1 is developed as follows:

- H_{1a} Poor work relationships are negatively related to commitment.
- H_{1b} Work-life imbalance is negatively related to commitment.
- H_{1c} Overload is negatively related to commitment.
- H_{1d} Job insecurity is negatively related to commitment.
- H_{1e} Poor job control is negatively related to commitment.
- H_{1f} Poor resources and communication are negatively related to commitment.
- H_{1g} Poor aspects of the job are negatively related to commitment.
- H_{1h} Poor pay and benefits are negatively related to commitment.

RELATIONSHIP BETWEEN COMMITMENT AND INDIVIDUAL PRODUCTIVITY

As an extension to the stressor-strain theories, the present study proposes that human consequences will lead to further organizational consequences. From the general model of stress of Beehr and Newman (1978) to the more specific occupational stress model of Beehr (1995), the work environment (where stressors are located) influence human consequences, which, in turn, affect organizational consequences. In the context of the present study, the strains that the academic administrators at MRUs suffer affect their commitment and, in turn, the poor commitment leads to poor organizational consequences, such as low individual productivity. Other models of stress fall within support the theory of stressor-strain-outcome, including Lang et al. (2007) who theorize that job demands lead to psychological strain and, subsequently, to poor job performance among individuals. This theory has been also supported empirically (Lang et al. 2007; Jacobs et al. 2007; Donald et al. 2005). Hence, H2 is developed as follows:

H₂ Due to stress, poor commitment is positively related to poor individual productivity.

RELATIONSHIP BETWEEN OCCUPATIONAL STRESSORS AND INDIVIDUAL PRODUCTIVITY

The best known theory concerning the relationship between stress and productivity is the Yerkes-Dodson law regarding motivation and drive (Young 1936). Job arousal or stressors create performance, but there are three inverted U-shaped curves that explain the relationship. Yerkes-Dodson law demonstrates that performance increases with increasing arousal up to a point, beyond which performance decreases. Jamal (1984) examines the relationship between occupational stressors and employee performance among nurses and finds that the variables are negatively related. Similarly, Abramis (1994) finds a negative linear relationship between role conflict; role ambiguity; job insecurity; and job performance. Recently, the ASSET model of stress (Cartwright & Cooper 2002), which includes the sources of stress, is linked directly to self-rated productivity and organizational productivity (Jacobs et al. 2007). Empirically, the stressors from the ASSET model show a negative relationship with productivity measures. Therefore, H3 is developed as follows:

- H_{3a} Poor work relationships are negatively related to individual productivity.
- H_{3b} Work-life imbalance is negatively related to individual productivity.
- H_{3c} Overload is negatively related to individual productivity.
- H_{3d} Job insecurity is negatively related to individual productivity.
- H_{3e} Poor job control will be negatively related to individual productivity.
- H_{3f} Poor resources and communication are negatively related to individual productivity.
- H_{3g} Poor aspects of the job are negatively related to individual productivity.
- H_{3h} Poor pay and benefits are negatively related to individual productivity.

ROLE OF COMMITMENT IN RELATIONSHIP BETWEEN OCCUPATIONAL STRESSORS AND INDIVIDUAL PRODUCTIVITY

Beehr and Newman's general theory of stress (1978) states that elements, such as environmental facets, human consequences facets and organizational consequences facets, are found in stress studies. Links between the three facets are found in the occupational stress model (Beehr 1995). The theory shows that stressors in the work environment affect the strains in the human consequences facet and lead to organizational consequences, such as individual productivity. The case is similar in regards to other stressors. The commitment level of academic administrators that suffer from work-life imbalance is

affected and, in turn, their poor commitment affects their individual productivity level. Previous studies using ASSET by Jackson and Rothmann (2006), Jacobs et al. (2007), Tytherleigh et al. (2005) and Viljoen and Rothmann (2009) find evidence of the negative effect of work-life imbalance on commitment. Meanwhile, the studies of Balfour and Weschler (1991); Becker et al. (1996); Benkhoff (1997); Fink (1992); and Jacobs et al. (2007) find that commitment affects individual productivity positively. Commitment is also been successfully employed as a mediator in stress studies for mediating stressors or strains; and organizational consequences variables (e.g. Glazer & Beehr 2005; Mohd Kamel 2009). Hence, H4 is developed as follows:

- H_{4a} Poor commitment mediates the relationship between poor work relationships and poor individual productivity.
- H_{4b} Poor commitment mediates the relationship between work-life imbalance and poor individual productivity.
- H_{4c} Poor commitment mediates the relationship between overload and poor individual productivity.
- H_{4d} Poor commitment mediates the relationship between job insecurity and poor individual productivity.
- H_{4e} Poor commitment mediates the relationship between poor job control and poor individual productivity.
- H_{4f} Poor commitment mediates the relationship between poor resources and communication and poor individual productivity.
- H_{4g} Poor commitment mediates the relationship between poor aspects of the job and poor individual productivity.
- H_{4h} Poor commitment mediates the relationship between poor pay and benefits and poor individual productivity.

