



**UNIVERSITI PUTRA MALAYSIA**

***ANTECEDENTS AND CONSEQUENCES OF ACADEMIC RESEARCH  
AND CONSULTATION PERFORMANCE OF ACADEMICIANS IN PUBLIC  
RESEARCH UNIVERSITIES IN MALAYSIA***

**JAMALI BIN JANIB**

**FPP 2021 40**



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By

**JAMALI BIN JANIB**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of  
Philosophy**

**August 2019**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

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**August 2019**

**Chair : Zoharah binti Omar, PhD**  
**Faculty : Educational Studies**

The purpose of this study is to investigate the performance of Malaysian academicians in research and consultation activities and to determine the antecedent factors influencing their performance. The antecedents examined in this study are personal attributes of the researchers which comprised of career commitment and collaboration and social networking, a supportive environment for research and faculty workload which comprises of workload management and teaching and research workload. This study also investigates the extent to which research and consultation performance influence the wellbeing of the academic staff measured by their job satisfaction in research and consultation performance. The research population consists of 9,333 faculty members from five research universities (RUs) namely UM, UPM, UKM, USM and UTM. The sampling consists of various disciplines and faculties as a major researcher or joint researcher during a research project period. A total of 100 faculty members involved in research projects from each of the aforementioned universities were selected using stratified random sampling techniques with three strata (faculty, department and academic position). They represent probable academic populations as in the framework of sampling obtained from the five RUs. Academic position refers to the rank of professor, associate professor, senior lecturer and lecturer. A total of 191 academic staffs from various faculties from the aforementioned research university responded to the questionnaires. The Ordinal Logistics Regression Analysis (OLS) has been used to predict or study the influence of the five antecedents or independent variables (IVs) on Research Performance (DV1) and Consultation Performance (DV2). Two independent variables have significant impact on the dependent variable (DV1), namely career commitment and supportive research environment. However, there is no independent variable that contributes significantly to the Consultation Performance (DV2). The Chi-Square independent test results revealed that there was a moderately strong relationship between the research performance and the academicians's well-being (Job Satisfaction) level. However, there is no

significant relationship between the consultation performance and the academician's well-being (Job Satisfaction) level. Based on the results of the study, it can be concluded that academic research performance among academicians in research universities is influenced by their commitment towards their career and the supportive research environment. None of the independent variables contributes to the consultation performance as there may be other factors that could contribute to academic research and consultation performance instead. It was also found that a higher research performance among academicians in a research university will lead to a higher satisfaction towards their career. As a result, the academicians' job satisfaction level will be enhanced with a higher research performance. However, it must be noted that the consultation performance does not increase the academicians' job satisfaction level. Furthermore, the findings from the research have a direct implication on the research achievements among academic staff in higher education institutes. Therefore, based on the findings of the study, several implications can be synthesised and implemented in a planned and organised manner. Overall, this study may contribute to the existing education fields and relevant theories such as Goal-setting Theory of Motivation, Expectancy Theory and Social Career Cognitive Theory as well as propose a number of human resource development strategies that can be addressed to relevant ministries and universities. This is to enhance the employees' commitment in research and development activities, commercialisation and innovation (RDCI) and to manage their respective performance.

Keywords: Research performance, productivity, research university, academic's job satisfaction, Malaysia

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**ANTESEDEN DAN KESAN TERHADAP PRESTASI PENYELIDIKAN  
AKADEMIK DAN PERUNDINGAN AHLI AKADEMIK DI UNIVERSITI  
PENYELIDIKAN AWAM DI MALAYSIA**

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Tujuan kajian ini dijalankan adalah untuk mengkaji prestasi ahli akademik Malaysia dalam aktiviti penyelidikan dan perundingan dan untuk menentukan faktor-faktor anteseden yang mempengaruhi prestasi mereka. Tujuan kajian ini adalah untuk menyiasat prestasi ahli akademik Malaysia dalam aktiviti penyelidikan dan perundingan. Anteseden yang dikaji dalam kajian ini adalah sifat peribadi penyelidik yang terdiri daripada komitmen kerjaya dan kerjasama dan rangkaian sosial, persekitaran yang menyokong penyelidikan dan beban kerja fakulti yang terdiri daripada pengurusan beban kerja dan beban kerja pengajaran dan penyelidikan. Kajian ini juga mengkaji sejauh mana prestasi penyelidikan dan perundingan mempengaruhi kesejahteraan staf akademik yang diukur melalui kepuasan kerja staf akademik dalam aktiviti penyelidikan dan perundingan yang dijalankan. Populasi kajian ini terdiri daripada seramai 9,333 orang ahli fakulti dari lima buah Universiti Penyelidikan (UP) iaitu UM, UPM, UKM, USM dan UTM. Sampel terdiri daripada penyelidik utama atau penyelidik bersama daripada pelbagai disiplin dan fakulti sepanjang tempoh projek penyelidikan dijalankan. Seramai 100 orang ahli fakulti yang terlibat dalam projek penyelidikan di setiap universiti telah dipilih menggunakan teknik pensampelan rawak berstrata dengan tiga strata (fakulti, jabatan dan jawatan akademik). Mereka mewakili populasi akademik yang mungkin seperti dalam rangka persampelan yang diperolehi daripada lima Universiti Penyelidikan. Jawatan akademik tersebut merujuk kepada pangkat profesor, profesor madya, pensyarah kanan dan pensyarah. Sejumlah 191 orang ahli akademik daripada pelbagai fakulti daripada universiti penyelidikan yang dikaji menjawab borang soal selidik yang diedarkan. Analisis Regresi Logistik Ordinal (OLS) telah digunakan untuk meramalkan atau mengkaji pengaruh lima anteseden atau pemboleh ubah bebas (IVs) terhadap Prestasi Penyelidikan (DV1) dan Prestasi Perundingan (DV2). Dua pemboleh ubah bebas didapati memberi kesan yang signifikan terhadap pemboleh ubah bersandar (DV1) iaitu komitmen kerjaya dan sokongan persekitaran penyelidikan. Walau bagaimanapun, tiada pemboleh

ubah bebas yang menyumbang secara signifikan terhadap prestasi perundingan (DV2). Keputusan ujian bebas chi-square mendapati bahawa terdapat hubungan yang agak kuat antara prestasi penyelidikan dengan kesejahteraan ahli akademik (kepuasan kerja). Walau bagaimanapun, tidak terdapat hubungan yang signifikan antara prestasi perundingan dengan kesejahteraan ahli akademik (kepuasan kerja). Daripada kajian tersebut, dapat disimpulkan bahawa prestasi penyelidikan akademik dalam kalangan ahli akademik di universiti penyelidikan dipengaruhi oleh komitmen mereka terhadap kerja dan sokongan persekitaran penyelidikan. Tiada pemboleh ubah bebas yang menyumbang kepada prestasi perundingan mungkin disebabkan oleh faktor lain yang boleh menyumbang kepada prestasi penyelidikan dan perundingan akademik. Didapati juga bahawa prestasi penyelidikan yang lebih tinggi dalam kalangan ahli akademik di universiti penyelidikan akan memberikan kepuasan yang lebih tinggi terhadap kerjaya mereka. Hasilnya, tahap kepuasan kerja ahli akademik akan dipertingkatkan dengan prestasi penyelidikan yang lebih tinggi. Walau bagaimanapun, prestasi perundingan tidak meningkatkan tahap kepuasan kerja ahli akademik. Tambahan pula, dapatan daripada penyelidikan mempunyai implikasi langsung terhadap pencapaian penyelidikan dalam kalangan ahli akademik di institut pengajian tinggi. Oleh itu, berdasarkan dapatan kajian, beberapa implikasi boleh disintesis dan dilaksanakan secara terancang dan tersusun. Secara keseluruhannya, kajian ini boleh menyumbang kepada bidang ilmiah dan teori yang berkaitan seperti Teori Keperluan Matlamat, Teori Penetapan Matlamat, Teori Harapan dan Teori Kognitik Kerjaya Sosial serta mencadangkan beberapa strategi pembangunan sumber manusia yang boleh dimajukan kepada pihak kementerian dan universiti yang berkaitan. Hal ini supaya komitmen pekerja ditingkatkan dalam aktiviti penyelidikan dan pembangunan, pengkomersialan dan inovasi (RDCI) dan cara menguruskan prestasi masing-masing.

