THE INFLUENCE OF JOB DEMAND-RESOURCES (JD-R) MODEL ON WORK ENGAGEMENT AMONG NORTHERN REGION PUBLIC UNIVERSITIES ACADEMICS

BY

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ABSTRACT

The aim of this study was to examine the influence of personal resources (Big-Five personality), job resources (autonomy, social support, and performance feedback) and job demand (workload and emotional demand) on work engagement among academic staff in Northern region universities in Malaysia. This study indicates new contribution in Job Demand-Resources (JD-R) model by treating Big Five personality traits as personal resources. The study is cross-sectional and quantitative in nature. Questionnaire was utilized to collect the data from one hundred and thirty-two academic staff using purposive sampling technique. Data collection was administered using on-line (SurveyMonkey) distribution through official e-mail ID among academic staff of three selected universities that located within Northern region which are Universiti Sains Malaysia (USM), Universiti Utara Malaysia (UUM) and Universiti Teknologi MARA (UiTM) Seri Iskandar. The data was analysed using Statistical Package for Social Science (SPSS) 24. Data were analyzed using different statistical techniques such as descriptive of variable analysis, reliability analysis, normality analysis, and inferential analyses (Pearson Correlation analysis and Multiple Linear Regression analysis). The findings of this study revealed mixed results, that personal resources (Big-Five personality) and workload (Job-Demand) are significant to work engagement, while the rest independent variables are not predicting work engagement among academic staff in respective universities. Hence, the study concludes that for effective work engagement to be improved, the level of motivation from various dimension need to be improvised. This would help to ensure the sustainability of academics as well the universities itself besides able to enhance the understanding on JD-R model in a new dimension.

Keywords: *Work Engagement, Personal Resources, Job Resources, Job Demand, Academician*

ABSTRAK

Tujuan kajian ini adalah untuk mengkaji pengaruh sumber peribadi (Big-Five personality), sumber pekerjaan (autonomi, sokongan social dan maklumbalas prestasi) dan permintaan pekerjaan (bebanan kerja dan permintaan emosi) terhadap penglibatan kerja dalam kalangan staf akademik di universiti yang terletak di kawasan wilayah Utara Malaysia. Kajian ini memberi idea baru dalam model JD-R dengan mengaplikasikan ciri personaliti Big Five sebagai sumber peribadi. Kajian ini bersifat *cross-sectional* dan kuantitatif secara amnya. Soal selidik penyelidikan diguna bagi mengumpul data maklumat dari serratus tiga puluh dua staf akademik menggunakan persampelan *purposive*. Data dikumpul secara atas talian (SurvryMonkey), pengedaran dibuat ke alamat e-mail staf akademik bagi tiga unversiti terpilih yang terletak di wilayah Utara Malaysia, iaitu Universiti Sains Malaysia (USM), Universiti Utara Malaysia (UUM) and Universiti Teknologi MARA (UiTM) Seri Iskandar. Data diinterpretasi menggunakan Statistical Package for Social Science (SPSS) 24. Data dianalisis menggunakan teknik statistik yang berbeza seperti analisis deskriptif, analisis kebolehkepercayaan, analisis normalisasi dan analisis kesimpulan (analisis korelasi Pearson dan analisis Regresi). Dapatan kajian menunjukkan keputusan yang bervariasi, iaitu sumber peribadi (Big-Five personality) dan bebanan kerja (permintaan kerja) penting terhadap penglibatan kerja, manakala pembolehubah lain tidak meramalkan penglibatan kerja dalam kalangan staf akademik di universiti-universiti tersebut. Sehubungan itu, kajian ini menyimpulkan bahawa bagi memperbaiki penglibatan pekerjaan, tahap motivasi dari pelbagai dimensi perlu diperbaiki. Ia akan membantu dalam memastikan kemampanan akademik dan universiti itu sendiri selain meningkatkan pemahaman mengenai model JD-R dari dimensi baru.

Kata Kunci: *Penglibatan Kerja, Sumber Peribadi, Sumber pekerjaan, Permintaan Pekerjaan, akademik*

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LIST OF ABBREVIATION

AACSB	Association to Advance Collegiate Schools of Business
BFI	Big Five Inventory
COR	Conservation of Resources
HE	Higher Education
HEI	Higher Education Institution
IR 4.0	Industrial Revolution 4.0
JD-R	Job Demand-Resources Model
KPT	*Kementerian Pengajian Tinggi*
SET	Social Exchange Theory
SPSS	Statistical Package for Social Science
UiTM	Universiti Teknologi MARA
USM	Universiti Sains Malaysia
UUM	Universiti Utara Malaysia
UWES	Utrecht Work Engagement Scale
VIF	Variance Inflated Factor
WE	Work Engagement

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter encompasses variables understudy (work engagement, personal resources, job resources and job demand), bounded with sub-section of study background, problem statements, research objective, research questions, study significance, study scope and together with definition of key terms applied.

1.1 Background of The Study

21st Century has brought various new trends across industries that changed working style and environment to be modern organization. Undeniable that technologies were synonym with the growth of a business, which require frequent and up-to-date changes of business with the benefits of technology, at the same time employees are busy in developing themselves to be align with job requirement which consequently increase business overall.

Technology developments here highly reflects the innovation of Industrial Revolution 4.0 (IR 4.0) which bring major changes in work flow that vanish former style and replaced with new way of working. Many books were explained the interplay significance of business and technology (Norman, 1998; Lessig, 2008; Varian & Farrell 2004; Berkun, 2010).

The IR 4.0 revolution is the mirror to the term disruption. The era of disruptive was started to discuss almost 20 years ago and has been investigate in several specific aspects of disruption but till now there is no one clear definition (Kilkki, Mantyla, Karhu, Hammainen & Ailisto, 2018). Moore (1991) coined disruption technologies as the reason of discontinuous of

innovation which require people to change behavior to make full use of innovation. Its rationally lead to change their work attitude. In this case, work engagement of employee become an issue because to make an employee be engage in their work, it is not plain sailing especially in this disruptive era that require lots of efforts from surrounding.

Prior establishment of engagement theory (personal engagement) by Kahn (1990, p. 694), which defined it as the "harnessing of organization member's selves to their work roles. In engagement, people employ and express themselves physically, cognitively and emotionally during role performances. This theory has expanded in multi-level and exposed numerous perceptions on engagement, thus led to the outcome of current study, work engagement.

A positive, fulfilling, motivational state of mind characterized by vigor, dedication and absorption was defined as work engagement in academic perspective (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002). The positivity, fulfilling-ness and motivational of mind will bring an employee to be engaged in work as they feel satisfied and happy. While, from consultant perspective, work engagement was perceived as the engagement of employees' head, heart and hands that work together during role performance. To make this in reality is an issue due to different influences one face. Thus, work engagement was found to be a problem across industries and education institution is no exception. The challenges posed by IR 4 to Higher Education Institutions (HEIs) and academicians was profound.

Academicians who are the backbone of university development are the university's assets and competitive advantage, which could not be imitated or cloned by competitors. Alzyoud, Othman, and Isa (2014) coined that organizations become more convinced that staff engagement is the secret to maintaining the business success and profitability. However, due

to many work requirements cause employees to leave the organization besides the pressures from top management. As mentioned by Basarudin Yeon, Yacoob and Rahman (2016) that academician apart from teaching and learning, they are required to produce more research paper on their respective fields with the purpose and intention to lift university rank higher. This could lead them to excessive stress or burnout.

As enhanced by Wefald, Mills, Smith and Downey (2012), to measure an employee's being presence psychologically together with their involvement in work may gain through engagement, as it is the job attitude that be measured. There is an increase interest to study the linkage between personality and work engagement (Akhtar, Boustani, Tsivrikos & Chamorro-Premuzic, 2014). Thus, Robertson and Cooper (2010) explained that to understand better how and why individuals become engage with their work, there is a practical and theoretical needs in improving employee's well-being and organization's performance in future.

The availability of resources at job, demands of a job and employee's personality influence one engagement tendency in an organization. The needs and important of this study is due to present scenario in organization which assume their employee to be proactive as to be align with technologies development of IR 4.0. Supported by Bakker and Demerouti (2008), employees who are energetic, dedicated and engaged are the ones companies want to hire and retain. However, there are no high considerations of differences on employee's demand and personality with the resources offered that influencing their work engagement level. As work engagement is intending to study, researcher imply Job Demand-Resources model (JD-R model) for this study, as the model discuss about employees' work engagement and burnout. Many studies that discuss on work engagement were implant the fashion of JD-R model in various frame (Altunel, Kocak & Cankir, 2015; Alzyoud et al., 2014; Bakker & Demerouti,

2008; Choi, 2013; Othman, 2016; Sukhri, 2015; Yusof, 2016). Hence, it led researcher to conduct slightly similar study in educational setting.

In this study, researcher concentrate on personal resources (Big Five personality), job resources (autonomy, social support and performance feedback), and job demands (workload and emotional demand). The study was conducted among academics from public universities located in northern region of Malaysia.

1.2 Problem Statement

Business is viewed as main activity in worldwide that offers multi-dimension of better improvement. Employee's contribution and involvement to the business activity provides greater output derives from their engagement in performing duties. Thus, issue of work engagement can be considered as global phenomenon that affects the society well-being and reputation. As stated by Guest (2014), that there is skyrocketing interest among organizations and academics on work engagement topic. Besides, Bakker and Demerouti (2007) state that the work engagement concept gained attention from human resources and organizations because of their performance outcome.

Across the globe, conglomeration of technology developments and high workload become an issue to employee to be engaged with work and the severity of the issues were identified when Gallup, a consulting firm has done an extensive and in-depth research on employee's engagement. 17 million employees across industries were involved in the study (Gallup, 2016). They came out with the statistic for United States (US) that revealed 50.8% of employees are not engaged. Previously, the same firm had done survey in United Kingdom (UK) and found 57% of employees are not engaged and the worst is 26% of employees is actively disengaged, the remaining 17% of employees who are engaged with their work (Allen, 2014). Moreover, Aon (2018), state the level of employees' engagement for employees around Asia Pacific was drop by 2% (59%) compared to year 2016 at 61%, (Trends in Global Employee Engagement Report).

In Malaysian context, Workday and IDC market advisory had done a survey on employee engagement and found Malaysians are the most least engaged professionals in Asian Markets

and Asia Pacific. The results indicate that just 23% of Malaysian are engaged and satisfied with work, while remaining 77% of employees are disengaged, (Dewan, 2016).

Apart from engagement level, the surprising part is Malaysia is going to face 65% of losing current job by year 2027 due to the factor of unfit to technology revolution 4.0, expressed by Human Resource Development Fund chief executive (The Star Online, 17th July 2017). The education sector is also of no exception when come to work engagement issue. Researcher believed IR 4.0 has affected education system in many developing and developed countries especially in Malaysia. Thus, the revolution leads Malaysian government to initiate the concept of Education 4.0. Embracing digital technology is what it is all about in education 4.0, and government's aspiration is to develop tech-savvy nation. Moreover, Higher Education Minister Datuk Seri Idris Jusoh said that universities need to prepare in facing changes and challenges of technology and enhance that educators have to keep up with the fast pace of revolution (Rajaendram, 2018).

The analysis of redesigning higher education done by Ministry of Higher Education in year 2018, came out with multi dimension to look into HE 4.0 as the fundamental were redesigned, such as in the aspect of redesigning teaching and learning (more active, interactive, immersive, challenge-based role play and self-directed learning), digital innovation (artificial intelligence, big data, virtual, augmented and mixed reality), translational research (global prominence, blockbuster research), resources (industry and practitioners in HE, unlocking assets, corporate alliances, alumni, education and training), jukebox education (beyond campuses and borders) and so on. To cater these demands for advanced studies, academics need to be alert on current education trend and for that they are required to engaged in order to perform as well develop students to meet industrial requirements. Hence, the engagement level is questionable due to

little number of academics to cope with huge number of students at a time (refer Figure 1.1). As a result, institutions are facing challenges to make academics engaged.

Table 8.6 Student and Academic Staff Ratio at Public Higher Education Institutes

Acedemic Staff (A)*	Enrolment (B)**	Ration (A:B)
31,712	532,049	1:16.8

Note : * Academic Staff - data as of 31st December 2016
** Enrolment - data as of 31st October 2016
Source : Planning, Research and Policy Coordination Division, Ministry of Higher Education

Figure 1.1
Student and academic staff ratio at Public Education Institution 2016

The theoretical issues captured that work engagement becomes the focus of business practitioners, academic researchers and governments. According to Rahman and Avan (2016), high workload among academic staff is unreasonable although willingness of organization to pay more is increasing too. The authors added that universities tend to require their academic staff to undertake supportive administrative work besides their job description. This led to shortage of time for those academics in carrying their teaching and research works, supported by Basarudin et al., (2016) coined that the additional work assigned to academician takes their time away from doing their research activities. Eventually, it increases high stress level among academics and ultimately affect their motivational and performance besides lower work engagement (Sajid & Shaheen, 2013).

Macey and Schneider (2008); May, Gilson and Harter (2004) state that individuals who are engaged to work are expected to show high levels of energy, be enthusiastic on their work, and fully immersed so that their time flies. However, the inability of employees to be energetic and high neuroticism has the consequences to low level of work engagement, probably due to mismatch between personality and existing of stressing factors. Enhanced by Xanthopoulou, Bakker Demerouti, and Schaufeli (2009) that there are certain personality dimensions which

reflect a propensity for engagement due to behavioural characteristics. Particularly, prior evidence from the study suggests that high extraversion, agreeableness, conscientiousness and openness to experience and as well low in neuroticism relate to high level of work engagement.

Schreurs, Cuyper, Emmerik, Notelaers, and Witte (2011) noted that every work has its own specific risks that associated with job stress. Researcher bear this in mind and try to come out with widely used well-being theory (JD-R Model) to investigate the work engagement level of academics. Literatures explained the model has two process namely health impairment process and motivational process. However, the model does not specify factors that accurately lead to job strain or motivation. Yet, Schreurs, et al., (2011) mentioned generally that job strain and motivation can be categorize into two: job resources and job demand. Aarabi, Subramaniam and Akeel (2013) pointed that administration should consider on motivating employees to execute their tasks efficiently and effectively as possible in order to improve employee's engagement and performance. It explains that motivation is essential as it plays significant role on employee's behaviour in positive ways. Anything that function in boosting employee's energy is known as job resource. Similarly, job demands also play significant role in determining one's engagement in work and organization. Practically, high job demands may turn one into job stress which consequently leads to work disengagement. Unfavourable work environment, high work pressure, and emotional demands are some example for job demands (Bakker & Demerouti, 2007).

This study attempts to investigate the influence of variables understudy namely personal resources (Big Five personality), job resource (autonomy, social support and feedback performance), and job demand (workload and emotional demand) on work engagement among academics in public university of Malaysia.

1.3 Research Questions

This research was conducted to examine the relationship between personal resources, job resources and job demands on work engagement among Malaysian public universities' academics. Therefore, this study was undertaken to answer the following questions:

1.3.1 Does personal resources (Big-Five personality) related to work engagement?

1.3.2 Does job resources (autonomy, social support and performance feedback) related to work engagement?

1.3.3 Does job demand (workload and emotional demand) related to work engagement?

1.4 Research Objective

A research objective is an essential element in a research as it is a main guidance for the researcher to clear about the purpose of the research being conducted. As for that, this research is attempted to focus on the following research objectives:

1.4.1 To examine the influence of personal resources (Big-Five personality) and work engagement.

1.4.2 To examine the influence of job resources (autonomy, social support and performance feedback) and work engagement.

1.4.3 To determine the influence of job demand (workload and emotional demand) and work engagement.

1.5 Significant of Study

This study is significant theoretically and practically. The significance value of this study contribution should be expressed in research to ensure the importance and benefits of the study

were exposed to responsible authorities. The study explores academics work engagement in HEIs based on JD-R model together with new collaboration of personal resources namely Big Five personality traits (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience) on work engagement. This make the study slightly different from previous studies on work engagement particularly within the Malaysian academics' context.