METHODOLOGY

The total population of academic administrators at the five MRUs (i.e., Universiti Kebangsaan Malaysia (UKM), Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Sains Malaysia (USM), and Universiti Teknologi Malaysia (UTM)) is 903 people. Referring to the table developed by Krejcie and Morgan (1970), the minimum required sample size for this population size is 274. A total of 300 respondents are selected. The proportionate stratified random sampling technique is used to determine the size of sample for each RU (i.e., the sample size is based upon the total academic administrators at an MRU divided by the total population of the academic administrators in all MRUs and multiplied by 300). The sample size required for each MRU is depicted in Table 1, below, and data are then collected based upon the total sample size required for each of the universities.

The period of the survey was from 15th of December 2010 until 2nd of April 2011, during which a total of 300

questionnaires were distributed to the five MRUs. The systematic sampling method was used to systematically pick the respondents for the present study to represent the population of academic administrators. Every third respondent was selected from the list of academic administrators from each MRU participating in the survey.

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

Levels of stress or occupational stressors, commitment, and health are measured from the ASSET (Cartwright & Cooper 2002) questionnaire. Meanwhile, individual productivity measurements are based upon the annual performance criteria (KPIs) of the academic administrators at the MRUs. All items of occupational stressors and commitment are measured on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Meanwhile, all individual productivity items are measured using a 5-point scale ranging from 1 (none) to 5 (4 or more). The multivariate assumptions are also tested in the present study. The results indicate that each of the variables distributions are normal, linear, homoscedastic and free from multicollinearity.

In the test of sampling adequacy, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is greater than 0.60 i.e. 0.914; and Bartlett's test of sphericity is significant (approximate chi-square = 21113.558; $p < 0.01$), which indicates that the sample utilized is adequate to run a factor analysis (Coakes & Steed 2007). The extraction method used in the factor analysis is principal axis factoring (PAF) with varimax rotation. Communalities are estimates of the shared, or common, variance among the variables. Next, the total variance explained is observed and 10 factors are extracted from 55 items. This finding can be seen from their eigenvalues exceeding 1. If the 10 factors are extracted, 69 per cent of the variance is explained. According to Cavana, Dlahaye and Sekaran (2001) and Kerlinger and Lee (2000), significant loadings are 0.30 and above. From the results, all the factor loadings for each variable contribute significantly at 0.30 and above. The reliabilities of the associated scales used are also found to be good and acceptable (Cronbach alpha higher than 0.70), which indicates that the construct validity of all occupational stressors, commitment, and individual productivity are each significant.

Correlation analyses are conducted on all 11 variables. Bivariate relationships between the variables are analyzed. The purpose of conducting correlation analyses is to analyze the relationship between two variables in a linear

fashion (Coakes & Steed 2007). To examine the cause and effect relationships between the variables studied, regression analyses are conducted. Multiple regression analysis techniques are employed to determine: 1) the direct effects between 8 occupational stressors dimensions as independent variables and commitment as the dependent variable; and 2) the direct effects between 8 occupational stressors dimensions as independent variables and individual productivity as the dependent variable. Meanwhile, simple regression analysis is employed to analyze the direct effects of commitment and individual productivity. Commitment, as a mediator, is tested to determine the indirect relationships between occupational stressors and individual productivity. Mediation is a hypothesized causal chain, in which one variable affects a second variable that, in turn, affects a third variable (Newsom 2010). In the present study, the mediational procedures of Baron and Kenny (1986) and Judd and Kenny (1981) are utilized. In order to meet the criteria of a mediation effect, the following elements are verified: Step 1, the independent variables must significantly predict or correlate with the dependent variable; Step 2, the independent variables must significantly predict the mediator variable; Step 3, the mediator variable must significantly predict the dependent variable; Step 4, when both the independent variable and the mediator variable both predict the dependent variable, the effects of both variables must be reduced.