Kata kunci: Prestasi penyelidikan, produktiviti, universiti penyelidikan, kepuasan kerjaya penyelidikan, Malaysia

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*Indeed, with hardship [will be] ease. Indeed, with hardship [will be] ease. So when you have finished [your duties], then stand up [for worship]. And to your Lord direct [your] longing [Quran Al-Inshiraah translation (The Relieve) 94: verse 5 - 8].*

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*Prophet Muhammad hadith narrated by Saidatina Aisyah, "Surely Allah loves when one of you does a job, he does it well, perfectly and thoroughly." (History of al-Baihaqi).*



This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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## Declaration by Members of Supervisory Committee

This is to confirm that:

- the research and the writing of this thesis were done under our supervision;
- supervisory responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2015-2016) are adhered to.

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## LIST OF ABBREVIATIONS

ACCA	Association of Chartered Certified Accountants
ANOVA	Analysis of Variance
APEX	Accelerated Programme for Excellence
CD	Career Development
CU	Comprehensive University
DV	Dependent Variable
EDA	Exploratory Data Analysis
EP	Effort-Performance
EPU	Economic Planning Unit
FU	Focused University
GLM	General Linear Model
GST	Goal Setting Theory
HEI	Higher Education Institution
HRD	Human Resource Development
ICT	Information and Communication Technology
IHL	Institution of Higher Learning
IP	Intellectual Property
IR	Ingenieur
IV	Independent Variable
KPI	Key Performance Indicator
LAr	Landscape Architect
MoA	Memorandum of Agreement
MOE	Ministry of Education Malaysia
MOHE	Ministry of Higher Education Malaysia

MRUs	Malaysia Research Universities
Non-RU	Non-Research University
OD	Organization Development
OLS	Ordinal Logistic Regression
PIC	Person-in-charge
PO	Performance-Outcome
QS	Quacquarelli Symonds
R&D	Research and Development
RDCI	Research and Development, Commercialization and Innovation
RMC	University Research Management Centre
RORI	Return on Research Investment
RU	Research University
S&T	Science and Technology
SCCT	Social Cognitive Career Theory
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
SR	Surveyor Registered
TD	Training and Development
TS	Professional Technologist
UKM	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
UPM	Universiti Putra Malaysia
USM	Universiti Sains Malaysia
UTM	Universiti Teknologi Malaysia

## CHAPTER 1

### INTRODUCTION

This chapter discusses the background of the study, the achievement of Malaysian research universities (MRUs), the problem of statement, objective of the study, definition of terms, and the significance and the limitation of the study.

#### 1.1 Background of the Study

Individual performance is highly important for an organisation as a whole and for the individual working in it. Performance comprises both behavioural and outcome aspects. An organisation needs highly performing individuals in order to meet its goals, deliver the products and services it specialises in, and finally to achieve competitive advantage (Sonnentag & Frese, 2002).

The performance of a university always relies on the performance of the academic staff. These human resources, as educated people, are responsible to bring the higher education institution towards its best achievement, as required by the university and government (Sarunya Lertputtarak, 2008).

Performance can be achieved through teaching, conducting researches, consultations, and professional services offered by the academicians. Zainab (1999) stated that a research is an important academic activity and is expected from every faculty member. Conducting a research, which is one of the major roles of an academic, is part of the researcher's contribution to the society and the development of knowledge in a field of study. By conducting researches, faculty members will be able to enhance their knowledge, increase the effectiveness of their teaching, and improve their ability to think and communicate better (Sarunya Lertputtarak, 2008).

Rentocchini, F., D'Este, P., Manjarrés-Henríquez, L. & Grimaldi, R. (2014) stated that the engagement of scientists in knowledge and technology transfer activities became an interesting topic to be discussed among scholars and policy makers. Perkmann & Walsh (2008) defined academic consulting as the provision of a service by academics to external organisations on commercial terms involving advisement, resolving problems as well as generating or testing new ideas. Generally, consulting is usually provided individually by academics (Perkmann & Walsh, 2008).

This study focuses on the research and consultation performances of academic staff in public higher education institutions in Malaysia, and how the management

plays its role in the context of human resource development. Theoretically, there are also several other factors that may contribute to job performance such as motivation and experience. Motivational constructs related to performance can be partly subsumed under the individual differences perspective (e.g., need for achievement), situational perspective (e.g., extrinsic rewards), and performance regulation perspective (e.g., goal setting theory) (Sonnentag & Frese, 2002). In addition, research finding by Quinones et al., (1995) reveals that professional experience shows a positive, although small relationship with job performance.

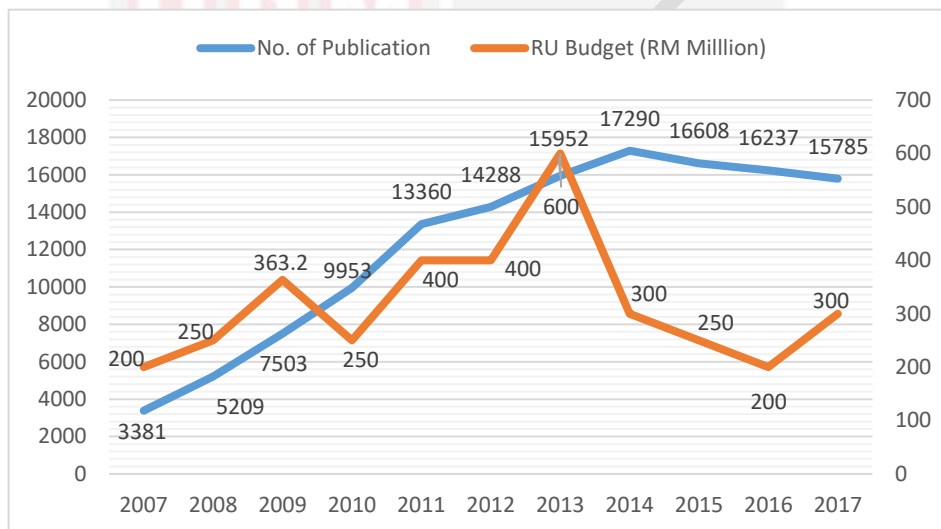
### **1.1.1 Malaysia's Higher Education in Transformation**

The Ministry of Higher Education Malaysia (MOHE) has since 2006 set up eight criteria to be fulfilled before a university can be accepted as a Research University or RU (Ramli et al., 2013). Three of the criteria are mostly related to an academicians of MRUs. Firstly, the qualification of the individual researcher and the number of grants and awards received; secondly, the quantity and quality of the research carried out by the university faculty members; and thirdly, efforts done by the individual academic staff to get involved in the networking and linkage with foreign universities or institutions and their counterparts. All those criteria to be fulfilled and the university performances will be closely monitored by the Ministry itself.

In addition, the transformation of higher education in Malaysia shows the increasing number of academic staff and the capacity of human resource is ready to serve respective universities very well. Academic profile in 2014 as reported by the ministry has stated that there were more than 33,000 academic staff across 20 public universities in Malaysia (MOE, 2014). The statistics showed that less than 9% were non-Malaysian and 51% were female academics. Among them were doctoral degree holders (37%) and those who had a master's degree were 52% of the academics. In total, there were 33,000 academics and 2,262 of them were professors (7%), 5,268 were associate professors (16%), 21,384 were lecturers (including senior lecturers) (65%), and the remaining 12% were language tutors, assistant lecturers and tutors. In comparison with the private higher education sector, there were 25,000 academic staff of whom close to 3,300 had a doctoral degree, 10,000 had a master's degree, and 8,650 were bachelor's degree holders (MOE, 2014a).

Currently, under the Eleventh Malaysia Plan 2016-2020, the government of Malaysia is pushing the agenda of producing human capital that is equipped with the right knowledge, skills, and attitudes to succeed in globalised economy and become a world-class talent to achieve its goal of developing into an advanced nation by 2020. Thus, thousands of academic staff across the country are the right people to commit to the significant contribution to the research outputs produced.

In order to promote research and innovation initiatives, the government has provided financial support for research universities (RUs) every year. For example, an amount of RM600 million of the Budget 2013 had been allocated to five Malaysian research universities (MRUs) for the said purposes. The funds were administered by the Ministry of Higher Education (MOHE) as highlighted in the 2013 Budget Speech. Likewise, the US government had allocated around USD40 billion for its research universities in 2011 for research development projects (Weigley & Hess, 2013). In essence, government funding has become the most important source of funds for the RUs to enhance their innovations and research development progress (Faridah Hanum Amran et al., 2014). However, as depicted in Figure 1, the budget for RUs had been cut for three years consecutively between 2013 and 2016 before it was increased to RM300 million by the government.