Theoretically, this study expands the contribution to the body of knowledge on variables understudy. Since there is new contribution on personal resources dimension, researcher believes it would be a significant contribution to literatures which enable to enhance readers understanding on JD-R model.

Practically, this study is able to provide a significant contribution to university policy maker or Ministry of Higher Education by grasping the idea to reconstruct existing policy to be more efficient in making academics engaged. With this, the whole Malaysian academics may be able to taste new working approaches that lead to high engaged employees which ultimately leads the organization to be succeed and consequently academics are satisfied and happy during role performance.

1.6 Scope of The Study

This study was conducted in three northern regions (Penang, Kedah and Perak) public universities consist of Universiti Sains Malaysia, Universiti Utara Malaysia and Universiti Teknologi Mara, Seri Iskandar. Permanent academics staff from various categories such as professors, associate professors, senior lecturers and lecturers were chosen as respondents in the study. The studied variables involve personal resources, job resources, and job demands as independent variables and work engagement as the dependent variables.

1.7 Definition of Key Terms

Work engagement

Work engagement referred as a positive, fulfilling, and work-related state of mind that is characterized by vigor, dedication and absorption. (Schaufeli, Salanova, González-Romá & Bakker, 2002).

Personal Resources

Personal resources in this study referred to Big Five Personality (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience) and is measured by using global rating. The definition of each traits below was adapted from John and Srivastava (1999).

i. **Extraversion** is the tendency to seek company of others, represent the tendency of being sociable, active, upbeat, assertive, optimistic and talkative.
ii. **Agreeableness** is the tendency to be trusting, compliant, caring, considerate, generous and gentle.
iii. **Conscientiousness** is socially prescribed impulse control that facilitates task- and goal-directed behavior.
iv. **Neuroticism** referred as people who at low end of neuroticism is emotionally stable and even tempered.
v. **Openness to experience** is the tendency to be imaginative, sensitive, original in thinking, attentive to inner feelings, appreciative of art, intellectually curious, and sensitive to beauty.

Job Resources

Job resources refer as aspects of the job that may do any of the following, be functional in achieving work goals, able to reduce job demands and the associated physiological and psychological costs and stimulate personal growth, learning and developments (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Under job resources, three dimensions were identified in this study:

i. **Autonomy** refers to the extent of freedom, independence, and discretion of an employee to plan his/her work pace and method (Karasek, 1985).

ii. **Social support** is referred as overall levels of helpful social interaction available on the job from co-workers and supervisors (Karasek & Theorell, 1990).

iii. **Performance feedback** refers to the extent to which an employee knows his or her own job performance from the job itself, colleagues, supervisors, or customers (Sims, Szilagyi & Keller, 1976).

Job Demand

Job demand refer as physical and psychological elements of stress factors that influence on how employees are able to manage excessive work, unexpected assignment or work conflict (Taipale, Selander & Anttila, 2011). Under job demands, two dimensions are identified in this study:

i. **Workload** is the pace and amount of work to be done under time restriction and pressure (Euwena & Bakker, 2009).

ii. **Emotional Demand** referred as employees' effort to manage personal emotions as well the job-related situations that provoke an emotional response, such as tension and suppression (Van Riet & Bakker, 2008).

1.8 Organization of Dissertation

This chapter has provided overview and discussion of research background, problem statement, research questions, research objectives, scope of the study, significant of study, definition of key terms and organization of dissertation report.

Chapter two describes on the arguments and discussion from past literatures related to this study's constructs. Begin with introduction, dependent variable (work engagement), and followed by the three independent variables namely, personal resources, job resources and job demand, covered by underpinning theories, and research framework. Hence, six hypotheses have been formulated based on literatures discussion.

Chapter three indicates the exact steps that was undertaken to address the hypotheses and research questions. Explanation on research design, study's population and sample size, sampling technique, data collections procedure, e-questionnaire layout, goodness of measurement, measurement of variables, and statistical design and analysis that will be conducted to test the proposed framework.

Chapter four revealed the current study's finding through data analyses. Lastly, chapter five emphases on discussion of overall study and summarize the implications to knowledge and practice of study conducted, and suggestion for future research. The recommendation will focus on how university's policy maker and Malaysian HEIs may improve academics work engagement in disruptive era.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter accumulated previous studies by highlighting the purpose of research and important quotations. The anthology of literature was focusing in defining concepts and review the relationship among variables. The organization of this paper starts with work engagement, followed by personal resources (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience), job resources (autonomy, social support and performance feedback), job demands (workload and emotional demand) and finishing with summarization of whole discussion. This review is intended to enhance better understanding among readers.

2.1 Conceptual Background of Engagement

Engagement is relatively broad in its' own coverage and numbers of definitions have been provided for the named concept. Although the term engagement seems very clear at first glance, a closer focus on its literatures reveals the distinctive operationalization of the concepts. Kahn (1990; 1992) who was originally came out with the idea of engagement, defined engagement as "the harnessing of organization members' selves to their work roles; people employ and express themselves physically, emotionally and cognitively during role performance". On the other hand, Kahn refers disengagement as "the uncoupling of selves from work roles; where people withdraw and defend themselves physically, cognitively, or emotionally during role performances in disengagement". In other words, Kahn perceive engagement to be psychologically one present when occupying and performing their organizational role and in similar vein if one disengaged, they psychologically withdraw their self from work. Kahn used the terminology of personal engagement in referring to his study of engagement concept.

The antecedents of Kahn's study were started with three-factor model of personal engagement explaining that employee's engaged with work by depending on their psychological stability level (meaningfulness, safety, and availability) in academic sector. However, after 14 years later, May, et al., (2004) introduce new measure of employee engagement on insurance sector's employees besides the only researchers that took Kahn (1990, 1992) the three-factor model engagement concept and reinforce with additional contribution. Yet, there are limited studies were used the original term (personal engagement), when referring to concept of engagement (Saks, 2006; Schaufeli, 2013). There are many different contexts in explaining engagement when researchers discuss on the term adapted from Kahn such as employee engagement, job engagement and work engagement, (Eldor, 2016; Iddagoda, Opatha & Gunawardana, 2016; Knight, 2011; Malinen, Wright & Cammock, 2013).

Within 7 years of Kahn's research establishment, there are new introductions to academic circle in testing employee engagement, at least three approaches to be studied theoretically, job engagement (Maslach & Leiter's, 1997), work engagement (Schaufeli, et al., 2002), and self-engagement (Britt, 1999). Maslach, Schaufeli & Leiter, (2001) states engagement is characterized by energy, involvement and efficacy, the three direct opposite dimensions of burnout namely, exhaustion, cynicism and inefficacy as the authors perceive engagement with those dimensions. On the other hand, Saks (2006) declared that employee engagement includes two categories namely, job and organization engagement. This shows that the induction of engagement depends on the author(s) interest and on the needs of study itself (refer Table 2.1). Additionally, all the concepts been studied in both cross-sectional and longitudinal studies across time such as (Alzyoud et al., 2014; Bakker & Demerouti, 2008; Choochom, 2016; Maslach & Leiter, 1997, 1998).

Table 2.1
Terminology of Engagement

Terms	Author(s)	Year	Definition
Personal Engagement	Kahn	1990; 1992	The harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances.
Employee Engagement	Harter, Schmidt & Hayes	2002	Employee engagement refers to the individual's involvement and satisfaction with as well as enthusiasm for work.
Job Engagement	Leiter & Maslach	1998 (p.203)	An energetic state of involvement with personally fulfilling activities that enhance one's sense of professional efficacy.
Work Engagement	Schaufeli, et al.,	2002	As a positive, fulfilling, motivational state of mind characterized by vigor, dedication, and absorption.
Organizational Engagement	Saks	2006	Organizational engagement showed stronger predictive utility than job engagement towards organizational outcomes like organizational citizenship behavior.

The concepts drive unique ideas to researchers to went in-depth on mentioned construct and perceive from different perspectives. Many lessons to be learned about engagement especially when some researchers disagree with the definitions and measurements of engagement, (Bakker, 2011). However, at the end of the day when researcher try to summarize and find which term will be suitable in this study, found that all the meaning leads to positive definition on employee's feeling and heart lighten when the employee wants to be engaged with their

work, and no extra added value for other terms, as mentioned by Macey and Schneider (2008) that engagement is like putting old wine in new bottle. Since the past 28 years, it yielded multiple concept, personal engagement, job engagement, work engagement and as well employee engagement which was used interchangeably, researcher prefer work engagement to act as dependent variable in this study. It refers to the definition of Schaufeli et al., (2002) that engagement is a positive, fulfilling, motivational state of mind characterized by vigor, dedication, and absorption.

2.2 Concept of Work Engagement

The term work engagement was initiated by Schaufeli et al., (2002) and this study was intent to undertake is to validate Maslach and Leiter (1997) engagement model and due to understanding the consequences of measuring burnout and engagement in same questionnaire will face at least two consequences such as:

i. It is not supposable to expect that burnout and engagement are perfectly negatively correlated.

ii. The relationship between burnout and engagement cannot be empirically studied when both constructs were measures with the same questionnaire.

However, Schaufeli et al., (2002) found that burnout is not opposite to engagement but stand independently and negatively related to burnout beside the correlation of dimensions (emotional exhaustion and vigor) is negative which explain that these two dimensions are not opposite of the same sequence. Thus, the authors state that a stronger correlation should be found in order to validate the ground that stating emotional exhaustion and vigor are opposites. Henceforth, the authors came out with new clarification for work engagement: "as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption" (Bakker & Schaufeli., 2008; Schaufeli, Bakker & Salanova, 2006; Schaufeli et al., 2002, p.74; Schaufeli & Salanova, 2007).

2.2.1 Dimensions of Work Engagement

Bakker, Schaufeli, Leither and Taris (2008) refers work engagement as "a positive, affective-motivational state of fulfillment which characterized by vigor, dedication and absorption dimensions" it reflects the original version of definition by Schaufeli et al., (2002) as well. From this, it was able to clarify that most studies on work engagement were indicates same perception by measuring through vigor, dedication and absorption that act as key indicators to measure work engagement (Alzyoud et al., 2014; Bakker, et al., 2008; Bakker & Schaufeli., 2008; Schaufeli & Bakker, 2003; Schaufeli et al., 2002; Hoigaard, Giske & Sundsli, 2011; Schaufeli & Salanova, 2007).

Bakker and Demerouti, (2008); Schaufeli and Bakker, (2004) expressed that vigor as a great energy level and mental resilience while working. Person possess this characteristic invest their efforts more on work and able to confront any difficulties easily. Bakker and Demerouti (2008) acknowledged that person possess dedication has high intensity of involvement in any tasks assigned to them particularly they have the sense of pride in works where leads to inspire others to be like them. Besides, the authors refer absorption to deep concentration in work and individual with this characteristic always enjoys their work to the extent that they get lost in the work. Additionally, Schaufeli et al., (2002, p.74) believed that engaged employee is difficult to detach themselves from work.

2.3 Previous Studies on Work Engagement

Literatures revealed evidence on researchers interests on work engagement where this construct has been studied in multi-dimensional aspects. It experienced and tested through various dimensions of predictors and found colorful correlation between the variables across sectors and countries. Table 2.2 shows few past studies on work engagement.

As able to discuss the past studies on work engagement, there are thousands of studies from different perspectives. Some tests new correlation with additional contribution to academic research and some focusing on antecedents and consequences of work engagement. Such as, Bakker and Demerouti (2008), replicate a study of 200 Finnish teachers. Hakanen, Bakker and Schaufeli (2006) test JD-R model and found job control, supervisory support, information, innovative climate and social climate were positively related to work engagement.

Reviewing the literatures also indicates that demographics do influence one's work engagement level. Based on Taipale et al., (2011) a cross-sectional study involves 7867 sample in 8 European countries (UK, Finland, Sweden, Netherlands, Germany, Portugal, Bulgaria and Hungary) across few economic sectors found women are more engaged in their work compared to men. Besides the article expose age group do affect the level of work engagement which shows that elder generation employees more engaged compared to their younger colleagues. In contrast, study done by Sharma, Goel and Sengupta (2017) on Information Technology (IT) staff found men is more engaged compared to women staff, yet age group, educational level and experience has significant relationship on work engagement.

The finding by Othman and Nasurdin (2011) towards 422 public hospital nurses in east coast of peninsular Malaysia, shows that hope and resilience (psychological capital) was a significant predictor of work engagement which the results pointed that it was consistent with past studies. Nevertheless, it's still consistent not only with literatures but also remain having same level of significance after 6 years of gap the study of Pan, Mao, Zhang, Wang and Su (2017) mentioned that creating a supportive nursing practice environment can increase male nurses' work engagement by developing their psychological capital.

Apart from that, many studies were executed related to work engagement on different setting, uniquely researcher noticed that educational setting become the main interest of numerous scholars, that could be seen from the study of Altunel, et al., 2015; Alzyoud, et al., 2015; Choochom, 2016; Hoigaard, et al., 2011; Ongore, 2014; Othman, 2016 and Sukhri, 2015. Furthermore, even when undertaking a comparative study between industries, scholars prefer to take education as one of essential industry to look into which similarly study done by Akhtar, et al., (2014). The subjects of their study are from diverse sectors which mainly from education, followed by in technology and health. It's clearly explains that education field become interest of scholars that perceive the setting as "must" studied industry. Thus, it breaks the statement made by Robinson, Perryman, and Hayday (2004), that there is little academic and empirical research on a topic (work engagement) that becomes so popular.

Multiple predictors were explained work engagement, such as of Sukhri (2015) found that social support, workload and work pressure were positively correlated to work engagement, while autonomy and performance feedback were negatively influence work engagement when tested on 380 academics from three Malaysia northern region universities. On the other hand,

study by Othman (2016) involving 200 university's administrative staff exposed that autonomy, social support and work pressure were positively correlated to work engagement.

Above that, JD-R model is another exclusive predictor to work engagement. Literatures exposed thousands of studies on this model with specified to diverse style of framework, which are readily available either in full version or focused on one independent variable (Altunel et al., 2015; Alzyoud et al., 2014; Bakker and Demerouti, 2008; Choi, 2013; Choochom, 2016; Saks, 2006), burnout (Hoigaard et al., 2011; Schaufeli, Bakker and Rhenen, 2009) and work stress (Yusof, 2016).

Referred to the JD-R model, (Doi, 2005; Halbesleben & Buckley, 2004) revealed job demand like high workload, emotional demands and role ambiguity leads to impaired health whereas Demerouti et al., (2001); Salanova, Agut and Peiro (2005); Taris and Feij, (2004) explain that job resources investigate a motivational process that leads to job related learning, work engagement and organizational commitment. Yet, there are lack of academic research in modifying the existing model's components.

Table 2.2

Summarize of Work Engagement Predictors in Previous Studies

Author(s) / years	Variables	Sample / Location / Industry	Findings
Bakker & Demerouti (2008)	**Dependent Variable** Performance **Independent Variable** Job Resources Personal Resources **Mediator** WE **Moderator** Job Demand	-Replicated in a sample of over 2000 Finnish teachers. -Review previous qualitative and quantitative studies to uncover manifestation of WE and reveal its antecedents and consequences.	-WE defined as a state including vigor, dedication & absorption -Job and personal resources are main predictors to WE & gain its salience through Job Demand.
Taipale, et al., (2011)	**Dependent Variable** WE **Independent Variable** Job demand Job resources	7869 respondents from four economic sectors (retail, trade, finance & banking, telecoms & public hospitals) in 8 European Countries **Europe**	-Demand decrease WE, autonomy & social support increase.
Othman & Nasurdin (2011)	**Dependent Variable** WE **Independent Variable** Psychological capital positive organizational behavior (Hope and Resilience)	422 Public hospital nurses from East Coast of Peninsular **Malaysia** **Healthcare Industry**	IV was significant predictor of work engagement, and the result are consistent with past studies.
Alzyoud, et al., (2014)	**Dependent Variable** WE **Independent Variable** Autonomy, Social support, performance feedback	532 academicians from 4 public universities in Southern, Middle and Northern Region of **Jordan** **Education**	-JR were a significant factor in influencing academicians' WE -significantly positively related to WE.