RESULT AND ANALYSIS

A 100 per cent response rate was achieved from the 300 questionnaires distributed. The stratified sample characteristics of each MRU are analyzed in Table 2. Overall, the total sample characteristics for the MRUs show typicality in several demographic levels: age between 41 to 50 years old; monthly income between RM5000 to RM10 000; and predominantly male. Most of them have a PhD or equivalent education attainment and are full-time employees.

All occupational stressors are significant ($p < 0.01$) and negatively relate to commitment, as depicted in Table 3. Similar results are also found in the relationships between occupational stressors and individual productivity. Stressors are significant ($p < 0.01$) and negatively relate to individual productivity. The correlation between commitment and individual productivity is significant ($p < 0.01$) but positive ($r = 0.580$).

To examine the relationship between occupational stressors and commitment, a multiple regression analysis is employed. The results, reported in Table 4, show that the model's R^2 is 0.459, indicating that 45.9% of the variances in predicting commitment are explained by the model. The dimensions of occupational stressors (i.e., work relationships; work-life balance; overload; control; resources and communication; and pay and benefits) are found to be significant and negatively related to

TABLE 2. Stratified sample characteristics for each MRU

DEMOGRAPHIC/ UNIVERSITY	UKM		UM		UPM		USM		UTM		TOTAL	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Age												
31 - 40 years	14	19.4	9	20.0	9	19.5	21	23.6	11	22.9	64	21.3
41 - 50 years	39	54.2	19	42.3	19	41.3	44	49.4	21	43.8	142	47.3
51 - 60 years	17	23.6	15	33.3	17	37.0	22	24.7	15	31.2	86	28.7
61 years and above	2	2.8	2	4.4	1	2.2	2	2.3	1	2.1	8	2.7
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0	300	100.0
Income												
Less than RM5000	2	2.8	3	6.7	2	4.3	5	5.6	1	2.1	13	4.4
RM5000 - RM10 000	44	61.1	18	40.0	19	41.3	54	60.7	28	58.3	163	54.3
More than RM10 000	26	36.1	24	53.3	25	54.4	30	33.7	19	39.6	124	41.3
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0	300	100.0
Sex												
Male	33	45.8	24	53.3	29	63.0	66	74.2	31	64.6	183	61.0
Female	39	54.2	21	46.7	17	37.0	23	25.8	17	35.4	117	39.0
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0	300	100.0
Education												
Bachelor	0	0	2	4.5	2	4.3	3	3.4	2	4.2	9	3.0
Master	16	22.2	10	22.2	4	8.7	16	18.0	4	8.3	50	16.7
Ph.D. or equivalent	56	77.8	33	73.3	40	87.0	70	78.6	42	87.5	241	80.3
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0	300	100.0
Employment												
Full time	66	91.7	40	88.9	44	95.7	83	93.3	47	97.9	280	93.3
Contract	6	8.3	5	11.1	2	4.3	6	6.7	1	2.1	20	6.7
Total	72	100.0	45	100.0	46	100.0	89	100.0	48	100.0	300	100.0

TABLE 3. Correlation analysis between occupational stressors, commitment, and individual productivity

Variable	1	2	3	4	5	6	7	8	9
1. Work relationships	1								
2. Work-life balance	0.468**	1							
3. Overload	0.503**	0.507**	1						
4. Job security	0.558**	0.340**	0.584**	1					
5. Control	0.489**	0.426**	0.579**	0.535**	1				
6. Resources and comm.	0.523**	0.447**	0.527**	0.468**	0.446**	1			
7. Aspects of the job	0.528**	0.583**	0.530**	0.410**	0.554**	0.481**	1		
8. Pay and benefits	0.566**	0.350**	0.546**	0.578**	0.520**	0.500**	0.547**	1	
9. Commitment	-0.580**	-0.501**	-0.504**	-0.365**	-0.592**	-0.533**	-0.417**	-0.502**	1
10. Individual productivity	-0.583**	-0.522**	-0.425**	-0.576**	-0.542**	-0.507**	-0.447**	-0.573**	0.580**

Note: ** indicates correlation is significant at the 0.01 level (1-tailed).