**Figure 1.1 : Budget for Malaysia Research University (2007 – 2017)**  
(Source: Planning Division of Excellence, MOHE (2018))

Interestingly, the number of publications contributed by MRUs that has been increasing steadily since the early establishment also tends to decrease due to budget cuts by the government. Hence, it is apparent that the amount of publications correlate with the amount of funding availability. Nevertheless, despite budget cuts, academic staff in MRUs are aware about their roles and functions in how the research and development (R&D) agenda should be focused on.

Given the significance of the necessary human capital development and many initiatives from the government to continually innovate in R&D, factors influencing the R&D performance across the universities must be considered. The following

section describes several issues pertaining to the productivity and research and consultation performances of academic staff.

### **1.1.2 Academic Research and Consultation Performances**

The National Higher Education Plan 2007- 2010, which operationalised the Strategic Plan, promised a greater autonomy for the universities in Malaysia. The ministry itself outlined three reasons for universities to succeed in R&D. Firstly, to produce the intellectual property and innovation required to move the country higher in the global value chain, and create new jobs and opportunities. Secondly, R&D is to create new knowledge and valuable new findings to enable Malaysia to become a leading education hub. Thirdly, R&D is to develop the necessary human capital to continually innovate across all sectors of the economy (MOHE, 2007).

According to Cadez, S. et al., 2017, most academics' workload involves two main activities – teaching and researching. However, their career advancement, for example, usually depends on research performance, although at the same time, they are performing the dual nature of the work. When defining research performance in academia, Harvey (2010) typically refers to scientific advancements and predominantly published academic journals. A widely accepted convention holds that the best research achievements are published in the most prestigious scientific journals and have a high impact, while lower quality achievements are published in less prestigious journals and have a low impact (Harvey et al., 2010). It needs to be noted that, with respect to research, the same performance measures (e.g. publications, citation and grants) can be meaningfully applied to the organisational and individual levels (Cadez, S. et al., 2017). However, teaching performance is not the focus of this study.

According to Moracsik (1985), the assessment of research may take the form of an input-output process. The inputs constitute manpower (qualified lecturer and professor, the percentage of time spent on research, and the number of research students and support staff); the institutional resources (supportive administration, libraries, electronic support facilities); and financial resources. The outputs of research can be divided into two. The intangible outcome is more complex and comprises new scientific knowledge and awareness of new methodologies in the form of theories and empirical findings. The tangible outputs, on the other hand, are research findings such as publication (for example, research reports or publication in refereed journals which have attained national or international recognition) or communicated outputs (presentation at conferences); and finished products (patented inventions or trained and qualified researchers). Furthermore, the outcome of research comes in varying forms such as the recognition conferred on the researcher on the basis of his contribution to his field of study. This recognition could be citations, positive ratings and rankings by peers, and award of honours and prizes. Zainab (1999)



however stated that published research findings are the most common tool used to assess the output of research.

Meanwhile, Perkmann and Walsh (2008) had identified three types of academic consulting namely opportunity-driven, commercialisation-driven and research-driven. The typology allows researchers to evaluate the varying impacts of different consulting activities on universities and firms. They determined that consulting has a limited impact on the direction of the academic research towards more 'applied' themes, but consulting is positively associated with academics' research productivity for research-driven consulting and, to a lesser extent, commercialisation-driven consulting, while involvement in opportunity-driven consulting has a negative impact (Perkmann & Walsh (2008)).

## **1.2 Antecedents of Academic Research and Consultation Performances**

Past research has shown several factors contributing to research performance among academics. In order to get a productive research organisation, several components must be present and accessible. These include the optimisation of the individual researcher, a good working environment, and leadership characteristics that prior literature has found to be associated with high academic productivity (Bland, et al., 2005). Wood, F.(1990), in her study, listed several factors that affect the research performance among academics. The factors are personal characteristics, area of research, funds/equipment/support staff, college and working environment, the number of PhD students, administrative demands, tenure, and other aspects such as the cost of travel or promotion (Wood, F., 1990). Another study found that the research performance is also influenced by motivation and hygiene factors (Aydin, O.T, 2012).

Edgar and Geare (2013), in their study on research productivity, examined features of managerial practice and culture within university departments in New Zealand and found factors that were associated with superior research performance. The findings showed that autonomy and egalitarianism along with a strong cultural ethos supporting achievement and individualism are characteristics of high functioning departments.

In terms of establishing the social network as part of the individual academic performance in research, many studies discussed the purpose and benefits to the staff. According to Colyvas et al., 2002, and Hsu and Bernstein (1997), an early network with the industry gives a greater chance for the invention to be capitalised on. The industry could advise and monitor the project according to the market needs. Therefore, personal contacts are needed as an effective way to attract companies to the universities' technologies (Colyvas et al., 2002; Thursby & Thursby, 2004). On the other hand, informal and formal networks with individuals and organisations are important for spin-off formation (Birley, 1985).

These networks link new firms to resource providers such as venture capitalists, business angels, bank and advisers, as well as potential customers. Shane and Cable (2002) pointed out that informal networks are important means of accessing finance, thereby giving more chance to the formation of university spin-offs (in (Kamariah, 2008)).

### **1.3 Academics' Well-being in Higher Education Institutions**

The World Economic Forum (2012) stated that good wellbeing enables individuals to perform better at work and in personal family life and the community. Wellbeing may increase the productivity of the company they work for. In addition, individuals with a high level of well-being produce more resilient families and happy children, whereas citizens with a high well-being level will strengthen their communities (World Economic Forum, 2012).

In general, the wellbeing of academic staff can be related to their productivity and their engagement level in the university, apart from changes in their working environment. The well-being of those in the teaching profession is deeply connected to the quality of their works (CESE, 2014). It becomes a critical element to the overall performance. At the same time, job satisfaction of the academic staff is also interrelated with each other.

Arokiasamy et al., 2011 stated that job satisfaction in public universities relies on academic staff's performance. This is because the academic staff's performance has an essential role in facilitating the forward movement of the universities. Academic staff is also known as knowledge workers (Arokiasamy, et al., 2011) who have to work harder in order to satisfy the progressively escalating universities' expectations (Eyupoglu & Saner, 2009; Bilge, 2006). Hence, motivated and satisfied academic staff would be more effective in promoting the future movement of the university.

A recent study conducted by Da Wan et al. (2015) stated there are three major sources of satisfaction perceived by academicians: (1) students and the function of teaching; (2) research, publication and contribution of knowledge; and (3) the flexible nature of academic work. Research-related activities are the second most frequently mentioned source of satisfaction with the highest frequency from academics in the two selected MRUs and one of the Comprehensive Universities (CUs) as compared to the other three universities involved in the study. The study reveals that academics shared their satisfaction from contributing to knowledge and the society through their work in research, obtaining research grants, and having their articles accepted for publication in top-tier journals (Da Wan et al., 2015).

Therefore, job satisfaction and the well-being of academic staff cannot be underestimated by universities. Academics play a vital role in higher education institutions to produce high quality researches and excellent teaching. Hence, the factors which may influence their level of research and consulting performance are critical to higher education institutions, and as the consequence, these performances will influence the academics' well-being.

#### **1.4 Statement of the Problem**

Academic research and consultation performances are of paramount importance to RUs. They are considered as part of the contribution to the society and the development of knowledge in a field of study, besides the establishment of engagements with industries. Prior research have identified several factors influencing the performance of academic staff from universities worldwide. A research conducted by Wood (1990) on the performance of academic staff from one Australian university reveals that research activity is highly varied and influenced by a number of factors including personal characteristics; differences in research styles, methods and strategies both within and between disciplines; and dependence on funding. Meanwhile, Edgar and Geare (2013) revealed that managerial practice and culture within university departments are factors associated with superior research performance among stakeholders from New Zealand-based universities. Judge et al. (2001) suggested that prior research on the job satisfaction–job performance relation can be organised around seven models. One of his models under study showed that job satisfaction is driven by job performance. However, not many similar studies conducted in Malaysia examined these influencing factors on research and consultation performances as well as the well-being or job satisfaction of the academic staff who are the key persons to contribute to the nation.

Many studies on higher education institutions in Malaysia have been conducted to examine the nature, cause and factors of academics' research performance which is related to job satisfaction. For example, Noordin & Jusoff (2009) carried out a small-scale survey and found a moderate level of job satisfaction among academics in a local public university. Aslan et al. (2014) also studied job satisfaction among academic staff in public universities, but it was not related to research and collaborative works.

Meanwhile, available researches on Malaysian public RUs so far are focused on job satisfaction (Sadeghi et al., 2012), factors associated with scholarly publication productivity among academic staff (Dhillon, Ibrahim, & Selamat, 2015), performance measurement system in Malaysian public RUs (Janudin & Maelah, 2016), faculty workload, and employment benefits in public universities (Basarudin et al., 2016).