Table 2.2

(Continued) Summarize of Work Engagement Predictors in Previous Studies

Author(s) / years	Variables	Sample / Location / Industry	Findings
Altunel, et al., (2015)	**Dependent Variable** WE **Independent Variable** Job Resources (autonomy, social support, coaching, task significance, personal development	422 Turkish academicians from Turkey city universities **Turkey** **Education**	-Intercorrelation among variables found to be good predictor to WE.
Sukhri (2015)	**Dependent Variable** WE **Independent Variable** Workload, work pressure, autonomy, social support & performance feedback	380 academicians from 3 universities (UUM, UniMAP, & UiTM) **Malaysia** **Education**	-Social support, workload & work pressure has positive relationship on WE, while autonomy & performance feedback is negatively influence, WE.
Choochom (2016)	**Dependent Variable** Work Behavior **Independent Variable** Personal Resources Job resources **Moderator** Job Demand **Mediator** WE	417 elementary teachers in Bangkok Metropolis Administration **Thailand** **Education**	-WE mediate the relationship between personal-job resources & work behavior. -Job demand negatively affect teacher's role behavior and OCB.
Othman (2016)	**Dependent Variable** WE **Independent Variable** Job Demand (workload & work pressure) Job resources (autonomy & supervisor support)	200 sample of respondents (9 faculties of administrative staff in UPSI). **Malaysia** **Education**	-Work pressure, autonomy & supervisor support was significantly positive related to WE.

Table 2.2
(Continued) Summarize of Work Engagement Predictors in Previous Studies

Author(s) / years	Variables	Sample / Location / Industry	Findings
Zhang, Ling, Zhang & Xie (2015)	**Dependent Variable** Turnover Intention **Independent Variable** Organizational Commitment (OC) **Moderator** Person-supervisor fit **Mediator** WE	Construction planner, architectural designers or supervising engineers for 23 different construction companies in Taiwan **Taiwan** **Construction**	-WE partially mediated negative relationship between OC and turnover intention.
Sharma, et al., (2017)	**Dependent Variable** WE **Independent Variable** Demographic Factors	303 working adults in Information Technology Industry, India **India** **IT Industry**	-Significant relationship of WE & age, education level, & experience. -WE are predicted by higher education and males are more engaged.
Pan, et al., (2017)	**Dependent Variable** WE **Independent Variable** Nurses' practice environment **Mediator** Psychological Capital	161 male nurses from 3 tertiary first-class hospital in Changsha City, China **China** **Healthcare Industry**	-Creating a supportive nursing practice environment can increase male nurses' WE by developing their psychological capital.

2.4 Utrecht Work Engagement Scale (UWES)

Individual work performance is determined through the engagement of an employee in doing their work. Hence, a reliable and valid instrument is needed to make sure it accurately measures the work engagement of an employee. Thus, researcher adapt Utrecht Work Engagement Scale (UWES) scale, a well-established self-report questionnaire to measure work engagement. The measure was extensively used to test work engagement (Alzyoud, et al., 2014; Hoigaard, et al., 2011; Schaufeli & Bakker, 2003; Schaufeli et al., 2006; Zhang et al., 2015).

The original version of UWES has 24 items that consist of vigor-items (9), dedication-items (8) and the remaining items were highly reflect burnout. Later, it has been undertaking to reformulation process and modified with absorption items has been developed to constitute the UWES-24 set. However, after psychometric evaluation on two different samples (students and employees), it was found that 7 items were unsound, thus the unsound items were eliminated and left the remaining 17 items. Meantime in a study by Demerouti, Bakker, Janssen and Schaufeli (2001) were used 15-items due to subsequent psychometric analyses found two other items are weak. There is even brief version of UWES, the latest and well-established. In a study conducted by Schaufeli, et al., (2006) shows that data were collected with 10 different countries with different occupation group population of 14,521 respondents, which approve the 17-items of UWES can be shortened to 9-items (UWES-9).

As validation of UWES is concerned, found in aspect of countries UWES been validated across countries like Spain (Schaufeli et al., 2002), China (Yi-Wen & Yi-Qun, 2005), Netherland (Schaufeli & Bakker, 2003; Schaufeli et al., 2002), South Africa (Storm & Rothmann, 2003). Eventually, the validity of UWES in Malaysian context was referred to the study of Sulaiman

and Zahoni (2016), as reliability of the scale was satisfactory beside the study provides initial evidence that the instrument can be used and applied to measure work engagement in Malaysia.

The questions are guided by five-point Likert scale with answers extending from "never" to "always". Former version scale was executed with seven-point Likert scale from "never" to "daily". In current study, there is minor adjustment in the aspect of scales rate from seven-points to five-point Likert scale, with few considerations:

i. To increase response rate and response quality along with reducing respondents' "frustration level" (Babakus & Mangold 1992). Five-point Likert scale able to reduce respondents' level of confusion and able to increase the responses rate, (Revilla, Saris and Krosnick, 2014).

ii. High reliabilities on measurements. Scholars had reported the higher reliabilities on five-point scales, (Jenkins & Taber,1977; Lissitz & Green, 1975; McKelvie, 1978). In addition, it is possible to compare reliability value with other research using five-point Likert scales, (Meade & Craig, 2012).

iii. Simplify the standardize scale points used in purpose of computing the mean of variables be aligned.

2.5 Overview on Job Demand-Resources (JD-R) Model

The model of Job Demand-Resources (JD-R) was initially proposed by Demerouti et al., (2001) with a motive of understanding the antecedents and consequences of burnout, a chronic of work psychological state. The model become famous since its establishment and has been recognized as one of the leading job stress models besides the Job Demands-Control (JD-C) model proposed by Karasek (1979), Job Characteristic Model (JCM) (Hackman & Oldhman, 1975, 1980) and Siegrist's (1996) Effort Reward Imbalance (ERI).

Basically, the original JD-R model specifies how burnout and work engagement may produce through two set of working condition namely job demand and job resources, besides this model frame predicts employee's health and well-being through the balancing of positive job resources with negative job demands. However, it's not restricted to any specific category or elements of demands and resources that probably affect employees' health and well-being. There are various dimensions that can fall under the category of personal resources, job resources as well job demands as long it was defined as resources and demands. Thus, this model is much broadens compared to other models besides it fit to any occupation to be tested.

In simple word, JD-R model explains the analogy of battery that anything which could drain the employees' energy is perceived as job demand where one need to invest effort and energy to perform. On the other hand, anything that gives positive charges and energy is recognized as resources that enable to boost employee to engage and perform better. It could be either job resources or personal resources or both that provoke them to engage and perform well.

Referring to Nada and Singh (2016) in their proposed framework was stated that employee engagement was influenced by different variable, such as job resources, culture, perceived organizational support (POS), leadership, job demand, rewards and team work. The authors later mentioned that the first four variables (job resources, culture, POS and leadership) are the most researched predictors to employee engagement.

Job resources is concerned as the availability of resources category in an organization to simplify work process of employee or anything that boost the employee's energy is perceived as resource. To be noted, resources could be in any form that enable to be functional in achieving goals, able to reduce job demands and associated physiological and psychological costs and able to stimulate personal growth, (Demerouti et al., 2001). Job resources regulate the way which emotionally demanding conditions to determine work engagement level, (Xanthopoulou, Bakker & Fischbach, 2013).

Next, job demand. Rationally anything that drain our energy will be a demand because it requires efforts in role performance which affect energy level. In addition, things that demand an employee either physically or psychologically could leads to job stressors. In this case although job demand is not necessarily giving negative impact, and probably able to balance up demand in one's work but mostly it is crucial and able to turn into job stressors when the task requires extra efforts from employees to meet those demands (Meijman & Mulder, 1998; Sonnentag & Zijlstra, 2006).

The whole frame of JD-R model was offer two process namely health impairment process and motivational process (Schaufeli & Bakker, 2004; Bakker & Demerouti, 2007). Health

impairment process happen due to the high-level job demand with low job resources that may highly leads to burnout.

Maslach and Leiter (1997) predict burnout and work engagement can be a model but unfortunately Schaufeli and Bakker (2003) pointed that it cannot be anticipate these two concepts, which are perfectly negatively correlated. The second process, motivational is driven by the job resources offered. For an illustration, as current study was tested on academics, let say that academics were given autonomy in doing their task with assigned time frame, probably through the autonomy resources earned, they have the freedom in performing their task with own styles by having the sense of ownership and comfortable in carrying their duties.

In a nutshell, JD-R model consists of many variables that enable to predict work engagement and performance which act as demands and resources (refer Figure 2.1) as exposed by Schaufeli (2017). The model was able to testify in any occupational group as able to explain the variance of elements of predicting engagement in an organization. The JD-R model was implied in this study with little modification and contribution to the model.

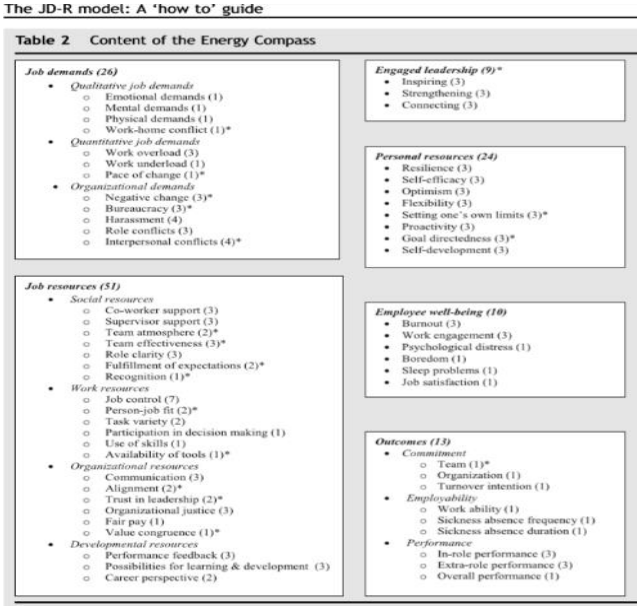
The JD-R model: A 'how to' guide

Table 2 Content of the Energy Compass

Job demands (26)
- *Qualitative job demands*
  - Emotional demands (1)
  - Mental demands (1)
  - Physical demands (1)
  - Work-home conflict (1)*
- *Quantitative job demands*
  - Work overload (3)
  - Work underload (1)
  - Pace of change (1)*
- *Organizational demands*
  - Negative change (3)*
  - Bureaucracy (3)*
  - Harassment (4)
  - Role conflicts (3)
  - Interpersonal conflicts (4)*

Job resources (51)
- *Social resources*
  - Co-worker support (3)
  - Supervisor support (3)
  - Team atmosphere (2)*
  - Team effectiveness (3)*
  - Role clarity (3)
  - Fulfillment of expectations (2)*
  - Recognition (1)*
- *Work resources*
  - Job control (7)
  - Person-job fit (2)*
  - Task variety (2)
  - Participation in decision making (1)
  - Use of skills (1)
  - Availability of tools (1)*
- *Organizational resources*
  - Communication (3)
  - Alignment (2)*
  - Trust in leadership (2)*
  - Organizational justice (3)
  - Fair pay (1)
  - Value congruence (1)*
- *Developmental resources*
  - Performance feedback (3)
  - Possibilities for learning & development (3)
  - Career perspective (2)

Engaged leadership (9)*
- Inspiring (3)
- Strengthening (3)
- Connecting (3)

Personal resources (24)
- Resilience (3)
- Self-efficacy (3)
- Optimism (3)
- Flexibility (3)
- Setting one's own limits (3)*
- Proactivity (3)
- Goal directedness (3)*
- Self-development (3)

Employee well-being (10)
- Burnout (3)
- Work engagement (3)
- Psychological distress (1)
- Boredom (1)
- Sleep problems (1)
- Job satisfaction (1)

Outcomes (13)
- *Commitment*
  - Team (1)*
  - Organization (1)
  - Turnover intention (1)
- *Employability*
  - Work ability (1)
  - Sickness absence frequency (1)
  - Sickness absence duration (1)
- *Performance*
  - In-role performance (3)
  - Extra-role performance (3)
  - Overall performance (1)

Figure 2.1
Content of Energy Compass on JD-R model

2.6 Personal Resources

Personal resources were basically reflecting the things that employees bring with themselves that could be inherently or by practice and it been recognized as the most crucial predictor of work engagement (Xanthopoulou, et al., 2009). Bakker, Boyd, Dollard, Gillespie, Winefield and Stough (2010) conducted a study by incorporating personality as personal resources into JD-R model. The authors incorporate two extreme traits in the model namely, neuroticism and extroversion which was based on Big Five personality model. Thus, this study was implying all the Big-Five personality dimensions (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience) to be treated as personal resources and was measured by global rating.

Generally, resilience, optimism, self-efficacy, and self-esteem are the favorable variables to researchers (Upadhyay, Vartiainen & Salmela-Aro, 2016; Xanthopoulou et al., 2009) in treating as personal resources in JD-R model. However, in present study, Big-Five personality was adapted to define personal resources in named model which act as new contribution to the model. Furthermore, this study able to fulfill one of Altunel, et al., (2015) study limitation. The authors found that their research is sensitive to personal characteristics and suggest adding the variable to explain the model relationship better.

Although this may be true that individual personality is a micro level matter, but it majorly influences one to be engaged with their work and organization due to how they react in any situations or circumstances that arise. Moreover, personality has its own role in influencing work engagement (Langelaan, Bakker, Doornen & Schaufeli, 2006) and it has been emphasized that engaged employees frequently practice positive emotion (Schaufeli & Rhenen, 2006). However, very few studies in academic and empirical research (Robinson et al., 2004), focus

on Big Five personality in JD-R model. Additionally, Inceoglu and Warr (2012) enhanced that almost no study has addressed the joint operation of personality in linked with engagement, instead examining few variables.

Youssef and Luthans (2007) explain employees who high in personal resources tend to invest more energy to experience the accordance between their expectation and objective. Thus, the application of Big Five personality (Goldberg, 1981; Costa and McCrae, 1992; John and Srivastava, 1999) as personal resources is due to several reasons, first as it was found in almost any measure of personality (McCrae & John, 1992); second, were applied in many languages, where enhance the personality structure is universal, (McCrae & Costa, 1997). Third, tested in multiple countries and cultures around the world with 56 nations (Schmitt, Allik, McCrae & Benet-Martinez, 2007) and next due to stabilization over time (Gosling, Renfrow, & Swann, 2003) and lastly due to the measurements been widely used (John & Srivatsava, 1999).

In literatures, there are few of primary studies and meta-analyses conducted to examine the relationship of personality traits on work engagement in academic setting (Akhtar et al., 2014; Kahn, 1990; Ongore, 2014). The study tested on all dimensions of Big Five personality. Still, there is a study done by Bakker, et al., (2010) which tests only two major components namely extroversion and neuroticism and it's in line with a psychologist named Hans Eysenck, where he hypothesized that only two (extraversion and neuroticism) are defined as personality traits, as the extreme characteristic of a person either being positive (extraversion) or negative (neuroticism). Table 2.5 shows the summary of personal resources' predictors on work engagement in literatures.

Table 2.3

Summarized of personal resources predictors to work engagement

Author(s) / Years	Variables	Sample/ Location /Industry	Findings
Othman & Nasurdin (2011)	Hope Resilience	422 Public hospital nurses from East Coast of Peninsular Malaysia Healthcare Industry	IV was significant predictor of work engagement, consistent with past studies.
Xanthopoulou, et al., (2013)	Self-Efficacy Optimism	163 service employees Electronic company The Netherland	-high emotional demands/dissonance & high self-efficacy results in highest levels of engagement. -high self-efficacy & low emotional demand results low engagement level.
Zaidi et al., (2013)	Big Five Personality	7 public universities (399 sample), Pakistan Education	-Big Five traits were significantly correlated with WE.
Akhtar et al., (2014)	-Trait emotional intelligence -Five Factor Model -Hogam Short Personality Inventory	1050 working adults United Kingdom Education, Health & Technology	-Personality factors are valid predictors of WE & determinants of engagement. -all traits were highly significant to WE.
Choochom (2016)	-Psychological Immunity -Intrinsic Motivation	417 elementary teachers in Bangkok Metropolis Administration Thailand Education	-WE mediate the relationship between personal-job resources & work behavior. -Job demand negatively affect teacher's role behavior and OCB.