TABLE 4. Multiple regression analysis of commitment on occupational stressors

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	β	T	
1 (Constant)	50.421	1.273		39.602	0.000
Work relationships	-0.228	0.086	-0.260	-3.535	0.002
Work-life balance	-0.222	0.104	-0.146	-0.940	0.043
Overload	-0.321	0.122	-0.215	-2.032	0.009
Job security	-0.018	0.170	-0.007	-0.108	0.914
Control	-0.393	0.086	-0.284	-4.595	0.000
Resources and comm.	-0.329	0.107	-0.252	-2.911	0.004
Aspects of the job	-0.066	0.096	-0.063	-0.687	0.493
Pay and benefits	-0.293	0.128	-0.149	-1.324	0.021
		R	0.677		
		R ²	0.459		
		F	30.855**		

Note: ** and * indicate significance at the 0.01 and 0.05 levels, respectively.

commitment. In terms of the contributions made by the individual stressors, control had the largest contribution ($\beta = -0.284$; $p = 0.000$), followed by work relationships ($\beta = -0.260$; $p = 0.002$); resources and communication ($\beta = -0.252$; $p = 0.004$); overload ($\beta = -0.215$; $p = 0.009$); pay and benefits ($\beta = -0.149$; $p = 0.021$); and work-life balance ($\beta = -0.146$; $p = 0.043$). Therefore, H_{1a} , H_{1b} , H_{1c} , H_{1e} , H_{1f} , and H_{1h} are all supported. However, job security and aspects of the job are found to be insignificant to such a degree that H_{1d} and H_{1g} are not supported.

A simple regression analysis is conducted to examine the direct effects of commitment on individual productivity. As reported in Table 5, the R^2 for this model is 0.336, demonstrating that 33.6% of the variances in predicting individual productivity are explained by the model. Commitment is found to be significant and positive in its prediction of individual productivity ($\beta = 0.580$; $p = 0.000$). Therefore, H2 of the study is supported.

A multiple regression analysis technique is again employed to determine the direct effects of occupational stressors on individual productivity. The results are reported in Table 6 and show that the model's R^2 was 0.335, which indicates that 33.5% of the variances in predicting individual productivity are explained by this model. The dimensions of stressors that are found to be significant

and negatively related to individual productivity are work relationships; work-life balance; job security; control; resources and communication; and pay and benefits. The highest contributor is work relationships ($\beta = -0.278$; $p = 0.001$), followed by job security ($\beta = -0.260$; $p = 0.003$); pay and benefits ($\beta = -0.230$; $p = 0.018$); control ($\beta = -0.213$; $p = 0.022$); work-life balance ($\beta = -0.171$; $p = 0.025$); and resources and communication ($\beta = -0.146$; $p = 0.029$). Therefore, H_{3a} , H_{3b} , H_{3d} , H_{3e} , H_{3f} , and H_{3h} are all supported. However, overload and aspects of the job are found not to be significant, resulting in H_{3c} and H_{3g} not being supported.

Next, the mediation analysis is discussed, which focuses upon the fourth step. The first three steps are conducted previously through correlation analysis. In step 4, the indirect effect or role of commitment as the mediator of the stressors and individual productivity is determined using hierarchical regression analysis techniques. The step involves both occupational stressors and commitment in predicting individual productivity. In step 1, all stressors are entered together into the model predicting individual productivity. The R^2 of Model 1 is 0.335, which indicates that the model explains 33.5% of the variances in predicting individual productivity. In step 2, commitment is entered into the existing

TABLE 5. Regression analysis of individual productivity on commitment

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	β	T	
1	(Constant)	-15.252	9.973		-1.529	0.127
	Commitment	3.218	0.262	0.580	12.292	0.000
	R	0.580				
	R ²	0.336				
	F	151.103**				

Note: ** and * indicate significance at the 0.01 and 0.05 levels, respectively.

TABLE 6. Multiple regression analysis of individual productivity on occupational stressors

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	β	T	
1	(Constant)	166.345	7.829		21.248	0.000
	Work relationships	-1.342	0.528	-0.278	-2.544	0.001
	Work-life balance	-1.994	0.705	-0.171	-0.829	0.025
	Overload	-2.339	0.752	-0.044	-0.111	0.602
	Job security	-0.687	1.048	-0.260	-1.655	0.003
	Control	-1.639	0.527	-0.213	-1.113	0.022
	Resources and comm.	-1.379	0.905	-0.146	-0.723	0.029
	Aspects of the job	-0.585	0.592	-0.101	-0.489	0.324
	Pay and benefits	-4.055	1.834	-0.230	-1.212	0.018
		R	0.579			
	R ²	0.335				
	F	18.344**				

Note: ** and * indicate significance at the 0.01 and 0.05 levels, respectively.