Nowadays, there are five RUs in Malaysia that are working hard to maintain their RU status. Thus, this will create more stress not only to the university management but also the academic staff (Arma & Noor, 2016). Recently, several research studies have been devoted to academic staff's job satisfaction in Malaysia (Wong & Heng, 2009; Ismail & Abdul, 2011; Zaidatol et al, 2011; Al Mansor Abu Said et al, 2015). Looking specifically at MRUs, it seems that there is no research article that focuses on academics' job satisfaction as the consequences of their research and consultation performances and relationships between them. It is meaningful if there is a study on the achievement among academicians that fulfilled the requirements of the RU criteria as mentioned above and how the performance level of staff will determine self-development and the overall success of the RUs.

Therefore in such situations, the qualification of an individual researcher, the researcher's competency in researching and consulting, and job satisfaction are crucial in the context of MRU after its establishment since the last ten years. From theoretical perspective perhaps motivational factors and theory of performance can be further explored for academics who are engaged in research and development, commercialisation and innovation (RDCI) for better achievement and satisfaction results.

The focus of the study would be the individual academicians's research and consultation performances, and several factors of the antecedent variables (personal attributes, supportive research environment, and faculty workload and the consequences of their achievement in research and consultation activities).

This study attempts to fill up the knowledge gap in the specific context of objective and subjective research and consultation performances and how this performances affect job satisfaction of academic staff in MRUs.

### **1.5 Objectives of the study**

The general objective is to investigate academic researches and consultation performances among academic staff in MRUs, and factors contributing to the research and consultation performances and the consequences to the academic staff's job satisfaction. The specific objectives of the study are as follows:

- (i) To determine the level of research and consultation performances and the position of academic staffs.
- (ii) To determine the level of well-being (job satisfaction) among academic staff.
- (iii) To determine the relationship between personal attributes (career commitment, collaboration and social networking) and research and consultation performances.
- (iv) To determine the relationship between supportive research environment and research and consultation performances.

- (v) To determine the relationship between workload (workload management, workload teaching and learning) and research and consultation performances.
- (vi) To determine the most dominant antecedent of research and consultation performances.
- (vii) To determine the relationship between research and consultation performances and staff's well-being (job satisfaction).

## **1.6 Significance of the study**

The study will provide an added value for theoretical human resource development (HRD), practices and policy development. For theoretical HRD, this study will explore more on the integration of training and development (TD), organisation development (OD), and career development (CD) to improve individual, group, and organisational effectiveness (McLagan, 1989). Integration means the combined use of all development practices in order to accomplish higher levels of individual, motivation level, and organisational effectiveness. In terms of career development, the social cognitive career theory (SCCT) can also be explored to determine how basic academic and career interests develop, how educational and career choices are made, and how academic and career success is obtained. SCCT incorporates a variety of concepts (e.g., interests, ability, values, and environmental factors).

For HRD practitioners, the benefits stem from having a broad scrutiny of practices related to the future rather than the past, especially in the challenges faced by higher education institutions. In a time of change and confusion, human resource personnel needs a relevant framework to guide them in managing academic staff and potential development according to the core business of the university, i.e. teaching, research and innovation activities, and professional services. In this case, how the academic staff conducts consultation activities effectively and meets the target of the interested party involved.

For policy development, the findings of this study may enlighten the significance of individual contribution to research performance, organisational strategy to achieve the key performance indicators (KPIs) within the right procedures and work ethics, preparing successful workforce and human capital reinforcement in RDCI activities.

The primary aim of the researcher in this study is to relook the conceptual model of research performance based on research productivities and aggregation of performance. So far most studies on research performances much on research related activities, tangible outcome and influencing factors towards individual performances. In this study the researcher has tried to shift the focus on research performance and split it up to the consultation performance as well and this has lead to the development of the model which is based on the contemporary issues facing by the local universities. This study will contribute to the body of

knowledge in term of theoretical model development which comprises of both research and consultation performances and the research approach under taken when involving all five RUs in Malaysia to participate in the study.

### **1.7 Scope of the study**

The study is confined to understanding human achievement and job performance factors in higher education institutions. Variables to be studied include personal attributes, working environment, and workload as the antecedent factors towards academics' job performances. The focus of the study is the academic staff's performance in research-related activities including consultation works that are conducted during their services in the university. Later on, further studies were done to determine academic staff's job satisfaction from the perspective of research related works being done and output derived to indicate the level of well-being. The contribution of this study is from the human resource development perspective in order to identify the capable academic staff and at the same time how the job performance affects the well-being of the individual academic staff. Therefore, the findings of this study may not be generalised with other organisational setting of the RUs in Malaysia.

This study will cover academics who are involved in research and consultation activities as sampling for the study. The academics selected for the research sample are limited to those working in public universities at the time of data collection, no matter what condition of appointment or tenure they hold (either temporary, permanent, or contract), and active academic staff (excluding those who are on study or sabbatical leave).

This study is limited to MRUs because their academics are more homogenous in terms of salary scale and terms of services than private sector university staff.

### **1.8 Limitation of Study**

Data generated from this study were mainly based on a self-administered survey as its research design. The academics will be asked to answer certain questions regarding their own research and consultation performances. The data required are from the last two years to indicate their research and consultation performances.

There are of course difficulties in getting data from a self-administered survey. These include whether or not respondents are willing to answer, and whether their answers will be biased or not. This is a limitation because it is beyond the researcher's control.

Therefore, the researcher tried to answer the research questions by looking at the relationship between research and consultation performance variables and other variables that have the potential to influence productivity mainly among professors, associate professors, senior lecturers and lecturers. A further limiting point that affects this study is that certain academics are expected to be reluctant to answer truthfully on their own performance, particularly questions concerning grades or positions in the university.

## 1.9 Assumptions of the study

There are several basic assumptions embedded in this study. The first assumption is that the responses have been returned from a representative sample. Responding participants can form a biased group if they are the only ones who are motivated by the research and will tend to give positive (or negative) responses, compared to those who do not respond.

Secondly, the academics being selected to participate in this study will receive the survey questionnaires and are then assumed to respond honestly and professionally. Although they might receive online surveys (via Google forms) through e-mail, they may choose any form of survey that comes first and fill in the questionnaire once using either hard copy or the online version. Thirdly, the target respondents will therefore be assumed to be very confident that their returned questionnaires will be treated as confidential data, even though they may be suspicious that the researcher could guess the identity of the respondent.

Finally, it is assumed that the academics who were selected to participate in this study are competent and professional.

## 1.10 Operational Definition of Terms

The following sets of operational definitions are used throughout the study. A definition that gives meaning to a concept by specifying the activities or operations necessary in order to measure it.

- a) **Academic staff/lecturer/faculty** – is full-time tenured and tenure-track university lecturers who are mainly responsible for teaching, researching and undertaking academic services (advising students and performing professional duties) as well as researchers who work in specific research centres. They can be professors, associate professors, senior lecturers and lecturers. These groups did not include university council members who are not full-time lecturers, adjunct professors, visiting professors, temporary faculty members and teaching assistants.

- b) **Research outputs** – any scholarly research produced by academic staff that contribute to the knowledge base of a discipline. The measurement includes the number of research publication (in refereed or non-refereed journals), research reports for an agency or institution, monographs, academic books or book chapters, submitting an article to newspapers or magazines, producing a creative work or an innovative item, being on book or journal editorial boards, and finished products (e.g. IPs, licence or patents).
- c) **Research performances** - the ability of an academician to produce tangible research outcomes (i.e., the number of publication produced such as journal articles, books, chapter in books and other publications; the number of intellectual properties such as patented products, copyright, and industrial design), producing policy papers, obtaining research funds from various sources, awards/stewardship conferred, and being promoted into current position.
- d) **Consultation performances** - the ability of an academician to produce intangible research outcomes (i.e., the minimum number of consultancy projects conducted or sharing expertise in a year, evaluator of working paper, panel for research grant, technical evaluator, policy judge, guest speaker, policy maker/standard, engagement and linkages established on the national or international levels. These do not included works by master's/PhD thesis examiners and evaluators of master's/PhD research proposals.
- e) **Personal attributes** –a cluster of related knowledge, skills, and attitudes or an academic's individual capability to perform the tasks. In this study, personal attributes are comprised of:
- (i) Career commitment - love and passion for the job, and commitment to the current profession as an academician
  - (ii) Collaboration and social networking - ability to collaborate with others, research partners, developing connections, and networking in research-related activities
- f) **Supporting research environments** - a supportive research environment provided by the university to spur innovation among academic staff in terms of research inputs, training and development, adequate support and facilities, sharing, recognition, communication and constructive feedback.
- g) **Faculty workload** - the extent of academic staff's workload from teaching to other tasks and responsibilities such as administrative works and management, conducting researches, and consultation activities.
- h) **Job satisfaction of academic staff** – individual academic staff/lecturer who are satisfied or dissatisfied with the outcomes from doing research works and consultation. Also, overall satisfaction on performing tasks,



level of achievement in researches, career advancement, satisfaction on emoluments, opinions on the university's policy and administration, level of recognition received, level of job supervision, working condition, and the flexibility of works.