2.6.1 Big Five Personality Traits

Big Five Personality Traits is a taxonomy for personality traits which commonly used in contemporary psychology field. The initial model was proposed by Tupes and Christal in early 1960s, later the model was extended by Goldberg to the organization concept in 1992. There are five core dimensions that represent individual differences namely extraversion, agreeableness, conscientiousness, neuroticism and openness to experience.

2.6.1.1 Extraversion

Extraversion is indicated by emotions and tendency to seek company of others. It represents the tendency to be sociable, assertive, active, cheerful, optimistic, and talkative. Extrovert person prefer groups, enjoy excitement and stimulation, and experience positive effect such as energy, enthusiasm, and excitement (Costa & McCrae, 1992; John & Srivastava, 1999). Goldberg (1992) acknowledge that extraversion is surgery which mean is a tendency of sociability. Besides, Vakola, Tsaousis, and Nikolaou (2004) declare extraversion as the number of interpersonal interactions with others. Mount, Illies and Johnson (2006) describe extrovert as ambitious and talkativeness (Nawi, Redzuan, Hamsan & Asim 2013), opposite to extrovert is introverts, which introverts' persons prefers to setback and comfortable to be passive. McCrae and Costa (1987) enhanced introverts will prefer loneliness, be quiet, passive, shy, and reserved.

The prediction extent of extraversion to work engagement seen when Zaidi, Wajid, Zaidi, Zaidi and Zaidi (2013) disclosed that found strong correlation between the constructs, the study was tested among public sector university teachers in Lahore, Pakistan. The finding was in line with (Diener and Lucas, 1999; Langelaan et al., 2006; Mostert and Rothmann, 2006; Wildermuth, 2008; Inceoglu and Warr, 2012). Furthermore, Akhtar et al., (2014) study's

results show extraversion and work engagement were highly correlated which they acknowledge that it's the salience of extraversion as predictor of work engagement. In general, it makes researcher believe that extrovert academician who optimistic, sociable, and talkative will engage more with their work as they feel energetic in performing their role besides the sense of responsibility even when they face high workload.

2.6.1.2 Agreeableness

Agreeableness is the tendency to be trusting, compliant, caring, considerate, generous, and gentle. Such individuals have an optimistic view of human nature. They are more sympathetic to others and have a desire to help others and in return they expect others to be helpful (Zaidi et al., 2013) which giving the reciprocal relationship of expectation. In essence, agreeable individuals are pro-social and have communal orientation toward others (Costa & McCrae, 1992; John & Srivastava, 1999). As individual with high agreeableness concern other's interest and welfare to extent where tend to forgo anything for the sake of others, being trustworthy and cooperative (Golberg, 1992; McCrae & Costa, 1987; Mount et al., 2006). While less agreeable individual is the person with high selfishness, stingy and distrust worthy.

Most studies that focus on agreeableness and work engagement showed positive relationship between the constructs. Such as, Zaidi et al., (2013) found work engagement is positively related to agreeableness and it has been confirmed in their multiple regression analysis. Additionally, Mostert and Rothmann (2006) report the correlation between agreeableness and work engagement were significant. Despite Akhtar, et al., (2014) and Wildermuth (2008) found no relationship between these constructs where they realized that employees see themselves as generally more sympathetic and warmer instead of critical on engagement.

2.6.1.3 Conscientiousness

Conscientiousness describes socially prescribed impulse control that facilitates task and goal-directed behaviour, such as thinking before acting, delaying gratification, following norms and rules, and planning, tabulating, and prioritizing tasks (John and Srivastava, 1999). This trait of individuals is purposeful and determined. Employees who possess this character may act dutifully, show self-discipline, and aim for achievement against a measure or outside expectation (Zaidi et al., 2013). Same goes to Barrick and Mount (1993) who acknowledge conscientiousness as behaviour of goal setting by means of planning, organising and carry out tasks.

Besides, they experience the sense of hardworking, punctual, self-discipline, cautious, neat and scheduled (Goldberg, 1992; McCrae & Costa, 1987 & Nawi et al., 2013). Those mentioned characteristics referred to individuals with high conscientiousness. However, people with low conscientiousness will act oppositely like careless, lazy, delaying in work and disorganized (Goldberg, 1992; McCrae & Costa, 1987).

Positive relationship was identified between conscientiousness and work engagement (Akhtar, et al., 2014). Furthermore, Zaidi et al., (2013) added that there is study found moderate correlation between conscientiousness and work engagement. This result has been supported by previous studies (Mostert & Rothmann, 2006; Wildermuth, 2008; Kim, Shi & Swanger, 2012). Conscientiousness individuals tend to be careful, reliable, hardworking, self-managed, well energized and purposeful. Thus, it was believed that purposeful and detailed academics will provide better quality of work as they know how to execute their duties. This type of individual will quickly adapt to new situation. This will lead them to be engaged with their work easily and shows the indicator and essential to be successful academics.

2.6.1.4 Neuroticism

Neuroticism measures the continuum between emotional adjustment or stability and emotional adjustment or neuroticism (Costa and McCrae, 1992). People who possess high sense of this trait has the tendency to experience fear, nervousness, sadness, tension, anger, and guilt. Since neuroticism is a negative influence of characteristic, few qualities were identified, like worries, impatient, discontented angry and nervous tense (McCrae & Costa, 1987; Goldberg, 1992). Moreover, the sense of distress, anxiety, and insecurity was declared by Vakola et al., (2004) anxious and depress (Alkahtani, Abu-Jarad, Sulaiman & Nikbin, 2011). Individuals scoring at the low end of neuroticism are perceived as emotionally stable and even-tempered (Costa & McCrae, 1992; John & Srivastava, 1999). They will remain calms, relax, at ease and be patience (Goldberg, 1992; McCrae & Costa, 1987).

The significance between neuroticism and work engagement seems negative, as researcher come across many studies on this dimension, almost every study emphasized that there is negative correlation between neuroticism and work engagement. The evidence has been indicated in Akhtar et al., (2014) that the neuroticism and work engagement were negatively correlated, and it was supported from past studies (Keyes, Shmotkin, & Ryff, 2002; Langelaan et al., 2006; Mostert & Rothmann, 2006; Wildermuth, 2008; Zaidi et al., 2013). It can be claimed that high level of neuroticism may leads to work disengagement. The sense of anxiety, depression, high feel of unhappiness which out of proportion of one's life cause them failed to focus which at the end of the day, leads to work disengagement. It has been acknowledged by John, Donahue and Kentle (1991); John, Naumann and Soto (2008) that neurotic individuals tend to be moody, get nervous easily, depressed, tense, and worry a lot. The vice versa explain when the academics with less neurotic, will be more relaxed and face stressful situation calmly.

2.6.1.5 Openness to Experience

Openness to experience is the tendency of the individual to be imaginative, sensitive, original in thinking, attentive to inner feelings, appreciative of art, intellectually curious, and sensitive to beauty (Costa & McCrae, 1992; John & Srivastava, 1999). Such individuals are willing to entertain new ideas and unconventional values beside being transparent and free. Same goes when referring to Zaidi et al., (2013) openness to experience individuals is original, ingenious, inventive, and sophisticated in art, or literature.

Moreover, John, et al., (1991); John, et al., (2008) stated that these individuals more curious on many different things which has active imagination and love to play with ideas. Thus, this led them to activate with their passionate to be proactive in everything they involved. Goldberg, 1993; Vakola et al., 2004 coined individual high in this value tend to be proactive in seeking knowledge and known as intellectual. In fact, individual in this trait try bounce to new experience in workplace by valuing autonomy and self-control (Mohan & Mulla, 2013). Whereas, antonym to openness to experience is closedness to experience which means that experiencing less exposure to world and uninterested to explore. Indeed, these narrow-minded individuals much prefer the traditional way of thinking as enhanced by Nawi et al., (2013).

In aspect of correlation, Zaidi et al., (2013) found positive correlation between openness to experience and work engagement. However, Wildemuth (2008) has investigated the relationship between openness to experience and work engagement but did not find any significant correlation between these two constructs.

2.7 Big Five Inventory (BFI) Scale

Instrument used to assess personality must be reliable and valid in order to be able accurately measure the named variable. Thus, for this study Big Five Inventory (BFI) was used to assess personal resources. The scale was originally developed by John et al., (1991). McCrae and John (1992) states that this instrument has been widely used in psychology and enforced that through cross-cultural replication and empirical validation which were led the model (BFI) to be a basic discovery of personality psychology.

Generally, there are two versions of BFI which the original has 44-items as it measures an individual difference in detail through Big Five personality dimensions (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) (Goldberg, 1992). Each dimension consists of 8 to 10 items. Later, the scale has been revised and developed a brief version, where uniquely 10 questions in whole reflecting the five dimensions of personality traits, 2 items were allocated for each dimension after test and re-test.

In present study, researcher adapt the brief version of BFI-10 to assess said variable. Fossati, Borroni, Marchione and Maffei (2011) explained that the findings of their study suggest BFI as a succinct measure of personality traits and it provides satisfactory reliability and validity data. Moreover, researcher choose to apply BFI-10 in measuring personal resources due to the ability of BFI-10 to predict and reflect the whole BFI-44 as was tested in United States and German, overall mean correlation between the BFI-10 and BFI-44 dimensions was correlated at r=.83 (Rammstedt & John, 2007).

Since limited time available and with intention to reduce participant's burden, researcher apply the BFI-10 to measure personal resources. Hence, there are five items (item no 1,3,4,5, and 7) has been characterized as reverse-scoring with note "R" (refer Table 3.5), to standardize and equalize the total score of the variable beside to be align in one positive direction. Reverse scoring means the numerical scoring scale runs in the opposite direction. Accordingly, in this study the standard allocation of scale is from "1" (strongly disagree) to "5" (strongly agree) while the reverse scoring scale be in reversed form (in SPSS application), from "1" (strongly agree) to "5" (strongly disagree).

2.8 Job Resources

Job resources was defined by Demerouti et al., (2001; p.501) as any physical, social or organizational aspects of job that may do anything of the following, be functional in achieving work goals; reduce job demands and the associated physiological and psychological costs; and stimulate personal growth, learning and developments.

The motivational part in JD-R model is job resources, where the resources available strengthen and boost employees to be engaged in work beside increase the sense of fulfillment. This is in line with Maslow hierarchy of needs (1943), where the self-actualization as one of the basic needs of a human being. Deficiency in this needs' will ultimately reduce the motivation level in a person to perform and engage, thus led to fail in reaching their goal.

In addition, referring to Deci and Ryan (1985); Ryan and Frederick (1997) coined job resources as fulfill the basic human needs such as the needs of autonomy (power), relatedness and competence, where it reflects and back to the nature of Maslow hierarchy of needs. Social support can be a job resources as it able to boost employees' motivation level with receiving supports from colleagues and supervisor, job enhancement opportunities to increase job control and autonomy, beside involve in decision-making process (Richardsen & Burke, 1993). In addition, Schaufeli and Salanova (2007) pointed that it includes performance feedback.

Karasek (1985) define autonomy as the extent of freedom independence and discretion of an employee to plan his or her work pace and method. Moreover, Karasek and Theorell (1990) demonstrate that autonomy is a working condition that has been acknowledge as one of valuable resources for employee. According to Hackman and Oldham (1975) and Morgeson and Humphrey (2006), autonomy as the individual freedom in carrying their work, including

freedom in scheduling work, work method and decision-making. This enhance the importance of autonomy in workplace which increase engagement level when employee has autonomy over their job. It focused on engagement due to the model itself, which explain the coverage of autonomy and work engagement, as emphasized by Demerouti et al., (2001); Schaufeli et al., (2009) that JD-R model has been classified autonomy as one of the job resources.

Social support also categorized as job resources. Karasek (1985) define social support as level of social interaction available on the job from co-workers and supervisors. Social support from colleagues and supervisors can be a step stone to boost employees' motivation and consequently leads to higher engagement level. It's the sense of bonding in workplace, where it is important to work together in a healthy environment, and ultimately lead to supportive working environment.

Apart from autonomy and social support, performance feedback also perceived as another components of job resources. Sims, et al., (1976) explain performance feedback as the extent to which an employee knows his or her own job performance from the job itself, colleagues, supervisors or customers. The motive of performance feedback is to improve individual and team performance; thus, the individual should know his or her performance level by receiving the feedback from 360 degree to enable them to improvise and perform better, and consequently leads to engagement.

In short, Bakker and Demerouti (2007); Schaufeli and Salanova (2007) asserted that literatures of job resources like autonomy, skill variety, performance feedback and social support from colleagues and superior are positively associated with work engagement.

2.8.1 Previous Studies on Job Resources

A longitudinal study conducted by Xanthopoulou et al., (2009), found that work engagement was positively related to autonomy, social support and performance feedback. The study involves about 163 employees from electrical and electronic engineering company.

Schaufeli and Bakker (2004) found positive correlation on job resources (performance feedback, social support and supervisory coaching) which exclusively predict work engagement (vigor, dedication and absorption) among four different samples of Dutch employees. On the other hand, Gupta, Acharya & Gupta (2015) studied how job resources influence work engagement among India academic and the effect of work engagement towards the interaction among job resources and perceived autonomy effect performance in service delivery.

Alzyoud et al., (2014) conducted study on job resources (autonomy, social support and performance feedback) and work engagement among 532 Jordanian academic staff. Data was gathered from four universities in Jordan and the results show that there was an association between all job resources components and work engagement. Koyuncu, Burke and Fiksenbaum (2006), study on 286 women managers and professionals at Turkish bank. The results show that work life experience, rewards, value fit, recognition and particularly control were significantly predicting work engagement. Moreover, Bakker and Bal (2010) study among six college of teacher's training, found a causal relationship between low level of work engagement and job resources. The study suggests that job resources play a role of motivation and has potential in increasing and enhance low levels of work engagement.

2.9 Job Demand

Taipale et al., (2010) perceived job demand as physical and psychological elements of stress factors that influence on how employees are able to manage excessive work, unexpected assignment or work conflict. The definition was aligning with literature which declared job demand as those physical, psychological, social or organizational aspects of the job that require sustained psychical and/or psychological (cognitive or emotional) effort, and therefore it was associated with certain physiological and/or psychological costs (Demerouti, et al., 2001). Researcher adopt the definition given by Taipale et al., (2010) of job demand, as suits present study context in disruptive era.

Bakker and Demerouti (2007); Demerouti et al., (2001) exposed some examples of job demand include unfavourable work environment, high level of work pressures and emotionally demanding interactions with clients. On the other hand, Karasek and Theorell (1990) declare job demands as quantitative workloads involved with a particular job requirement.

Essentially, job demand is all about the requirements which were crucially needed for completing the job or task assigned. Besides, there are vary dimensions that can be categorized as job demand. Generally, there is increase in needs since new challenges of technology developed. It may jeopardize employee's satisfaction at work to meet their career objective and possibly leads to disengagement in work. Thus, management should make interference in order to counterbalance the demands. In current study, workload and emotional demand are applied as job demand.

2.9.1 Previous Studies on Job Demand

A study conducted at South Africa by De Braine and Roodt (2011) involving about 2429 Information and Communication Technology (ICT) sector company workers, found that there was negative correlation between workload and work engagement. Burke (2011) found nearly half of the academic workforce in Australian universities intends to move to overseas universities and leave the higher education in the next 10 years. It is probably due to high workloads which they (researchers and academics) need to stay back after official working hours to cover their workloads (Rea, 2011).

Townley (2000) conducted a study in United Kingdom which indicates that many workers are unhappy due to the working culture, which required extra effort and work long hours together with high workload and the suppression for meet deadline and production targets. This cause the workers to be disengaged with work. Thus, Maslach et al., (2001) enhanced that heavy workload and time pressure lead to exhaustion. This can lead the employees to be demotivated and consequently disengaged with work. This was acknowledged by Meijman and Mulder (1998) which argues that job demand may turn into job stressor when meet demands that require high efforts.