model to create Model 2. The R^2 of Model 2 increased to 0.404, indicating that 40.4% of the variance in predicting individual productivity is explained by the model. Commitment makes a significant and unique contribution of 6.8% to the model ($\Delta R^2 = 0.068$; ΔF statistics = 33.281; $p < 0.01$). Individual stressors whose effects are reduced, but still significant, include work relationships ($\beta = -0.189$; $p < 0.05$); control ($\beta = -0.172$; $p < 0.05$); pay and benefits ($\beta = -0.145$; $p < 0.05$); work-life balance ($\beta = -0.144$; $p < 0.05$); and resources and communications ($\beta = -0.136$; $p < 0.05$). Commitment is still significant and positive in predicting individual productivity ($\beta = 0.356$; $p < 0.01$). Therefore, H_{4a} , H_{4b} , H_{4c} , H_{4f} , and H_{4h} are only partially supported. Other stressors, such as overload, job security and aspects of the job, are not significant in influencing either individual productivity or commitment prior to analysis four. Hence, no mediation exists in these relationships and H_{4c} , H_{4d} , and H_{4g} are not supported. The results of the final steps of the mediation analysis of commitment as a mediator in the stressors-individual productivity relationships are presented in Table 7.

DISCUSSION AND CONCLUSIONS

Commitment partially mediates the relationships of certain occupational stressors (i.e., work relationships; work-life balance; control; resources and communication; and pay and benefits) on individual productivity. Previous studies produce similar results (e.g., Ismail, Suh-Suh, Ajis & Dollah 2009; Webster et al. 2009; Yahaya et al. 2009). Academic administrators at MRUS that suffer from stress based on the occupational stressors examined in the present study appear to exhibit lower commitment. Additionally, the individual productivity of academic administrators also suffers.

The implication for managers at MRUS is that the findings concerning the significant stressors revealed in the present study can be used as a platform to develop

an intervention strategy. For instance, work relationships can be improved if people respect each other. Work-life balance can be better if academic administrators possess skills to improve time management. Furthermore, overload problems can be resolved by reducing the amount of teaching assigned to the academicians that hold administrative posts. The finding also imply that that university policy can be improved in terms of job security by promising greater weighting on the administrative achievements of academics in their promotion criteria so that academic administrators are less burdened by publication requirements. The MRU managers should practice empowerment as often as possible as to provide more power to the academic administrators to make fast decisions and gain control over their subordinates. Resources, such as training and research grants, should also be accessible and communicated organizationally. Aspects of the job, such as the physical environment, can be improved by moving into new buildings equipped with better and more modern facilities. Job satisfaction can be improved by promoting academic administrators more quickly. If the MRUS are not able to apply the first theory or primary intervention strategy, managers can work to improve commitment as a second intervention strategy. The final intervention strategy involves the counseling of individuals personally. The productivity of individuals that are "stressed-out" is demonstrated to be negatively affected.

The present study contributes to existing literature by providing empirical evidence concerning occupational stressors in the context of Malaysia. Secondly, the present study also introduces commitment as a mediator. Thirdly, the present study introduces new measurements of outcomes of individual productivity, such as teaching productivity; supervision productivity; publication productivity; training productivity; student service productivity; administrative duties productivity; and social responsibility productivity. By understanding the relationships between stressors, commitment and individual productivity, the present study provides

TABLE 7. Hierarchical regression analysis of individual productivity on commitment and occupational stressors

Variable	Step 1			Step 2		
	B	SE	β	B	SE	β
Work relationships	- 1.342	0.528	- 0.278*	- 0.913	0.506	- 0.189*
Work-life balance	- 1.994	0.705	- 0.171*	- 1.555	0.673	- 0.144*
Overload	- 2.339	0.752	- 0.044	1.608	0.725	- 0.018
Job security	- 0.687	1.048	- 0.260*	- 0.651	0.995	- 0.047
Control	- 1.639	0.527	- 0.213*	- 0.863	0.517	- 0.172*
Resources and comm.	- 1.379	0.905	- 0.146*	- 0.533	0.871	- 0.136*
Aspects of the job	- 0.585	0.592	- 0.101	- 0.455	0.562	- 0.079
Pay and benefits	- 4.055	1.834	- 0.230*	- 2.688	1.756	- 0.145*
Commitment				1.973	0.342	0.356**
R^2		0.335			0.404	
ΔR^2					0.068	
ΔF statistics		18.344**			33.281**	

Note: Asterisks ** Significant at 0.01 level; * significant at 0.05 level

suggestions and recommendations to make improvements in relation to stress at the workplace; commitment; and individual productivity. In summary, the present study provides empirical evidence that supports general theories of stress, including Beehr and Newman's (1978) general theory of stress; Beehr's (1995) occupational stress theory; and Cartwright and Cooper's (2002) ASSET model of stress.

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