### **1.11 Summary of the Chapter**

Chapter one highlighted the background of the study in the context of MRUs' achievement, transformation process guided by the ministry, and factors influencing the overall performances of academic research. Also highlighted are the problem of statement, objectives of the study, limitation and assumption of the study, and the operational definition of terms being used throughout this study.

The next chapter presents the literature review on research performances, factors contributing to academic research performance such as personal attributes, environment, workload and academic well-being as well as job satisfactions. Also going to be discussed are the influencing factors on research performances, research hypotheses and the relationship of the variables of the study.

## BIBLIOGRAPHY

- Aceto, L. *The importance of research for a modern university*. Paper presented at ICE-TCS, RU and BRICS, Aalborg University. 2005
- Ahmad, A. and Farley, A. (2013). Federal government funding reforms: issues and challenges facing Malaysian public universities. *International Journal of Asian Social Science*
- Aminuddin Hassan (2006). *Academic productivity and the impact of the national education philosophy in higher education institutions as viewed by Malaysian academics*.(Unpublished doctoral dissertation).Durham University. Available at Durham E-Theses Online: <http://etheses.dur.ac.uk/2675/>
- Andersson, T. *Public Research and University Reform – European perspectives*. Discussion paper for the Workshop on “University Organisation, Excellence, and Societal Impacts”, Kuala Lumpur. 5 August 2010.
- Arokiasamy,L.,Ismail,M., Ahmad, A. and Othman,J.(2011).”Predictors of academics’ career advancement at Malaysia private universities”, *Journal of European Industrial Training*, 35(6):589-605. Doi:10.1108/03090591111150112.
- Aslan, A.S, Shaukat,M.Z., Ahmed,I., Mad Shaha,I. and Mahfar,M. 4th World Conference on Psychology, Counselling and Guidance WCPCG-2013 Job Satisfaction of Academics in Malaysian Public Universities *Procedia - Social and Behavioral Sciences*, 114 ( 2014 ) 154 – 158 Doi: 10.1016/j.sbspro.2013.12.676.
- Asmawi, A., Zakaria, S., and Wei, C. C. (2013). Understanding transformational leadership and R&D culture in Malaysian universities. *Innovation*, 15(3): 287-304
- Atkinson, R. C., & Blanpied, W. A. (2008). Research Universities: Core of the US Science and Technology System. *Technology in Society*, 30(1): 30-48. Doi: 10.1016/j.techsoc.2007.10.004
- Austin, A.E., Gamson, Z.F. (1983). *Academic Workplace: New Demands, Heightened Tensions*. ASHE-ERIC Higher Education Research Report No, 10, 1983. Association for the Study of Higher Education, Publications Dept., One Dupont Circle, Suite 630, Washington, DC 20036.

- Austin, A.E., Gamson, Z.F. (1983). Academic Workplace: New Demands, Heightened Tensions. ASHE-ERIC Higher Education Research Report No, 10, 1983. Association for the Study of Higher Education, Publications Dept., One Dupont Circle, Suite 630, Washington, DC 20036.
- Aydin, O. T. (2012). The impact of motivation and hygiene factors on research performance: An empirical study from a Turkish University. *International Review of Management and Marketing*, 2(2):106–111. Doi:10.3968/4984
- Bandura, A. (1991). Social-cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bartol, K.M. and Martin, D.C. (Ed.). (1998). *Management* (3rd). New York, NY: McGraw-Hill.
- Basarudin, N. A., Yeon, A. L., Yaacob, N. and Rahman, R. A. (2016). Faculty workload and employment benefits in public universities. *International Review of Management and Marketing*, 6(7): 73–82.
- Batterham, R. (2004). Measuring excellence: A chief scientist perspective. In National Academies Forum (22 June), Measuring excellence in research and research training, pp.3-8. Canberra: The Academy of Science
- Bayan Khalifa, Riad Abdullaouf, and Sulaiman Mouselli, (2016). Factors affecting research environment at Syrian Business Faculties: A student-perceived model. *Business, Management and Education*, 2016, 14(2): 210–225. Doi:10.3846/Bme.2016.322
- Bazeley, P. (2010). Conceptualising research performance. *Studies in Higher Education*, 35(8): 889-903.
- Bilge, F. (2006). Examining the burnout of academics in relation to job satisfaction and other factors. *Social Behavior and Personality: An international journal*, 34(9):1151-1160. Doi: 10.2224/sbp.2006.34.9.1151
- Birley, S. (1985). The role of networks in the entrepreneurial process. *Journal of Business Venturing*, 1(1):107–117.
- Blackburn, R.T., Bieber, J.P., Lawrence, J.H. and Trauvelter, L.C. (1991b). Faculty at work: Focus on research, scholarship and service. *Research in Higher Education*, 32(4): 385–413.

- Blackburn, T. and Lawrence, H. (1995). *Faculty at work: motivation, expectation, satisfaction*. The Johns Hopkins University Press, London.
- Bland, C.J. and Schmitz, C.J. (1986). Characteristics of the successful researcher and implications for faculty development. *Journal of Medical Education*, 61: 22–31.
- Bland, C.J., Center, B.A., Finstad, D.A., Risbey, K.R. and Staples, J.G. (2005). A theoretical, practical, predictive model of faculty and department research productivity. *Academic Med*, 80(3): 225–37.
- Blau, G. (1989). Testing generalizability of a career commitment measure and its impact on employee turnover. *Journal of Vocational Behavior*, 35:88-103.
- Boyatzis, R.E. (2007). Developing emotional intelligence through coaching for leadership, professional and occupational excellence. In R. Bar-On, J.G. Maree & M.J. Elias (Eds.), *Educating people to be emotionally intelligent* (pp. 155-168). Johannesburg: Heinemann Publishers (PTY).
- Bradler, C., Dur, R., Neckermann, S., Non, A. (2016). Employee Recognition and Performance: A Field Experiment. *Management Science*, 62(11). Doi:10.1287/mnsc.2015.2291
- Brown, S., Lent, R., Ryan, N. and McPartland, E. (1996). Self-efficacy as an intervening mechanism between research training environments and scholarly productivity: A theoretical and methodological extension. *The Counselling Psychologist*, 24: 535-544.
- Cadez, S., Dimovski, V., and Grodd, M.Z. (2017). Research, teaching and performance evaluation in academia: the salience of quality. *Studies in Higher Education*. 42(8):1455–1473. Doi:10.1080/03075079.2015.1104659
- Castillo, J.X. and Cano, J. (2004). Factors explaining job satisfaction among faculty. *Journal of Agricultural Education*, 45(3): 65-74. Doi: 10.5032/jae.2004.03065
- Centre for Education Statistics and Evaluation (CESE). (2014). School improvement frameworks: The evidence base. Sydney: NSW Department of Education and Communities.
- Chirikov, I. (2013). Research universities as knowledge networks: The role of institutional research. *Studies in Higher Education*, 38(3): 456-469.