Basically, above literatures were discussing the negative perspective of job demand which leads to disengagement. However, there are studies that break the negative perception on job demands. Positive correlation between the constructs defined that high job demands (workloads, work pressures, emotional demands, suppression and etc.) may increase the level of engagement, where the employees engage with the motivation to accomplish the work delegated. The studies found workload were increasing the engagement level (Hallberg, Johansson & Schaufeli, 2007; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007).

2.10 Underlying Theory

2.10.1 Social Exchange Theory

Social Exchange Theory (SET) was initially developed by Thibaut and Kelley (1959). Later the theory been revised by numerous experts. This theory has extensively implied beside Conservation of Resources (COR) which used interchangeably to describe linkage to work engagement. SET is one of the most influential models in organizational behaviour which is to understand the behaviour of employees in workplace. SET explain the interdependency and contingent on the actions of another person, moreover, this theory was explained in diverse areas (Cropanzano & Mitchell, 2005).

Basically, SET is interdependency, reciprocal relationship and having "rule" of exchange. As acknowledged by Jose and Mampilly (2012) that SET is able to explain employee engagement as a strong theoretical support. The main idea of this theory is when an individual receives benefits from a relationship, he or she would sacrifice something in attaining those benefits. An employee who perceived to receive benefits from organization feel responsible to repay or compensate the loyalty and efforts, positive attitudes and behaviours, to that organization (Mossholder, Settoon & Henagan, 2005). Moreover, Saks (2006) states that SET explain employee engagement agreement as there is a requirement between two parties who has interest or conditions to work collaboratively. Thus, SET is able to explain the reason why employees decide to engage or disengage with their work in the organization according to the "policy" of organization made (Saks, 2006).

Personal resources. The upshot is that individual (academics) with greater resources that fit with the organization able to provide or offer their services, thus attract organization to counter-offer the benefits. In this case, academics may repay to the organization by showing their

sincerity and loyalty in engaging with their work. For instance, extrovert academician may proactive in learning new things that enable to improvise their ability to tackle conflicts arise like due to the technology's development which enable them to be engaged.

Job resources. High level of freedom with allocation of time frame create happy working environment and increase the sense of ownership with their work, consequently, leads to engagement. High level of social support (colleagues and supervisors support) also increase the bonding to be engaged with organization, employees will feel motivated to work in supportive environment. It's an opportunity to company in retaining productive and potential employees to the future performance of organization. Performance feedback is important not only for an employee but also the whole team of organization. If there is high opportunity to employees get know their performance feedback from various sources, it would be great platform to them in improving their performance much better, thus they may repay by performing better and surely engaged with organization which concern with their growth.

In addition, the reciprocity also occurs in job demand. High job demand either in the aspect of quantitative (workload) or qualitative (emotional demand) will led the individual to burnout or exhaustion which ultimately result in disengagement, the worst is quit the job. Hence, company may loss the "resources". However, at the same, if job demand is at below expectation also may consequently influences employees to be disengaged due to the unchallenging working environment, especially for those expecting new challenges in work. Yet, an equilibrium of job demands needed to enable employee voluntarily to represent in repaying through engagement. In short, personal resources, job resources and job demand have reciprocal relationship with work engagement which reflect this study's objective on explaining the effect of independent variables on dependent variable.

2.11 Research Framework

Research framework can be classified as the main basis on what the whole research paper is founded (Sekaran & Bougie, 2016). In line with that, the dependent variable in this study is work engagement and independent variables are personal resources, job resources and job demand. The linkage of variables is shown in Figure 2.1.

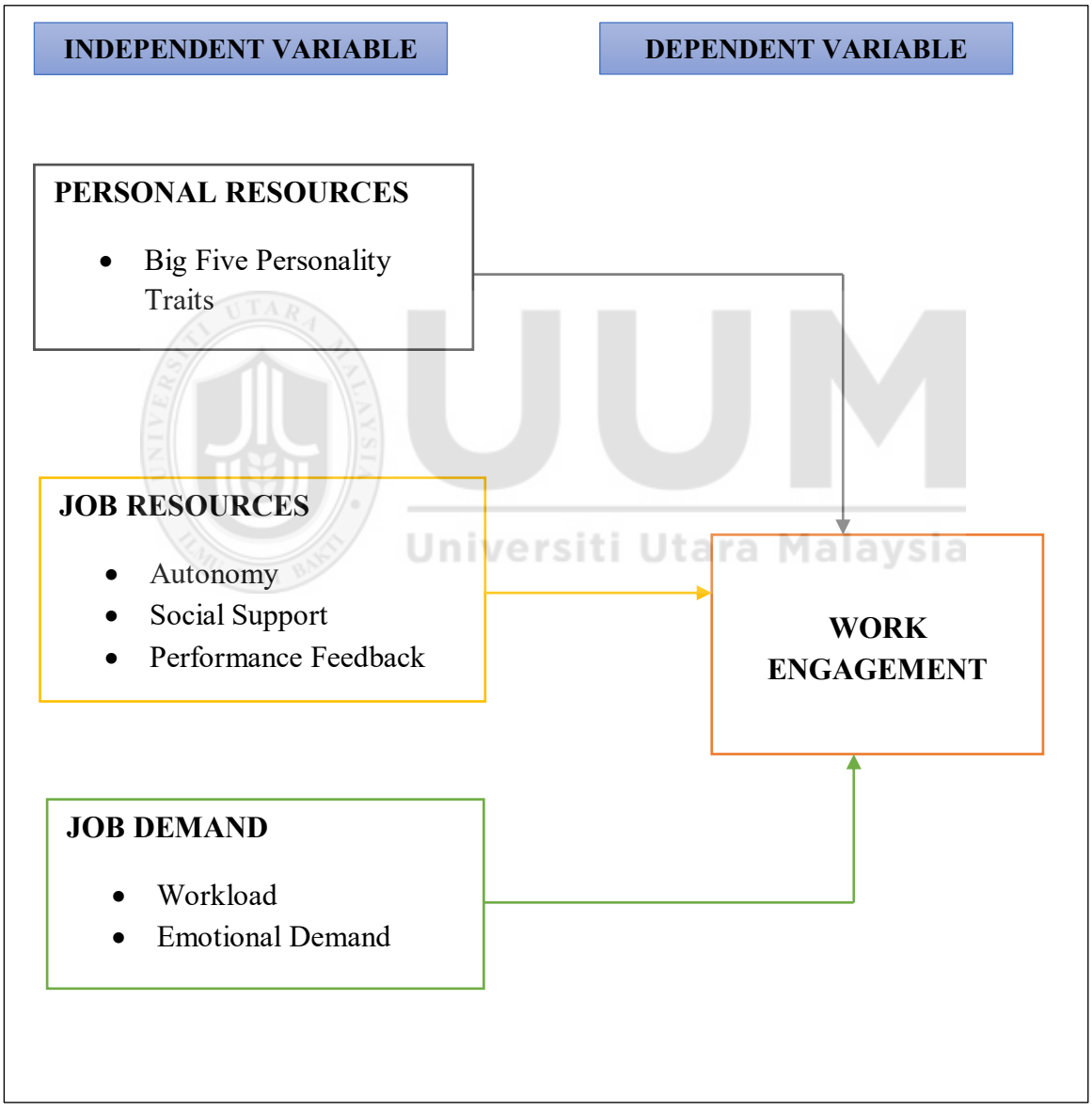

Figure2.2
Research Framework

2.12 Hypothesis Development

Hypothesis can be defined as a tentative argument of the research problems, an educated assumption about the research result. It needs to be specific and transparent in describing to indicate the research outcome. The hypothesis developed for the study includes the following:

2.12.1 Relationship between personal resources and work engagement

Many literatures demonstrated different components in measuring personal resources, while current study treat Big Five personality as personal resources, thus the result of finding might different compared to literatures. Past studies' personal resources reflecting in variables like self-efficacy, self-esteem, resilience and optimism which were highly predicting work engagement. Moreover, hope and resilience also found as significant predictor on work engagement (Othman & Nasurdin, 2011) involving 422 public hospital nurses from east coast peninsular Malaysia.

Study conducted by Xanthopoulou et al., (2013) in electronic company in Netherland, involved 163 service employees, was found self-efficacy and optimism in highest level of engagement when the emotional demand is high. In the same year, by testing Big Five personality studies, Zaidi et al., (2013) disclosed the relationship of the five dimensions personality which was significantly predict work engagement. The study was executed among public sector teachers in Lahore, Pakistan. Hence, researcher believed that personal resources in current study will potentially predict work engagement. Thus, it hypothesized as:

H1: Personal resources is significantly related to work engagement.

2.12.2 Relationship between job resources and work engagement

In literatures, dimensions like social supports, skill variety, performance feedback, learning opportunity and freedom in decision making (autonomy/job control) was linked positively on work engagement, (Alzyoud et al., 2014; Bakker & Demerouti, 2007, 2008; Sukhri (2015); Korunka, Kubjcek, Schaufeli, & Hoonakker, 2009; Schaufeli & Bakker, 2004).

Bakker and Demerouti (2007) perceive job resources as motivational process, like autonomy and social support from colleagues. This process enhancing work engagement, learning at work beside organizational commitments. Moreover, this process also helps employees to diminish the health impairment outcome and functioning as achieving work goals. Schaufeli and Bakker (2004) found positive correlation between performance feedback, social support and supervisory coaching on work engagement. The study was tested among four different occupational groups.

Furthermore, Alzyoud et al., (2014) also found positive linkage between three job resources category namely autonomy, social support and performance feedback on work engagement when conducted on 532 academicians from four Jordan public universities. In the same vein, Sukhri (2015) study's results indicate that there is a significant relationship between autonomy and work engagement, where the study tested on 380 academicians from three Malaysia public universities. Thus, it was hypothesized as:

H2: Autonomy is significantly related to work engagement.

H3: Social support is significantly related to work engagement.

H4: Performance feedback is significantly related to work engagement.

2.12.3 Relationship between job demands and work engagement

Literatures expose the relationship between job demands categories and work engagement which found mixed results, positive and negative. There are studies that indicate positive correlation between job demands and work engagement, which revealed that job demand does not necessarily be negative to one be engaged. There are few conglomerates of studies been explained below.

Workload can be either work underload or work overload. Work underload shouldn't be a problem because employee was not putting much effort in performing tasks, yet it can be an trick issue that leads to boredom and unchallenging work due to the insufficient work assigned. On the other hand, the most crucial is work overload which are common issue in today's work environment. Excessive work with limited time frame may cause employees to work long hours, that lead to increases of stress level apart possibly drag to disengagement of work.

Xanthopoulou et al., (2007) conducted a study among 714 Dutch workers on workload and work engagement. The result was shown positive correlation between the constructs. Similarly, in the same year Hallberg, et al., (2007) found positive correlation between workload and work engagement among 329 Information Communication Technology (ICT) and management consultants.

In contrast, study tested on 1919 finnish dentist for workload shows negative relationship in predicting work engagement (Hakanen, Bakker & Demerouti, 2005). Together with two more studies that show negative correlation between workload and work engagement, namely Tomic and Tomic (2011); Rothmann and Jordan, (2006). The studies were from different setting, thus it shows regardless of work setting, if high workload, will leads to work disengagement.

Besides, many studies were pointed that emotional demand was negatively predict work engagement. This has been demonstrated by Xanthopoulou et al., (2013). The study suggest that job resources regulate the emotional demanding conditions in determining work engagement level and found emotional demands and work engagement was strongly negative when self-efficacy is low in two different study time as it was a longitudinal study. Self-determination is important in handling own emotional demands; equilibrium emotional demand will predict better engagement level.

Additionally, Abdullah (2014) were also found significance correlation or positive relationship between workload and employee engagement (vigor, dedication and absorption). The study tested on 144 workers who are UUM part time students. It explains that the students are high self-discipline which able to manage excessive work and smartly managed time by allocating for work and study.

Moreover, past studies resulted inconsistency between emotional demand work engagement. Study by Bakker, et al., (2007) among Finnish teachers found that emotional demand was negatively predict work engagement. Specifically, when dealing with misbehave students. On the other hand, a study conducted among flight attendants by Heuven, et al., (2006) expose the result that there is no correlation between emotional demands and engagement among 154 Cabin attendants. However, situation that emotionally demanding require high energy investment as may lead to confusion emotionally and exhausting employees' emotions which probably leads to disengagement. Thus, it was hypothesized that:

H5: Workload is significantly related to work engagement.

H6: Emotional demand is significantly related to work engagement.

Table 2.4
Hypotheses Proposition

Hypotheses	Description
H1	Personal resources is significantly related to work engagement.
H2	Autonomy is significantly related to work engagement.
H3	Social support is significantly related to work engagement.
H4	Performance feedback is significantly related to work engagement.
H5	Workload is significantly related to work engagement.
H6	Emotional demand is significantly related to work engagement.

2.11 Chapter Summary

The variable understudy are personal resources, which Big-Five Personality traits was treated as personal resources, job resources was defined through dimensions of autonomy, social support and performance feedback. Moreover, job demand was measured through workload and emotional demand. Generally, this chapter covered a review of previous literatures regarding the concepts and definitions of independent variable and dependent variables of this study besides the significance variance between personal resources, job resources, job demand and work engagement. It's the conglomerate package of previous studies with the funnel approach on these four constructs.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter will describe the exact steps that will be undertaken to answer the research question of the study. The objective is to provide a complete description of the specific steps to be followed in conducting the tests. The subsections for this chapter include the research designs, population, study sample, sampling method employed, procedures of data collection, designs of questionnaire, pre-test, the measurements of variable understudy, statistical technique and types of analysis of study are presented together.

3.1 Research Design

Research design was defined by Sekaran (2010), as tabulating a plan, imply procedures for data collection purpose, analyse and translate the outputs to summarize the result. Hence, the framework of this design is to provide accurate assessment to measure relationship among variables and present the result in next chapter. The typical approach to be scientific study is quantitative method which enhance on quantity or amount (Tewksbury, 2009).

Therefore, quantitative design was employed to get a clear picture on overall study's aim in numerical aspects beside to acquire the reliability responses to examine the relationship between personal resources, autonomy, social support, performance feedback, workload and emotional demands on work engagement among academics in Malaysia public universities. Moreover, Ghauri, Grohaug, Kristianslund (1995) coined that quantitative approach enhance statistical analyses that assure the gathered data are reliable and valid.

Incorporative quantitative approach leads to primary data of collection (close-ended questionnaire developed). The questions will be responded within five-point Likert Scale. Creswell (2003) acknowledged that questionnaire that been organized in multiple choice (agreement scale) is to control the scope of answer and ensure the validity and reliability of study without any unbiased error.

Finally, in line with that the designs implemented in this study is cross-sectional study where the data were collected at one-point time due to limited time frame available. The unit of analysis is at individual level as this study focused on individual academician's work engagement level.

3.2 Population, Sample of Study and Sampling Method

3.2.1 Population

Population is the overall number of collection of individuals, things events of concern whereby the researcher intends to make an investigation (Sekaran & Bougie, 2013). It is crucial in determining sample size because the right amount of selection may generalize research findings, minimize time and cost consumptions and enable to reduce errors. In line with that, the population of this study is academicians from public universities located in northern regions. Based on the statistics received from the University's Registrar Department of the respected universities, there are a total of 2601 academics who are in active working status (refer Table 3.1).

Table 3.1
Distribution of academics' population for the three universities

University	Total number of academics	Source
Universiti Utara Malaysia (UUM)	1121	University's Registrar Department
Universiti Sains Malaysia (USM)	1112	University's Registrar Department
Universiti Teknologi MARA (Perak)	368	University's Registrar Department
TOTAL	**2601**	

3.2.2 Sample Size and Sampling Technique

A sampling process is undertaken to determine sampling size. Thus, the number of samples in this study was decided through Roscoe's rule of thumb (Table 3.2). Roscoe (1975) suggest there are few rules of thumb believed to be appropriate for most behavioural research, which state that a sample larger than 30 and less than 500 is appropriate for most research study.