- Christopher J. Collins and Kevin D. Clark (2003). Strategic Human Resource Practices, Top Management Team Social Networks, and Firm Performance: The Role of Human Resource Practices in Creating Organizational Competitive Advantage. *The Academy of Management Journal*, 46(6): 740-751
- Colyvas, J., M. Crow, A. Gelijns, R. Mazzoleni, R. R. Nelson, N. Rosenberg (2002), "How do University inventions get into practice?", *Management Science*, 48(1), 61–72.
- Creswell, J. (1986). *Measuring faculty research performance*. Jossey-Bass Inc., San Francisco.
- Da Wan, C., Chapman, D. W., Zain, A. N. M., Hutcheson, S., Lee, M. and Austin, A. E. (2015). Academic culture in Malaysia: Sources of satisfaction and frustration. *Asia Pacific Education Review*, 16(4): 517–526. Doi: 10.1007/s12564-015-9398-1
- Damon, W. W. (2011). The research university: Allocating resources within schools and among schools, *Proceedings of the American Institute of Higher Education 6th International Conference*. 6-8 April 2011. Charleston. pp. 395-406.
- Dayton, C.M. (1992). *Logistic Regression Analysis*. Department of Measurement, Statistics and Evaluation, University of Maryland.
- Dhillon, S. K., Ibrahim, R. and Selamat, A. (2015). Factors associated with scholarly publication productivity among academic staff: Case of a Malaysian public university. *Technology in Society*, (42): 160–166. Doi: 10.1016/j.techsoc.2015.04.004
- DIUS, 2008. Innovation Nation. HM Stationary Office, London.
- Dominicis, Laura de, Pérez, Susana Elena, & Fernández-Zubieta, Ana. (2011). European university funding and financial autonomy: A study on the degree of diversification of university budget and the share of competitive funding. *Contemporary Economic Policy*, 22(2):162-178. Doi: 10.1093/cep/byh012
- Don Houston, Luanna H. Meyer & Shelley Paewai (2006). Academic Staff Workloads and Job Satisfaction: Expectations and values in academe. *Journal of Higher Education Policy and Management*, 28(1), 17-30. Doi: 10.1080/13600800500283734

- Dutrenit, G., Arza, V. (2010). Channels and benefits of interactions between public research organisations and industry: comparing four Latin American countries. *Sci. Public Policy*, 37(7):541–553.
- Edgar, F. and Geare, A. (2013). Factors influencing university research performance. *Studies in Higher Education*, 38(5): 774–792. Doi: 10.1080/03075079.2011.601811
- Euben, D (2003). Lives in the balance: Compensation, workloads and program implication
- Eyupoglu, S.Z. and Saner, T. (2009). The relationship between job satisfaction and academic rank: a study of academicians in Northern Cyprus. *Procedia - Social and Behavioral Sciences*, 1(1):686-691
- Faridah Hanum Amran, Ibrahim Kamal Abdul Rahman, Kalsom Salleh, Syed Noh Syed Ahmad Noor Hasniza Haron. Funding Trends of Research Universities in Malaysia. *Procedia - Social and Behavioral Sciences* 164 (2014): 126–134. Doi: 10.1016/j.sbspro.2014.11.060
- Fields, D.L. (2002). *Taking the measure of work: A guide to validated scales for organizational research and diagnosis*. Thousand Oaks, California: Sage Publications, Inc.
- Fox, M.F. (1983). Publication productivity among scientists: a critical review, *Social Studies of Science*, 13: 285–305.
- Fox, M.F. (1992a) Research, teaching, and publication productivity: mutuality versus competition in academia, *Sociology of Education* 65: 293–305.
- Fox, M. F. (1992). Research productivity and the environmental context. In *Research and higher education: The United Kingdom and the United States*, Edited by: Whiston, T. G and Geiger, R. L. 103–111. Buckingham, UK: The Society for Research into Higher Education & Open University Press.
- Francesco Rentocchini, Pablo D'Este, Liney Manjarrés-Henríquez, Rosa Grimaldi. (2014). The relationship between academic consulting and research performance: Evidence from five Spanish universities. *International Journal of Industrial Organization*, 32(2014):70–83
- Gary, J., Blau (1985). The measurement and prediction of career commitment. *Journal of Occupational Psychology*. Doi: 10.1111/j.2044-8325.1985.tb00201.x

- Giovanni Abramo, Ciriaco Andrea D'Angelo, Marco Solazzi (2011). The relationship between scientists' research performance and the degree of internationalization of their research *Scientometrics*, 86:629–643. Doi: 10.1007/s11192-010-0284-7
- Gordon Gerald and Morse, E.V. (1970). Creative potential and organizational structure. In M.J. Cetronand, J.D. Goldher (Eds). 1970. *The Science of Managing Organized Technology*, Vol II New York: Gordon and Breach, 517-31.
- Greenberg, J. (1999). *Managing behavior in organizations*. 2nd edition. New Jersey: Prentice Hall.
- Harvey, C., A. Kelly, H. Morris, and M. Rowlinson. (2010). *Academic Journal Quality Guide*. London: The Association of Business Schools.
- Hassan, A., Tymms, P., and Ismail, H. (2008). Academic productivity as perceived by Malaysian academics. *Journal of Higher Education Policy and Management*, 30(3): 283-296.
- Hekelman, F.P., Zyzanski, S.J., and Flocke, S.A. (1995). Successful and less-successful research performance of junior faculty. *Research in Higher Education*, 36(2): 235-255.
- Heneman, H. and Schwab, D. (1972). Evaluation of research on expectancy theory predictions of employee performance. *Psychological-Bulletin*, (78): 1-9.
- Henkel, M. (2007). Shifting boundaries in academic profession. In M. Kogan & U. Tiechler, (Eds.), *Key challenges to the academic profession* (pp. 191-200). Kassel, Germany: International Centre for Higher Education Research
- Henrekson, M. and Waldenström, D. (2007). *How should research performance be measured?* (IFN Working Paper No.712). Stockholm, Sweden: Research Institute of Industrial Economics (IFN).
- Herzberg, F., Mausner, B. and Snyderman, B. (1959). *Motivation to work* (2<sup>nd</sup> edition). Wiley, NY. <http://www.helium.com/items/802036-what-is-a-high-performance-organization-hpo>
- Hosie, P. J. and Sevastos, P. (2009). Does the “happy-productive worker” thesis apply to managers ? 2(2): 131–160. Doi: 10.1108/17538350910970219

- Houston, D., Meyer, L.H. and Paewai, S. (2006). Academic staff workloads and job satisfaction: Expectations and values in academe. *Journal of Higher Education Policy and Management*, 28(1): 17-30.
- Hsu, D.H., Bernstein, T. (1997). Managing the university technology licensing process: findings from case studies. *Journal of the Association of University Technology Managers*. Doi: 10.1016/j.sbspro.2009.01.120
- ICF Consulting (2003). California's Future: It starts here. UC's contribution to economic growth, health, and culture. <http://www.universityofcalifornia.edu/itstarthere/report/fullreport.pdf>
- Ismail Hussein Amazt, Abdul Rahman Idris. (2011). Lecturers' Satisfaction towards University Management and Decision-making Styles in some Malaysian Public Universities. *Procedia - Social and Behavioral Sciences*, 15:3957-3970. Doi: 10.1016/j.sbspro.2011.04.400
- Izabel Soliman and Hani Soliman. (2006). Academic Workload and Quality. *Journal Assessment and Evaluation in Higher Education*, 22(2), 135-157. Doi: 10.1080/0260293970220204
- Janudin, S. E. and Maelah, R. (2016). Performance measurement system in Malaysian public research universities: Is it contemporary? *International Journal of Management in Education*, 10(3). Doi: 10.1504/IJMIE.2016.077505
- Janudin, S.E. and Maelah, R. (2016). Performance measurement system in Malaysian public research universities: Is it contemporary? *International Journal of Management in Education*, 10(3):219–233
- Jaya Priah Kasinathan and Lawrence Arokiasamy (2019). A study on academicians' well-being in Malaysian Universities: A conceptual paper. *Global Business and Management Research: An International Journal*, 11(1): 446-454.
- Jowell, P. and Rothwell, M. (1987). *Performance Indicators in the Public Sector*. Macmillan: London.
- Jowkar, Abdolrasoul, Didegah, Fereshteh, and Gazni, Ali. (2011). The effect of funding on academic research impact: a case study of Iranian publications. *Aslib Proceedings: New Information Perspectives*.
- Judge, T. A., Thoresen, C. J., Bono, J. E., and Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127: 376–407



- Junaidah, H. and Saodah, W. (2012). Reconceptualising social skills in organisation: Exploring the relationship between networking, mentoring, individual difference and career success. Kuala Lumpur International Islamic University Malaysia.
- Jusoff, K., Abdullah, Z. and Samah, S.A.A. (2009). Moving ahead for academic excellence through international journal publication. *International Education Studies*, 2(2): 31-36.
- Kamarulzaman Ab. Aziz, Hezlin Harris, Stanley Richardson and NorAzlina Ab. Aziz. (2012). *Drivers for university research performance: Investigating the researchers' dynamics*. IBIMA Publishing, 2012, Article ID 418252.
- Kenney, and Patton (2011). Does inventor ownership encourage university research-derived entrepreneurship? A six university comparison. *Research Policy*, 40(8):1100-1112. Doi: 10.1016/j.respol.2011.05.012
- Kenney, M., and Patton, D. (2009). Reconsidering the Bayh-Dole Act and the Current University Invention Ownership Model. *Research Policy*, 38(9):1407-1422. Doi: 10.1016/j.respol.2009.07.007
- Koenig, M.E.D. (1982a). Bibliometric indicators versus expert opinion in assessing research performance. *Journal of the American Society for Information Science*, 34(2): 136-145.
- Koenig, M.E.D. (1982b). Determinants of expert judgement of research performance. *Scientometrics*, 4(5): 361-378.
- Korman, A. (1974). *The psychology of motivation*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Lamari, M. and Jacob, J. L. (2011). Factors associated with research productivity of education faculty: An econometric analysis of the publication performances within Quebec Universities, 2001-2008. *Proceedings of EDULEARN11 Conference*. 4-6 July 2011, Barcelona, pp. 70-80.
- Landino, R.A. and Owen, S.V. (1988). Self-efficacy in university faculty. *Journal of Vocational Behavior*, 33: 1-14.
- Landy, F. and Trumbo, D. (1980). *The psychology of work behaviour*, Dorsey Press, Homewood, IL.