Researcher are given freedom to select any number within the range but to proceed with a recommendation, the sample size was selected based on Hill (1998) that mentioned within the limits, recommended sample size is about 10% of parent population. Yet, Alreck and Settle (1995) argued that it is seldomly necessary to acquire sample more than 10%. Based on rule calculation (Hill, 1998), at least 260 academics are needed to represent to whole study population, but researcher decides to distribute about 390 questionnaires (15%) with intention to receive high response rate.

Non-probability sampling design is applied to indicate that members were selected from the population in some non-random manner. This sampling techniques was implied because there is no sampling frame was given to researcher from the universities of choice yet only the updated total numbers of academics currently working there were given. First and foremost, the universities that involved in this study were randomly chosen, and since the unit of analysis is individual, researcher apply purposive sampling in selecting potential respondent for specific purpose. Few criteria were set up to narrow the number and get into the actual respondents directly to enable them to answer the survey.

The criteria focus on permanent academic staffs from few positions like professors, associate professors, senior lecturers and lecturers who are capable to explain the engagement level in their work better compared to tutors and contract academics. The criteria pointed explains the proportion made on group of experts with more knowledge and experience. Bernard (2002) acknowledge that researcher may decides what is intending to study or to be known in order to find respondents who were the target that are able to provide information by virtue of knowledge or experience.

Table 3.2
Determination of sample size

Roscoe's rule of thumb (10%):
(SS = Sample Size; NP = Total number of populations in each universities)

SS = NP X 10 / 100

SS = 2601 X 10/100
SS = 260

Table 3.3
Distribution of respondents for each university

University	Total number of academicians (N = 2601)	Total respondents (SS = 260)	Total Distribution to each university (D = 390)
Universiti Sains Malaysia	1112	111	167
Universiti Utara Malaysia	1121	112	168
Universiti Teknologi MARA (Perak)	368	37	55
Total	**2601**	**260**	**390**

3.3 Data Collection Procedure

Data collection procedure was handled with ethical considerations when researcher dealing with universities' registrar department that involved in this study. Researcher includes the data collection official letter which explained the objective of the study in order to gain the updated number of population or prospective respondents from the universities. Later, researcher identify the sample needed to be representative for the population through Roscoe rule of thumb. Data collection was administered using e-questionnaire. Then, 390 academics from three universities were invited to participate via their official e-mail at SurveyMonkey platform. The motive of internet survey was executed due to the reason of time and cost efficient for the population larger than 300 (Uhlig, Seitz, Eter, Promesberger, & Busse, 2014). Respondents were given two weeks to complete the questionnaire and within the period a kind reminder was sent, besides they also were assured that information collected will be strictly kept confidential and used only for academic purpose.

3.4 E-Questionnaire Layout

Instrument used to collect data was solely from e-questionnaire survey (SurveyMonkey). The questionnaire has five sections and each section was specified. Starts from welcoming respondent, demographic profile, personal resources, job resources, job demand and work engagement respectively. The objective and scope of the research were explained in brief to samples with assurance on confidentiality and anonymity. The scale applied to tap all responses for independent variables were five-point Likert scale ranging from 1 to 5 and labelled as "1" (Strongly Disagree), "2" (Disagree), "3" (Neither agree nor disagree), "4" (Agree), and "5" (Strongly Agree) for independent variables. While, for dependent variable the five-point Likert scale with different term of labelling, "1" (Never), "2" (Rarely), "3" (Sometimes), "4" (Often), "5" (Always).

3.5 Goodness of Measurement

Researcher are in need to ensure that instruments used in the study are indeed measuring constructs as what they actually intended to measure. Thus, the goodness of measurement, validity and reliability were performed in ensuring the righteousness of measurements. Validity is a test on 'how' well established or developed an instrument measuring the construct as intended, while reliability is a test on 'how' internally consistent on each item in the instruments that measure the concept itself, (Sekaran & Bougie, 2010). In this study, face validity is performed through pre-test prior to actual study, and reliability analysis was conducted for actual study.

3.5.1 Pre-Test

Pre-test was conducted in this study before distributing questionnaires to actual respondents. The aim is to ensure that respondents is fully understand the entire content of questionnaire and clarity on wordings. It clarified the face validity and content validity. Three academics were involved in this pre-test. The results from pre-test disclosed that all items in this questionnaire are clear, transparent and straightforward. Thus, no amendments were made from the adapted items. The finalized questionnaire attached (Refer Appendix A).

3.5.2 Reliability Analysis

Reliability analysis is used to test the internal consistency among items by using Cronbach's coefficient alpha. The Cronbach alpha value for adapted items were declared in measurements below. For current study, the reliability level was referred to Hinton, Brownlow, McMurray and Cozens (2004), that considered internal consistent as following alpha value, 0.50 and below (low reliability), 0.50 to 0.70 (moderate reliability), 0.70 to 0.90 (high reliability) and 0.90 and above (excellent reliability).

3.6 MEASUREMENT OF VARIABLES

3.6.1 Work Engagement Measures

Work engagement was treated as dependent variable in this study and has been operationalized as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption (Schaufeli, et al., 2002). Work engagement has three dimensions namely, vigor (V), dedication (D) and absorption (AB) and it has three items respectively, however for this study, work engagement was measured globally. The named variable is measured by Utrecht Work Engagement Scale (UWES) 9-items which was developed by Schaufeli, et al., (2006). Table 3.4 shows the measures of work engagement. The range of measure is from "1" (Never) to "5" (Always). Cronbach's alpha value for work engagement is .926.

Table 3.4
Measures of Work Engagement

Variable	Operational Definition	Items
Work Engagement	A positive, fulfilling, and work-related state of mind that is characterized by vigor, dedication and absorption.	
Vigor	Present high energetic, mental resilience and continuous in the presence of difficulties while working	1. At my work, I feel bursting with energy. (V1) 2. At my job, I feel strong and vigorous. (V2) 3. When I get up in the morning, I feel like going to work. (V3)
Dedication	Being strongly involved in one's work and experiencing significance sense, pride, enthusiasm, inspiration and challenge.	4. I am enthusiastic about my job. (D1). 5. My job inspires me. (D2) 6. I am proud on the work that I do. (D3)
Absorption	Being fully concentrate in work, where time passes quickly, and one has the difficulties to detach from work.	7. I feel happy when I am working intensely. (AB1) 8. I am immersed in my work. (AB2) 9. I get carried away when I'm working. (AB3)

Source: Schaufeli, et al., (2002); Schaufeli, et al., (2006).

3.6.2 Personal Resources Measures

Big Five Personality was treated as personal resources in this study which included five dimension of personality traits (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience) and it was measured globally. To measure the personality traits Big Five Inventory-10 (BFI-10) was adapted. The measurement of BFI-10 was revised by Rammstedt and John (2007). Out of total 10 questions, 5 are reverse coded (items no.1, 3, 4, 5, and 7; with note "R") in Table 3.5. The questions were started with a statement of (I see myself as someone who…) and five-point Likert scale applied, "1" (strongly disagree) to "5" (strongly agree). The Cronbach's alpha value for personal resources is .74.

Table 3.5
Measures of Personal Resources (Big Five Inventory-10 items)

Variable	Operational Definition	Items
Personal Resources ***I see myself as someone who…***		
Extraversion	Tendency to seek company of others, represent the tendency of being sociable, active, upbeat, assertive, optimistic and talkative.	1. is reserved. *R 2. is outgoing, sociable.
Agreeableness	Tendency to be trusting, compliant, caring, considerate, generous and gentle.	3. is generally trusting. 4. tends to find fault with others. *R
Conscientiousness	Socially prescribed impulse control that facilitates task- and goal-directed behavior.	5. tends to be lazy. *R. 6. does a thorough job.
Neuroticism	Neuroticism measures the continuum between emotional adjustment or stability and emotional adjustment or neuroticism.	7. is relaxed, handles stress well. *R 8. gets nervous easily.
Openness to Experience	Tendency to be imaginative, sensitive, original in thinking, attentive to inner feelings, appreciative of art, intellectually curious, and sensitive to beauty.	9. has few artistic interests. *R 10. has an active imagination.

* **"R"** denotes reverse-scored items
Source: John and Srivastava, (1999); Rammstedt and John, (2007)

3.6.3 Job Resources Measures

Demerouti, et al., (2001, p. 501) coined job measures as the aspect of the job that may include any of the following; be functional, able to reduce job demands and the linked physiological and psychological costs and able to stimulate personal growth, learning and developments. Autonomy, social support and performance feedback was considered as job resources in this study.

Karasek (1985) defined autonomy as the extent of freedom, independence, and discretion of an employee to plan their work pace and methods. Social support is the overall level of helpful social interaction available on the job from co-workers and supervisors, (Karasek & Theorell, 1990). To measure autonomy and social support, there are three and eight items respectively adapted from Karasek (1985). Next, performance feedback is perceived as the extent to which an employee knows his/her own job performance from the job itself, co-workers, supervisors or customers (Sims, et al., (1976) and it was measured with 4 items.

Minor adjustment was applied for social support and performance feedback items, the word supervisor was substituted with the word Head of Department (HOD) to fit with study context, like a study done by Sukhri (2015), the author changed the word supervisor to Dean. The scale used for job resources is based on five-point Likert scale whereby, "1" (strongly disagree) to "5" (strongly agree). Table 3.7 shows measures of job resources. Cronbach's alpha for the adapted items was .89 in overall, specifically autonomy (.61), social support (.82) and performance feedback (.83). Sukhri (2015) was used these three elements of job resources (autonomy, social support and performance feedback).

Table 3.6
Measures of Job Resources

Variable	Dimensions	Operational Definition	Items	Author (s)
Job Resources		Aspect of the job that may include any of the following; be functional, able to reduce job demands and the linked physiological and psychological costs and able to stimulate personal growth, learning and developments. (Demerouti, et al., (2001).		
	Autonomy	The extent of freedom, independence, and discretion of an employee to plan his/her work pace and method.	1. My job allows me to make a lot of decision on my job. 2. On my job, I have very little freedom to decide how I do my work. 3. I have a lot of influence about what happens on my job.	Karasek (1985)
	Social Support	Overall levels of helpful social interaction available on the job from co-workers and supervisors.	4. My HOD is concerned about the welfare of those under them 5. My HOD pays attention to what I am saying 6. My HOD is helpful in getting the job done. 7. My HOD is successful in getting people to work together 8. People I work with are competent in doing their jobs	Karasek & Theorell (1985)

			9. People I work with take a personal interest in me 10. People I work with are friendly 11. When needed, my colleagues will help me	
	Performance Feedback	The extent to which an employee knows his / her own job performance from the job itself, colleagues, supervisors, or customers	1. I receive enough information from my HOD about my job performance 2. I receive enough feedback from my HOD on how well I am doing 3. There is enough opportunity in my job to find out on how I am doing 4. I know how well I am performing on my job	Sims, Szilagyi & Keller (1976)

3.6.4 Job Demand Measures

Job Demand is physical and psychological elements of stress factors that influence on how employees are able to manage excessive work, unexpected assignment, or work conflict, (Taipale et al., 2011). Workload and emotional demand were considered as job demands in this study. Workload is measured as the pace and amount of work to be done under time restrictions and pressure (Euwema & Bakker, 2009). This dimension was measured with 10 items, developed by Gillespie, et. al (2001). On the other hand, emotional demands refer to the employee's effort to manage personal emotions as well the job-related situations that provoke an emotional response, like tension and suppression (Van Riet & Bakker, 2008). The items were rephrased to suit the scale used in this study (refer Table 3.7) and the rating scale is aligned with five-point scale used in this study, the degree of "1" (strongly disagree) to "5" (strongly agree). The Cronbach's alpha for workload was .60 and emotional demand was .79.

Table 3.7
Original and adapted version of emotional demand items

Original version	Adapted version
Is your work emotionally demanding?	My work is emotionally demanding
In your work, are you confronted with things that personally touch you?	In my work, I confronted with things that personally touch me
Do you face emotionally charged situation in your work?	I face emotionally charged situation in my work
In your work, do you deal with clients who incessantly complain, although you always do everything to help them?	In my work, I deal with people who incessantly complain, although I always do everything to help them
In your work, do you have to deal with demanding clients?	In my work, I have to deal with demanding people
Do you have to deal with clients who do not treat you with the appropriate respect and politeness?	I have to deal with people who do not treat me with the appropriate respect and politeness

Table 3.8
Measures of Job Demand

Variable	Dimensions	Operational Definition	Items	Author (s)
Job Demand		Physical and psychological elements of stress factors that influence on how employees able to manage excessive work, unexpected assignment, or work conflict. (Taipale, et al., 2011)		
	Workload	The pace and amount of work to be done under time restrictions and pressure. Euwena & Bakker (2009)	1. I do not have enough time to perform quality research 2. The number of hours I am expected to teach has increased in recent years 3. The amount of administration I am expected to do is manageable, given my other responsibilities 4. My workload has increased over the past 12 months 5. I often need to work after hours to meet my work requirements. 6. The amount of administration I am expected to do is reasonable.	Gillespie, Walsh, Winefield, Dua & Stough (2001)

			7. The number of students I am expected to teach and /or supervise is reasonable. 8. I feel pressured to attract external research funding. 9. I believe the promotions procedures recognize the variety of work that staff do. 10.I believe that teaching and research achievements are considered equally by promotions committees	
	Emotional Demand	Employee's effort to manage personal emotions as well as the job-related situations that provoke an emotional response, such as tension and suppression Van Riet and Bakker (2008)	1. My work is emotionally demanding. 2. In my work, I confronted with things that personally touch me. 3. I face emotionally charged situation in my work. 4. In my work, I deal with people who incessantly complain, although I always do everything to help them. 5. In my work, I have to deal with demanding people. 6. I have to deal with people who do not treat me with the appropriate respect and politeness	Bakker (2014)

3.7 Statistical Design and Analysis

The results gathered from data collected were coded by using Statistical Package for Social Science (SPSS) version 24.0. There are three statistical techniques were applied in this study in accord to descriptive and inferential statistics namely, frequency, descriptive, normality, linearity, correlation, multicollinearity and multiple linear regression analyses. Frequency analysis used to describe demographic distribution by classification of samples involved (gender, age, employment status, university, position and length of service in current institution). To determine central tendency and dispersion of items, mean and standard deviation analyses was executed in descriptive analysis. Apart from that, the minimum and maximum value also included in this analysis to identify in general if there are any outliers.

Normality test is undertaken to ensure no violation on three basic assumptions namely normality, linearity and homoscedasticity (Pallant, 2007). Skewness and kurtosis ratios were used to assess the significance values for normality diagram besides to look whether the items have any outliers that falls outside the data sets. Together with linearity diagram that will reveal if the data are consistent with the straight line. Next, reliability analysis was performed solely for actual study as pre-test was conducted prior to actual study. In addition, inferential statistics is intended to examine the significant values in contributing to relationship of two or more variables studied. Pearson correlation analysis was applied to examine the direction (positive or negative) and strength (weak, moderate or strong) of associations between variables. Moreover, multicollinearity test is executed to identify if the independent variables are highly correlated to each other compared to dependent variable as the extension of normality test in correlation. Finally, multiple linear regression was applied to indicate the relative contribution of independent variables to predict the dependent variable and to test hypotheses developed for the study.

3.8 Conclusion

This chapter emphasize the methodology approach being executed in this study. This include the research design, population, sample of study and sampling method, operationalization of variables, data collection procedure, questionnaire layout, pre-test and together with analyses techniques. The analyses were performed to determine 'how' much the predictors affects (beta) criterion and 'how' much the personal resources, job resources and job demand were explaining the variance (R square) of work engagement (Pallant, 2007; Sekaran & Bougie, 2010). In a nutshell, the chapter gives a better clue of the research methodology adopted and the pattern of analysis embraced.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.0 Introduction

The results presented in this chapter is the statistical findings that led to further discussion and conclusion for current study in next chapter. The results were obtained by using statistical techniques, descriptive and inferential statistics. Descriptive statistics spotlight on sample demographic distribution, central tendency and dispersion of variables, while inferential statistics were focus on potential correlation and impacts among the variables. The analyses commence with an overview of e-survey research response rate, frequency, mean and standard deviation, reliability, normality, correlation and multiple regression.

4.1 Response Rate

In view of data collection which was administered by on-line base (SurveyMonkey) were sent out to 390 academics via e-mails with attached survey question link to participate in this study, also a notification of gentle reminder was sent after a week with intention to increase the response rate. However, a total of 132 (33.85%) respondents completed the questionnaire successfully. Although researcher has added up the number of respondents to 15% in case of low response rate, however it still does not meet the minimum requirement (260). Yet, it is still considered as acceptable and can proceed with further analysis (Lindemann, 2018). According to Lindemann (2018), the "acceptable" response rate of 29% is acceptable for electronic or online survey. Moreover, Yan and Fan (2010) highlights that response rate using online survey was quite low about 11% compared to other survey types.

4.2 Descriptive Statistics

4.2.1 Participants' Demographic Distribution

This section describes respondents' background that participated in this study. Specifically, respondent's demographic information like gender, age, employment status, university work, position, and their length of service in current institution. The details were identified by using frequency analysis in frequency statistics. Table 4.1 shows the demographic data of sample participated (n=132). The analysis output is attached (refer Appendix B).

Table 4.1
Output of Respondents' Profile

Demographic	Frequency	Percentage (%)
Gender		
Male	39	29.5
Female	93	70.5
Age		
25 – 30	28	21.2
31 to 36	35	26.5
37 – 42	31	23.5
43 – 48	17	12.9
49 – 54	14	10.6
55 and above	7	5.3
Employment Status		
Permanent	132	100.0

Table 4.1
(Continued) Output of Respondents' Profile

Demographic	Frequency	Percentage (%)
University		
USM	54	40.9
UUM	47	35.6
UiTM	31	23.5
Position		
Professor	10	7.6
Assistant Professor	12	9.1
Senior Lecturer	65	49.2
Lecturer	43	32.6
Visiting Lecturer	2	1.5
Service Length		
Less than a year	23	17.4
1 year to 5 years	32	24.2
6 years to 10 years	30	22.7
11 to 15 years	27	20.5
More than 16 years	20	15.2

As shown in above table, among 132 respondents, 93 (70.5%) are female and the remaining 39 (29.5%) are male. It shows the biggest portion of survey was participated by female academics. In terms of respondents' age, 28 (21.2%) respondents were in age range of 25 to 30 years old, followed by 35 (26.5%) respondents were in the age of 31 to 36, 31 (23.5%) respondents were in age bracket between 37 to 42. In addition, 17 (12.9%) respondents were in age bracket of 43 to 48, followed by age bracket between 49 to 54 has 14 (10.6%) respondents and the remaining 7 (5.3%) of respondents were in the age range of 55 and above.

Regarding with the respondents' employment status, all respondents 132 (100%) were permanent staff in respective universities. Besides, based on respondents' working university, majority are from Universiti Sains Malaysia (USM) about 54 (40.9%) who was participated, followed by 47 (35.6%) respondents are from Universiti Utara Malaysia (UUM) and the remaining 31 (23.5%) respondents are from Universiti Teknologi MARA (UiTM), specifically from Seri Iskandar campus.

With regards to respondents' current position in their respective university, 10 (7.6%) is holding the position as Professor, while 12 (9.1%) as Associate Professor. Next, 65 (49.2%) of respondents are senior lecturers and 43 (32.6%) of respondents were lecturers, while the remaining 2 (1.5%) is visiting lecturer. In addition, according to respondents' length of service in current institution, respondents worked for 1 to 5 years, 32 (24.2%), worked for 6 to 10 years, 30 (22.7%). While respondents worked for 11 to 15 years, 27 (20.5%), 20 (15.2%) has worked for more than 16 years, and the remaining 23 (17.4%) of respondents worked less than a year in their current institution.

4.2.2 Central Tendency and Dispersion of Variables

The aim of mean and standard deviation in descriptive statistics is to identify the 'central' scores of variables and spread the values approximately at central tendency. The value of mean and standard deviation is important as it highlights the importance of construct being assessed, (Martey, 2014). Prior to analysis, negative items in personal resources were reverse coded to ensure that all items were align in one positive direction, beside after the process of deleting unreliable items. Pallant (2007) states, to ensure the high intensity of optimism, five-point Likert Scale that was used in research survey need to be in line. Moreover, the minimum and maximum value were added to identify if there are any outliers from the scale.

Table 4.2
Output of Mean and Standard Deviation for Variables

Variables	**Min**	**Max**	**Mean**	**SD**
Work Engagement **(WE)**	2.37	5.00	3.85	0.45
Personal Resources **(PR)**	2.75	5.00	4.00	0.54
Autonomy **(Auto)**	1.50	5.00	3.86	0.65
Social Support **(SS)**	2.25	5.00	3.72	0.57
Performance Feedback **(PF)**	1.00	5.00	3.67	0.80
Workload **(WL)**	1.50	5.00	3.35	0.68
Emotional Demand **(EDD)**	1.83	4.83	3.43	0.64

a. N = 132
b. Dependent Variable: WE = Work Engagement
c. Independent Variables: PR= personal resources, Auto=autonomy, SS=social support, PF=performance feedback, WL= workload and EDD= emotional demand

Table 4.2 shows the mean and standard deviation score for variables understudy. Basically, almost all mean score is above moderate nearest to 4 on the five-point Likert scale but for workload and emotional demand it shows slightly moderate. Additionally, the minimum and maximum value indicating that there is no outliers fall out of the five-point Likert scale.

4.3 Reliability Analysis

In indicating the goodness of measures, reliability analysis is salient (Sekaran & Bougie, 2010). The reliability level for variables understudy was identified based on suggestion made by Hinton, et al., (2004). The authors revealed, 0.50 and below (low reliability), 0.50 to 0.70 (moderate reliability), 0.70 to 0.90 (high reliability) and 0.90 and above (excellent reliability). After the reliability analysis, found there are few items need to be deleted as recommended by the analysis itself to increase the reliability value.

Almost all variables (work engagement, autonomy, social support, performance feedback, workload and emotional demand) indicates high level of reliability but only personal resources show moderate level of reliability (refer Table 4.3). It possibly due to new contribution of Big Five personality to JD-R model and misinterpretation. As enhanced by Mohan and Mulla (2013) misinterpretation and lack of understanding on items may result to low alpha value. It tends to occur due to different perception among respondents especially in the context of country (Malaysia and Western). Specifically, in terms of wording used as personalities terms may complicated to interpret by them.

Table 4.3
Output of Reliability Analysis: Cronbach's Coefficient Alpha

Constructs	No. of Items	No. of Items Discarded	Cronbach's Alpha	Level of Reliability
WE	9	0	.816	High
PR	4	6	.508	Moderate
Auto	2	1	.703	High
SS	8	0	.825	High
PF	4	0	.883	High
WL	6	4	.729	High
EDD	6	0	.784	High

4.4 Normality, Linearity and Homoscedasticity

This is the preliminary test in order to attain the substantial distribution of variables for further inferential statistics like Pearson correlation and multiple linear regression analyses. The purpose of this test is to ensure that there is no violation on three basic assumption, normality, linearity and homoscedasticity (Pallant, 2007). Skewness and Kurtosis are the indicator to assess the normality significance values. There is a rule to ensure normality, as skewness and kurtosis value between -2 to +2 are considered acceptable to prove the normal univariate distribution, (George & Mallery, 2010). Table 4.4 shows the normality of distribution for this study, indicates the values are within acceptable range even data shows a little skewed and kurtotic for all the variables yet does not differ significantly from normality.

Next, linearity. The purpose of linearity is to ensure a linear relationship between predictors and the outcome variable. The rule of thumb is that the variables must have a similar variance to the line instead of inconsistent and homoscedasticity. Thus, to assess the linearity and homoscedasticity between variables, normal probability plot was performed. The visual inspection of normal P-P Plot and histogram with bell curve showed in Figure 4.1 and Figure 4.2. It's shows data scored were approximately normally distributed and its substantially skewed as all variables are below -2. Hence, there is no major deviation found in normal probability plot as observed in shown figures and therefore it met the prerequisite of basic assumption and it enable to proceed into inferential statistics to testify the research objective.

Table 4.4
Normality Analysis: Skewness and Kurtosis Ratios

Constructs	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
WE	-0.334	0.211	1.646	0.419
PR	-0.150	0.211	-0.750	0.419
Auto	-0.574	0.211	1.469	0.419
SS	-0.065	0.211	0.243	0.419
PF	-0.820	0.211	0.965	0.419
WL	-0.444	0.211	-0.014	0.419
EDD	-0.226	0.211	-0.427	0.419

a. N= 132

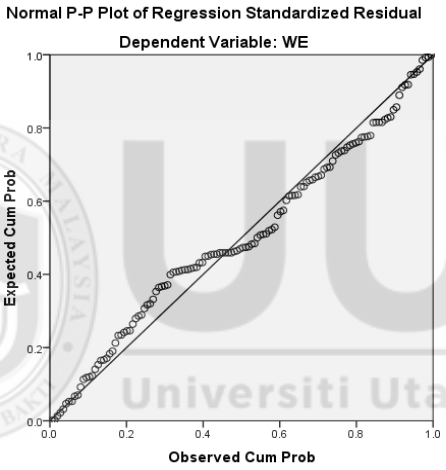

Figure 4.1
Normal P-Plot of Regression Standardised Residual

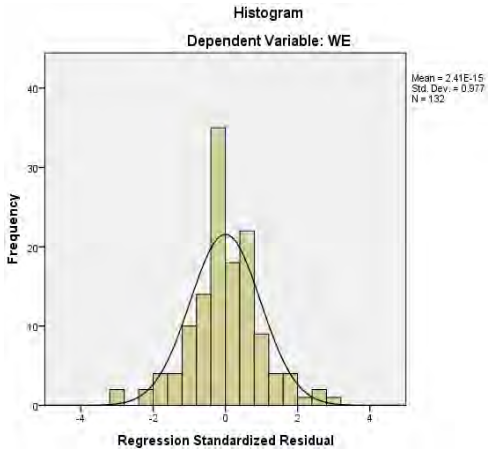

Figure 4.2
Statistics Histogram for Personal Resources, Autonomy, Social Support, Performance Feedback, Workload, Emotional Demand and Work Engagement

4.5 Inferential Statistics

4.5.1 Correlation Analysis

Correlation analysis is prime as enable to investigate the potential relationship between the continuous variables. The analysis provides the indication of variable's direction either substantially negative or positive. To interpret the correlation coefficient, researcher need to identify the coefficient and associated significance value (p), (Coakes & Steed, 2007).

Thus, if the correlation coefficient indicates +1.0, it explains as perfect positive correlation between two variables, meanwhile if the results is -1.0, it perceived as perfect negative correlation, (Gliner, Morgan & Leech, 2009). The acceptable significant value (p) will be either 0.01 or 0.05 (Coakes & Steed, 2007). There is recommendation made by Cohen (1988) on interpretation of r value, the strength of correlation coefficient. The r value of 0.10 to 0.29 (weak), 0.30 to 0.49 (moderate) and 0.50 to 1.00 (strong). Meanwhile, Pallant (2007) explained if the value scored zero (0), it referred as no correlation. Table 4.5 shows the output of Pearson correlation analysis.

Additionally, multicollinearity test was executed to identify if the independent variables are highly correlated to each other compared to dependent variable. There are two analysis under this test, namely multicollinearity test via correlation matrix with tolerance and Variance Inflated Factor (VIF).

Table 4.5

Output of Pearson Correlation Analysis

	WE	PR	A	SS	PF	WL	EDD
WE	1						
PR	0.290**	1					
Auto	0.194*	0.115	1				
SS	0.232**	0.207*	0.493**	1			
PF	0.147	0.083	0.405**	0.730**	1		
WL	0.225**	-0.057	0.222*	0.467**	0.585**	1	
EDD	0.073	-0.011	-0.008	-0.165	-0.153	0.054	1

a. N=132

*b. **Correlation is significant at the 0.01 level (2-tailed)*

*c. *Correlation is significant at the 0.05 level (2-tailed)*

Based on result presented above in Table 4.5, with 132 samples tested on, all variables related to dependent variable (work engagement) shows weak correlation yet four out of six variables were significant. Personal resources ($r = 0.290$, $p < 0.01$), autonomy ($r = 0.194$, $p < 0.05$), social support ($r = 0.232$, $p < 0.01$), and workload ($r = 0.225$, $p < 0.01$). Whereas, the insignificant variables are performance feedback ($r = 0.147$, $P > 0.05$) and emotional demand ($r = 0.073$, $p > 0.05$).

Table 4.6
Multicollinearity Test: Correlation Matrix

Constructs	PR	A	SS	PF	WL	EDD
PR	1					
Auto	0.115	1				
SS	0.207*	0.493**	1			
PF	0.083	0.405**	0.730**	1		
WL	-0.057	0.222	0.467**	0.585**	1	
EDD	-0.011	-0.008	-0.165	-0.153	0.054	1

a. N= 132

The above Table 4.6 indicates the correlation of all independent variables with each other is far below the cut-off point of 0.90. Thus, it shows that all independent variables are not highly correlated.

Second method for evaluating the multicollinearity is Variance Inflation Factor (VIF). As suggested by Hair, Ringle and Sarstedt (2011) the value of VIF must be lower than 5. Value of VIF exceeding 5 and the tolerance lower than 0.20 depicts that multicollinearity exist. Below mentioned Table 4.7 shows the value of VIF and tolerance for independent variables ranges from 1.081 to 2.626 and tolerance value ranges from 0.381 to 0.925 which are considered acceptable.

Table 4.7
Multicollinearity Test: Tolerance and VIF

Construct	Tolerance	VIF
PR	0.924	1.082
Auto	0.744	1.345
SS	0.393	2.547
PF	0.381	2.626
WL	0.614	1.630
EDD	0.925	1.081

a. N= 132

4.5.2 Multiple Linear Regression Analysis

Multiple linear regression analysis is the extension of correlation analysis, essentially in finding 'how' much the contribution does independent variables impact dependent variables and to test the formulated hypotheses. This analysis was performed to examine the relationship between personal resources, autonomy, social support, performance feedback, workload, emotional demand on work engagement. Table 4.8 shows the results of multiple regression analysis for hypotheses testing.

Table 4.8
Multiple Regression Analysis: Personal resources, autonomy, social support, performance feedback, workload and emotional demand

Variable	Beta (β) (Standardized Coefficient)	t	Sig.
(Constant)		4.326	.000
PR	0.278	3.274	0.001***
Auto	0.105	1.111	0.269
SS	0.122	0.934	0.352
PF	-0.136	-1.026	0.307
WL	0.237	2.270	0.025*
EDD	0.064	0.751	0.454
R Square (R^2)	0.167		
Adjusted R Square	0.127		
F Value	4.181		
Sig. F Change	0.001***		

a. N = 132
b. Dependent Variable: WE
c. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Based on Table 4.8, the R^2 value, which is an indicator of how well the model fits is (R^2 =0.167) for work engagement. In other words, the independent variables (personal resources, job resources and job demand) explain 16.7 % of the variance in the dependent variable, work engagement. The results also indicate that personal resources (Big-Five personality) (β = 0.278, $p < 0.05$) and work load (β = 0.237, $p < 0.05$) were significantly related to work engagement. Thus hypotheses 1 and 5 were supported. Autonomy (β = 0.105, $p > 0.05$), social support (β = 0.122, $p > 0.05$), performance feedback (β = -0.136, $p > 0.05$) and emotional demand (β = 0.064, $p > 0.05$) were found to be not significantly related to work engagement. Thus hypotheses 2,3,4 and 6 were not supported.

4.6 Hypotheses Testing

Table 4.9
Summary of Hypotheses Results using Standard Multiple Linear Regression Analysis

Hypotheses	Description	Results
H1	Personal resources is significantly related to work engagement.	Supported
H2	Autonomy is significantly related to work engagement.	Rejected
H3	Social support is significantly related to work engagement.	Rejected
H4	Performance feedback is significantly related to work engagement.	Rejected
H5	Workload is significantly related to work engagement.	Supported
H6	Emotional demand is significantly related to work engagement.	Rejected

4.7 Chapter Summary

Based on the discussion above, three research objectives have been accomplished via hypothesis testing. There was clear indication that not all independent variables were related to dependent variable. In other words, personal resources and workload have a significant relationship with work engagement, whereas autonomy, social support, performance feedback and emotional demand are not significant to predict work engagement in this study's context. Output of the statistical analyses (SPSS output) were attached (Appendix B).