- Larsen-Pusey, M. A. (1988). *Higher education in Colombia: The perspective of the professoriate*. (PhD thesis). The Claremont Graduate University and San Diego State University.
- Law, M., Cooper, B., Strong, S., Stewart, D., Rigby, P. and Letts, L. (1996). The Person-Environment-Occupation Model: A transactive approach to occupational performance. *Canadian Journal of Occupational Therapy*, 63: 9-23.
- Liebowitz, J. (2012). The knowledge management handbook (2<sup>nd</sup>Edn.). In Liebowitz, J. (Ed.), *Collaboration and social networking: The keys to knowledge management – Introductory thoughts* (pp. 1-10). Boca Raton, FL: CRC Press.
- Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance*, 3, 157-189.
- Locke, E., Shaw, K., Saari, L. and Latham, G. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin*, 90: 125-152.
- Maenapothi, R. (2007). *Happiness in the workplace indicator*. (unpublished master dissertation). Human Resource Development National Institute of Development Administration.
- Mahathir, M. *Malaysia: The way forward*. Paper presented at the First Plenary Meeting of the Malaysian Business Council, Kuala Lumpur
- Makhbul, Z. M. (2013). The effects of commitment, health and occupational stressors on individual productivity: The case of Malaysian Research Universities, 3(2): 12–27.
- Malaysia Plan, various publications.
- Malaysia. (2010). Tenth Malaysia Plan (2011-2015). Speech by the Prime Minister in the Dewan Rakyat on 10<sup>th</sup> June 2010.
- Maslow, A. (1954). *Motivation and personality*. Harper and Row, NY: McCelland,
- Massy, William F. (1996). *Resource Allocation in Higher Education*. Ann Arbor: University of Michigan Press.
- McHugh, M.L. (2013). The Chi-square test of independence. *Biochem. Med* 23(2): 143-149. Doi: 10.11613/BM.2013.018

- Merton, R. K. (1973b). The normative structure of science. In N. W. Storer (Ed.). *The sociology of science: Theoretical and empirical investigations* (pp. 267–278). Chicago: University of Chicago Press
- Merton, R.C. (1973). The theory of rational option pricing, *The Bell Journal of Economics and Management Science* 4, !41-183.
- Ministry of Education. (2014a). *National education statistic: Higher education sector 2013*. Putrajaya, Malaysia: MOE.
- Ministry of Higher Education. (2004). *Establishment of Research Universities in Malaysia*: Concept paper. Kuala Lumpur: MOHE.
- Ministry of Higher Education. (2008). *Perangkaan Pengajian Tinggi Malaysia Tahun 2008*. Putrajaya, Malaysia: Bahagian Perancangan dan Penyelidikan, Jabatan Pengajian Tinggi.
- Ministry of Higher Education. (2011). MOHE implementation plan for development of innovative human capital tertiary level. Available at: [www.mohe.gov.my/portal/images/utama/penerbitan](http://www.mohe.gov.my/portal/images/utama/penerbitan) (accessed 29 August 2012).
- Ministry of Higher Education.(2007). National Higher Education Strategic Plan Beyond 2020. Putrajaya: Ministry of Higher Education Malaysia.
- Moed, H.F., Burger, W.J.M., Frankfort, J.G., and WanRaan, A.F.J. (1984). The use of bibliometric data for the measurement of university research performance. *Research Policy and Science Studies Unit*.Bureau Universiteit, University of Leiden, The Netherlands. November 1984.
- Mohamad Shakir Ramli and Ahmad Jusoh (2015). Expectancy Theory analysis to conduct research at Malaysian research university. *International Journal of Economics and Financial Issues*,5(special issue): 366–372.
- Moravcsik, M. J. (1985). Applied scientometrics: an assessment methodology for developing countries. *Scientometrics*, 7(3–6): 165–176
- Motowidlo, S. J., Borman, W. C. and Schmit, M. J. (1997). A theory of individual differences in task and contextual performance. *Human Performance*, 10: 71–83.
- Mullen, C. A., Murthy, U., and Teague, G. (2008). Listening to Those We Serve: Assessing the Research Needs of University Faculty. *The Journal of Research Administration*.

- Murray, B., and Ann, M.R. (2004). Personality and work: Reconsidering the role of personality in organisation. In the happy worker hypotheses about the role of positive affect in worker productivity. Richard, E. & Ed Diener (Eds). John Wiley and Sons, pp. 30–59.
- Nadler, D. and Lawler, E. (1977). Motivation: a diagnostic approach. In R. Steers and L Porter (eds). *Motivation and Work Behavior*. McGraw Hill, NY.
- Nasiibah Ramli, Zinatul A. Zainol, Junaidi Abdul Aziz, Hasani Mohd. Ali, Jady Hassim, Wan Mohd. Hirwani Wan Hussein, Ruzian Markom, Wan Siti Adibah Wan Dahalan, and Noor Inayah Yaakob (2013). The concept of Research University: The implementation in the context of Malaysian university system. *Asian Social Science*, 9(5): 307-317. Doi: 10.5539/ass.v9n5p307
- Ngah, Z. A. (2001). *Exploring the factors related to academic publication productivity among selected Malaysian academic engineers and scientists*. (PhD thesis). Loughborough University, Leicestershire.
- Nik Mustapha, R.A. (2008). UPM intensifies and nourishes Malaysia's lifelong learning process. *Malaysia Progress*, 16 September 2008, 30-32.
- Noor A., and Ismail N. H.(2016). Occupational stress and its associated factors among academicians in a research university, Malaysia. *Malaysian Journal of Public Health Medicine*, 16 (1): 81-91.
- Noordin, F. and Jusoff, K. (2009). Levels of job satisfaction amongst Malaysian academic staff. *Asian Social Science*, 5(5): 122. Doi: 10.5539/ass.v5n5p122
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- OECD, (2003). Turning Science into Business, Patenting and Licensing at Public Research Organisations. OECD, Paris.
- Omar, Z., and Ahmad, A. (2014). Factors contributing to research team effectiveness: Testing a model of team effectiveness in an academic setting. *International Journal of Higher Education*, 3(3): 10–26. Doi: 10.5430/ijhe.v3n3p10
- Orpen, C. (1996). Dependency as a moderator of the effects of networking behavior on managerial career success. *The Journal of Psychology: Interdisciplinary and Applied*, 130(3), 245-248. Doi: 10.1080/00223980.1996.9915006

- Osberg, T. M., and Raulin, M. L. (1989). Networking as a tool for career advancement among academic psychologists. *Teaching of Psychology*, 16(1), 26-28. Doi: 10.1207/s15328023top1601\_9
- Oshagbemi, T. (1997). Job satisfaction and dissatisfaction in higher education. *Education and Training*, 39(9): 354-359.
- Pelz, D. C., and Andrews, F. M. (1966). Scientists in organizations: Productive climates for research and development. John Wiley.
- Perkmann, M. and Walsh, K. (2008). Engaging the scholar: Three types of academic consulting and their impact on universities and industry. *Research Policy*, 37(10): 1884–1891. Doi: 10.1016/j.respol.2008.07.009
- Perkoff, G.T. (1986). The research environment in family practice. *Journal of Family Practice*, 21:389-393.
- Quinones, M. A., Ford, J. K. and Teachout, M. S. (1995). The relationship between work experience and job performance: A conceptual and meta-analytic review. *Personnel Psychology*, 48: 887–910.
- Richard A. Swanson, Elwood F. Holion III (2001). Foundations of human resource development. Berrett-Koehler Publisher, Inc. San Francisco
- Rentocchini, F., D'Este, P., Manjarrés-Henríquez, L. and Grimaldi, R. (2014). The relationship between academic consulting and research performance: Evidence from five Spanish universities. *International Journal of Industrial Organization*, 32(1): 70–83. Doi: 10.1016/j.ijindorg.2013.11.001
- Roca, J., Bikfalvi, A., Simon, A. and Alcoba, O. (2011). Knowledge transfer management as a tool for enhancing research teams performance. *Proceedings of EDULEARN11 Conference*. 4-6 July 2011, Barcelona, pp. 4854-4861.
- Rodell, J. B. (2013). Finding meaning through volunteering: Why do employees volunteer and what does it mean for their jobs? *Academy of Management Journal*, 56: 1274-1294
- Rosenberg, N., Nelson, R.R. (1994). American universities and technical advance in industry. *Research Policy*, 23:323–348.
- Rothwell, J.W. (2002). *The workplace learner*. American Management Association, New York.

- Rowley, J. (1996). Motivation and academic staff in higher education. *Quality Assurance in Education*, 4(3): 11-16.
- Ruttan, R.L. and Nordgren, L.F. (2016). The strength to face the facts: Self-regulation defends against defensive information processing. *Organizational Behavior and Human Decision Processes*, 137: 86-98. Doi:10.1016/j.obhdp.2016.06.006
- Ryser, L., Halseth, G., and Thien, D. (2009). Strategies and intervening factors influencing student social interaction and experiential learning in an interdisciplinary research team. *Research in Higher Education*, 50(3): 248–267. Doi:10.1007/s11162-008-9118-3
- Sadeghi, A., Zaidatol, A. L. P., Habibah, E. and Foo, S. F. (2012a). Demographic analysis on academic staff's job satisfaction in Malaysian research universities. *Pertanika Journal of Social Science and Humanities*, 20(suppl.): 1–20.
- Said, A. A., Rasdi, A. M., Samah, B. A., Silong, A. D., and Sulaiman, S. (2015). A career success model for academics at Malaysian research universities. *European Journal of Training and Development*, 39: 815– 835. Doi:10.1108/EJTD-03-2015-0022
- Sam Ching Pey (2009). Research Environment of Malaysian Private HEIs: Features, Funding and Policy Implication. Paper presented at Asia-Pacific Sub-regional Preparatory Conference for the 2009 World Conference on Higher Education in Facing Global and Local Challenges: the New Dynamics for Higher Education, Macau PR China, 25-26 September, 2008.
- Sarunya Lertputtarak (2008). *An Investigation of factors Related to Research Productivity in a Public University in Thailand: A Case Study*. (unpublished doctoral dissertation). Victoria University, Melbourne, Australia.
- Severson, J. A. (2004). Models of university–industry cooperation. *Journal of Industry–Academia–Government Collaboration*, 2: 1–6
- Shane, S., and Cable, D. (2002). Networking ties reputation and the financing on new ventures. *Management Science*, 48(3): 364-381.
- Shen, H. (2007). Challenges on the academic profession development posed by the changing doctoral education in China. In M. Kogan, & U. Tiechler (Eds). *Key challenges to the academic profession* (pp. 125-144). Kassel, Germany: International Centre for Higher Education Research.

Slack, N., Chambers, S. and Johnston, R. (2001), *Operations Management*, 3rd ed., Prentice-Hall, Harlow.

Smart, W. (2008). *The impact of the performance-based research fund on the research productivity of New Zealand Universities*. (unpublished doctoral dissertation). Auckland University of Technology.

Sonnentag, S. (2002). Psychological management of individual performance. In Sonnentag, S. (ed.). John Wiley and Sons, Ltd. *Performance Concept and Performance Theory*. pp. 3–25.

Sonnentag, S. and Frese, M. (2002). Performance concepts and performance theory. *Psychological Management of Individual Performance*, 1–25. Doi: 10.1002/0470013419.ch1

Sousa, J.M.De and Porto, J.B. (2015). Happiness at work: Organizational values and Person-Organization Fit Impact. *Paidéia*, 25(61): 211–220. Doi: 10.1590/1982-43272561201509

Srikanth, P. B., Israel, D., (2012). Career Commitment & Career Success: Mediating Role of Career Satisfaction. *Indian Journal of Industrial Relations*, 48(1), 137-149.

Staw, B. (1984). Motivation research versus the art of faculty management, college and university organization. In *The Behaviour Sciences*, pp 63-83.

Stephen. (2010). Asian Initiatives on Bayh- Dole, With Special Reference to India: How do we make it more “Asian?”. 10 Chi.-Kent J. Intell. Prop, 44.

Summers, T., and Hendrix, W. (1991). Modelling the role of pay equity perceptions: A field study. *Journal of Occupational Psychology*, 64: 145–157.

Taylor, J. (2001). The Impact of Performance Indicators on the Work of University Academics: Evidence from Australian Universities, *Higher Education Quarterly*, 55(1): 42–61

Taylor, M., Lockes, E. and Gist, M. (1984). Type a behaviour and faculty research productivity: What are the mechanism? *Organizational Behaviour and Human Performance*, 34: 402-418.

The Star (2017, June 8). Five Malaysian public research varsities listed in top 1% universities worldwide. *The Star Online*, <https://www.thestar.com.my/news/nation/2017/06/08/malaysian->

universities-surge-in-world-rankings/#KA0HLsul4BxGEGG9.99

Thursby, J. G., and Thursby, M. C. (2007). University Licensing. *Oxford Review of Economic Policy*, 23(4): 620-639. Doi:10.1093/oxrep/grm031

Thursby, J.G. and Thursby, M.(2004). Are Faculty Critical? Their Role in University--Industry Licensing

Tom, R. and Jim, H. (2010). The five essential elements of wellbeing. *Business Journal*, May 4, 2010. [www.gallup.com/businessjournal/](http://www.gallup.com/businessjournal/)

Tural, N.K. (2007). Universities and academic life in Turkey: Changes and challenges. *International Journal of Educational Policies*, 1(1): 63-78.

University of Nevada, Las Vegas. *Faculty Workload Report*, 2010.

Vancouver, J., Thompson, C. and Williams, A. (2001). The changing signs in the relationships among self-efficacy, personal goals, and performance. *Journal of Applied Psychology*, 86: 605-620.

Vasil, L. (1992). Self-efficacy expectations and causal attributions for achievement among male and female university faculty. *Journal of Vocational Behaviour*, 41: 259-269.

Veugelers, R., Cassiman, B. (2005). R&D cooperation between firms and universities: Some empirical evidence from Belgian manufacturing. *International Journal of Industrial Organisation*, 23(5–6):355–379.

Vroom, V. (1964). *Work and motivation*. Wiley, NY.

Weigley, Samuel, and Hess, Alexander E.M. (2013). Universities Getting the Most Government Money. September 2013, from <https://247wallst.com/investing/2013/04/25/universities-getting-the-most-government-money/>

White Paper Using Bibliometrics. A guide to evaluating research performance with citation data. Thomson Reuters (2008).

Wolff, H.-G., & Moser, K. (2006). Entwicklung und Validierung einer Networkingskala (Development and validation of a networking scale). *Diagnostica*, 52, 161–180.

Wolff, H.-G., Moser, K., and Grau, A. (2008). Networking: Theoretical foundations and construct validity. In J. Deller (Ed.), *Readings in applied*



*organizational behavior from the Lüneburg Symposium* (pp. 101–118). München, Germany: Rainer Hampp.

Wong, E. S.K., and Teoh, N. H. (2009). Case study of factors influencing jobs satisfaction in two Malaysian universities. *International Business Research*, 2(2): 86 – 98.

Wood, F. (1990). Factors influencing research performance of university academic staff. *Higher Education*, 19(1): 81–100. Doi: 10.1007/BF00142025

World Bank. (2000). Higher education in developing countries: Peril and promise the task. *Foaydirnce on Higher Education and Society*. Washington: The World Bank.(ISBN:0-8213-4630-X).

World Economic Forum Annual Meeting (2012). Well Being and Global Success. Jan 25-29, Davos, Switzerland.

Zaidatol Akmaliah Lope Pihie, Amir Sadeghi, Habibah Elias, (2011). Analysis of head of departments leadership styles: Implication for improving research university management practices. *Procedia - Social and Behavioral Sciences*, 29: 1081–1090.

Zainab, A.N. (1999). Personal academic and departmental correlates of research productivity: A review of literature. *Malaysian Journal of Library and Information Science*, 4(2): 73-110.