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.0 Introduction

This chapter discusses the findings presented in chapter 4 along with the theoretical and practical contributions of the study. It also presents the limitations of this study and offers some suggestions for future research.

Generally, overall discussion will refer to answering the research objective as presented in chapter one:

1. To examine the relationship between personal resources (Big-Five Personality) and work engagement.
2. To examine the relationship between job resources (autonomy, social support and performance feedback) and work engagement.
3. To determine the relationship between job demand (workload and emotional demand) and work engagement.

5.1 Summary of Findings

The study focuses its findings on the influence of personal resources, autonomy, social support, performance feedback, workload and emotional demand on work engagement among academic staff in Northern region universities in Malaysia which are USM, UUM and UiTM Seri Iskandar. The multiple regression analysis results found that not all the independent variables of the study predicting work engagement and supported the hypotheses. Only two out of 6 hypotheses were supported and related to work engagement. They are personal resources and work load. Autonomy, social support, performance feedback and emotional demand were found no related to work engagement. Below discussion will explained in detail the research

result based on hypotheses proposed. The future suggestion is the key indicator to many parties such as Ministry of Higher Education, Human Resources officers, academic researchers, and business practitioners to come out with idea for better strategy in improving academics engagement level especially in Public universities academics.

5.2 Relationship between personal resources and work engagement

The first objective of this study aimed to examine the influence of personal resources (Big-Five personality) and work engagement. The result of multiple regression analysis found significant relationship between personal resources (agreeableness and conscientiousness traits) and work engagement. The result is parallel with past studies that agreeableness and conscientiousness were predicting work engagement, (Mostert & Rothmann, 2006; Zaidi, et al., 2013). It indicates that engaged academics tend to be more concern for others, helpful and are not demanding. Thus, it creates a harmonious working environment. As defend by John, et al., (1991) that individual at high end agreeableness is kind almost to everyone and possess forgiving in nature. Conscientiousness was related to work engagement where the result is consistent with past literatures (e.g. Kim et al., 2012; Mostert and Rothmann, 2006; Wildermuth, 2008; Zaidi, et al., 2013). According to Bakker et al. (2012), work engagement was found to be positively related to task performance, contextual performance, and active learning, particularly for employees high in conscientiousness. Hence, conscientiousness individuals tend to be more focused, self-discipline, well organized, efficient and goal oriented. Generally, both personal resources (agreeableness and conscientiousness) are significantly predicting work engagement.

5.3 Relationship between job resources and work engagement

The second research objective of this study aimed to examine the influence of job resources (autonomy, social support and performance feedback) and work engagement. The result of multiple regression analysis found that all the dimensions of job resources are not predicting work engagement and reveal the insignificance of autonomy, social support and performance feedback to work engagement.

The findings of this study was quite surprising yet justifiable. The results of this study were contradicting with literatures. Most studies on job resources specifically autonomy, social support and performance feedback were found to be predictive of work engagement (Alzyoud, et al., 2015; Bakker & Bal, 2010; Sukhri, 2015 and Taipale, et al., 2011). However, current findings were in contrast with literatures. One possible explanation for insignificant results could be due different nature of universities involved in this study where USM is research university, UUM is focused university while UiTM is comprehensive university.

Since a big portion of respondents in this study were from USM (40.9%), academics from this university are used to self-management concept which does not require any monitoring to perform their work and be engaged with it. They have freedom, independence, and discretion to plan their work pace and methods and autonomy to perform their tasks. What is important, at the end of the day they achieved the KPIs set for them. This explained why autonomy was not significant to work engagement. Social support from co-workers and supervisor was also found to be not significant to work engagement. This could possibly due to the nature of academics' work which is independence and has a clear set of KPIs to be achieved, social support seems less important. This help to explain why social support was not significantly related to work engagement among academics. Performance feedback also does not influence

work engagement among academics in this study. Possible explanation could due to achievement or not achievement of the KPIs set for them by itself acts as feedback mechanism. Thus, performance feedback by superior is not important because the task itself will inform or give feedback on the achievement or not the targeted results. Another justification for why job resources do not have significant relationship with work engagement among academics in this study could be due to demographic background of respondents. Most of respondents are senior lecturers (49.2%) who have more knowledge and experienced. Hence, it enables them to handle their task by themselves.

5.4 Relationship between job demand and work engagement

The third research objective of this study aimed to determine the influence of job demands (workload and emotional demand) and work engagement. The result of regression analysis found workload are predicting work engagement, however emotional demands does not. Thus, the hypotheses developed for workload is accepted while for emotional demand is rejected.

Workload defined as the pace and amount of work to be done under time restrictions and pressure influence positively and significantly on work engagement among academics. It indicates that academics in this study context accepting workload as parts of their job and responsibilities. They are expected to work under pressure to achieve their KPIs. The finding of this study is parallel to few past studies that indicating positive correlation between workload and work engagement (Hallberg, et al., 2007; Xanthopoulou, et al., 2007). Thus, it declares that Malaysian public university's academics can manage excessive and unexpected tasks, besides they are adapting to the pace and quantity of work to be accomplished in restricted time frame. Other justification for a significance and positive relationship between workload and work engagement is possibly due to the self-discipline and motivation in lifting university to high rank with the determination of work engagement apart from the eagerness to complete assigned work successfully.

Referring to the demographic in universities involved, the number of female respondents is much higher (80.3%) compared to male respondents (19.7%). Due to the job nature and the uniqueness of female characteristics in accommodating work, they will try the best in completing assigned tasks to avoid facing high workload if they extend the work longer. The motivation to engaged with work when has high workload is also determined by age group of respondents, where mainly respondents are from 25 – 36 years old who possess high motivation

level and energy to complete work fast. However, emotional demand, that is how eemployees' effort to manage personal emotions as well as the job-related situations that provoke an emotional response, such as tension and suppression was insignificant to work engagement. It indicates that respondents in this study do not facing any emotional demand issues that may influence their work engagement level. It could possibly due to the nature of academics who are professional people, independence and has some kind of freedom in dealing with tasks and responsibilities assigned to them. They act more professionally, not based on personal emotion when confronting situations that provoke emotional response. At the same time, researcher perceive that due to positive personal resources (agreeableness and conscientiousness) as discussed earlier may influence them to deal emotionally charged situation better. As coined by Hobfoll (1989) that high personal resources such as positive criteria help to manage emotional demands situation effectively.

5.5 Limitation and Future Direction of Research

There are few limitations found in this study that might influence the interpretations and generalizations of the results. The limitations and suggestions for future study were discussed below.

The study intends to understand the influence of personal resources, job resources and job demand on academics' work engagement. However, due to time and data information constraint, researcher was only able to gain data from three selected public universities located in Northern region of Malaysia. The limitation of data may refer to university's rules and regulation which could not reveal the list name of academics working in that university. It leads to applying non-probability sampling which could not generalized the study to whole population. Thus, the findings were only captured perception of those participate in this study and failed to generalize to other sector institution such as private university and colleges. Therefore, there is a need for future study which could enhance and increase the better understanding of work engagement issues that influenced by named variables, especially when involving private universities and colleges that possess different types of demands and resources, or even can execute a comparison study among Higher Institution.

The second limitation was the response rate. Since online survey was applied solely in this study, researcher gain low response rate which consequently researcher found difficulties in interpreting the perception of academics regarding the subject matter. Hence, in future study, the conglomeration of survey mode may help researchers to increase the response rate besides improve the interpretation of results.

Third limitation found in personal resource predictor, as future research could be extended into other dimension of personality instead of focus solely on positive characteristic. It is because every individual has different personality which has significant with negative side, for instance the dark traits model could be tested in future, where this predictor may enrich the output on work engagement issue, beside able to synchronize with IR 4.0 changes.

The fourth and last limitation found in this study context was that throughout the study, researcher noticed that most of work engagement constructs were tested on educational setting compared to other work setting. Hence, future research is needed to fulfil the gap and future researchers may possibly test on different setting such as in real estate development and holdings, airlines, and even in textile industry. These setting was suggested due to the high demands of employee that requires best talent to stay. Furthermore, it is because their job duties become more challenging and facing rapid changes in delivering preference, beside researcher believe the possibly of having work engagement issue.

5.6 Research Implications

In overview, there are few implications of the study which can be categorized into two: theoretical implications and practical implications. In this study context, theoretical implication emphasizes the importance and the contribution of the study to existing knowledge and to widen the perspective of JD-R model. On the other hand, the practical implication will focus on solving specific issues that related to the study.

5.6.1 Theoretical Implication

The aim of current study was to identify the influence of personal resources (Big Five personality), job resources (autonomy, social support and performance feedback) and job demand (workload and emotional demand) on work engagement. The finding of this study has theoretical implications. Specifically, this study provides additional contribution for the JD-R model regarding the scope of personal resources. It is because most of the studies imply positive traits such as resilience, optimism and self-efficacy compared to contribution of current study on Big Five personality. The result helps to confirm the relations between personal resources, job resources and job demand as predictors of work engagement. Thus, this study emphasis the importance of those variables.

Based on the finding, personal resources (Big Five personality) and workload were significant in predicting work engagement in academics profession within Malaysian Northern region public universities academics. In summary, the findings assist in contributing in strengthening an empirical evidence on literature of work engagement especially in Malaysian context. As this contribution can be a stepping stone for more outcome of these constructs' literatures. It would be benefits for future scholars that will conduct a research, especially for local scholars that has the intention to investigate JD-R model among academics.

Next, Social Exchange Theory (SET) applied to underpin personal resources, job resources, job demand and work engagement with the justification of interdependency between the variables. The study explores the theory is highlighting on the perspective of the university nature. SET was defined with high end positive character that will influence work engagement level specifically, extrovert and open to experience personality may engaged and neurotic individual would find difficulties to engaged due to unfit with job nature and scarcity of resources that an academic is required. Yet, the result indicates different perspective based on the university nature. Since the nature of universities academics involved mainly from research university where self-management were in nature during role performing found to be more agreeable and conscientiousness in personality which motivate them to be engaged. They may tend to be reserved yet still possess positive thinking, curiosity and high motivation in learning to apply the latest knowledge, aligned with Education 4.0.

Job resources in self-managed academics, where autonomy, social support and performance feedback is not a compulsory needed element to affect academics be engaged as they found there are other major elements could influence them greatly in engaging. In job demand, the study explains that there is reciprocal relationship between workload and work engagement. It exposes that academics in this study prefer workload that enable them to explore more knowledge and experience the challenging works, thus lead them to engage. At the same time, only emotional demand is not indicating any reciprocal relationship as emotionally disturbed situation or none did not affect their engagement with work. As coined by Hobfoll (1989) that high personal resources such as positive criteria help to manage emotional demands situation effectively.

In final analysis, the contribution to the body of knowledge is enhanced and can be anchored beyond the Malaysian context which makes it more profoundly suitable for other environments. From this, it is clearly seen that theoretical postulations are applicable to other similar academic environments. In a nutshell, the study is theoretical endowed towards understanding of the phenomena under studied.

5.6.2 Practitioner Implication

The finding of this study can be a key indicator for university's management and Ministry of Higher Education. The study reveal that personal resources and workload had a positive impact in boosting work engagement among public university academicians. Therefore, management needs to ensure that workload receiving by academics are in optimum level and fit with their existing personal resources. The result explain that agreeable and conscientiousness academics are engaged with work compared to other traits (extraversion, openness to experience and neuroticism). This could possibly due to the nature of the work of academics which has certain degree of freedom and independence. On the other hand, job resources (autonomy, social support and performance feedback) were found to be insignificant with work engagement. University's management and Ministry of Higher Education need to ensure that academics are prepared to face more revolution of IR 4.0 such as the redesigned higher education system with an equal demand and resources to achieve Malaysia national education objectives. This is important because academics are the backbone of a university.

5.5 Conclusion

The objective of this study is to explore the influence of personal resources, job resources and job demand on work engagement. The study covers academics from USM, UUM and UiTM and therefore statistical results have represented these universities as significant contributor, added value and also 'cornerstone' for expansion of literature of work engagement. Out of 390 questionnaires e-mailed to the academics, only 132 responses had received. By using SPSS 24, a total of 132 complete responses were analyzed. Multiple regression analysis revealed that there is correlation between personal resources and workload on work engagement. Thus, the research objective and hypotheses were explained.

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UNIVERSITI UTARA MALAYSIA

THE INFLUENCE OF JOB DEMAND-RESOURCES MODEL ON WORK ENGAGEMENT AMONG MALAYSIAN UNIVERSITIES' ACADEMICIANS

Dear valued respondent,

Thank you for your participation in this survey. It is great pleasure to inform you that currently I am conducting a research project titled "The influence of Job Demand-Resources model on work engagement among Malaysian universities' academicians". Therefore, I am seeking your cooperation in completing a questionnaire that will take approximately 4-6 minutes, has 5 sections, total of 56 questions. I highly recognize that your time is valuable with having high workload but at the same time, I really appreciate all your contribution in answering this questionnaire. Information provided will be kept confidential and used purely for academic purpose. Please do not hesitate to contact me, if you have any query about this research.

Thank you very much for your time and cooperation.
Wish you have a great day.

Yours sincerely,

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SECTION A: PERSONAL DETAILS
Please tick (√) on the answer form that best describes your personal details.

GENDER	
	Male
	Female
AGE	
	25 – 30
	31 – 36
	37 – 42
	43 – 48
	49 – 54
	55 and above

EMPLOYMENT STATUS	
	Contract
	Permanent

UNIVERSITY	
	Universiti Sains Malaysia (USM)
	Universiti Utara Malaysia (UUM)
	Universiti Teknologi MARA (UiTM)

POSITION	
	Professor
	Associate Professor
	Senior Lecturer
	Lecturer
	Visiting Lecturer
	Others (Please State) _____

LENGTH OF SERVICE IN CURRENT INSTITUTION	
	Less than 1 year
	1 year to 5 years
	6 years to 10 years
	11 years to 15 years
	More than 16 years

SECTION B: PERSONALITY TRAITS

Here are numbers of characteristics that may or may not apply to you. Please circle a number to indicate the extent to which you agree or disagree with the statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

I see myself as someone who……

NO	ITEMS	SCALE				
1	Is reserved	1	2	3	4	5
2	Is generally trusting	1	2	3	4	5
3	Tends to be lazy	1	2	3	4	5
4	Is relaxed, handles stress well	1	2	3	4	5
5	Has few artistic interests	1	2	3	4	5
6	Is outgoing, sociable	1	2	3	4	5
7	Tends to find fault with others	1	2	3	4	5
8	Does a thorough job	1	2	3	4	5
9	Get nervous easily	1	2	3	4	5
10	Has an active imagination	1	2	3	4	5

SECTION C: JOB RESOURCES

Please read each statement carefully and decide if you ever feel this way about your job resources. indicate how often you feel it by circling the agreement scale that best describe your job resources.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

NO	ITEMS	SCALE				
1	My job allows me to make a lot of decision on my job.	1	2	3	4	5
2	On my job, I have very little freedom to decide how I do my work.	1	2	3	4	5
3	I have a lot of influence about what happens on my job	1	2	3	4	5
4	My HOD is concerned about the welfare of those under them	1	2	3	4	5
5	My HOD pays attention to what I am saying	1	2	3	4	5
6	My HOD is helpful in getting the job done	1	2	3	4	5
7	My HOD is successful in getting people to work together	1	2	3	4	5
8	People I work with are competent in doing their job	1	2	3	4	5
9	People I work with take a personal interest in me	1	2	3	4	5
10	People I work with are friendly	1	2	3	4	5
11	When needed, my colleagues will help me	1	2	3	4	5
12	I receive enough information from my HOD about my job performance	1	2	3	4	5
13	I receive enough feedback from my HOD on how well I am doing	1	2	3	4	5
14	There is enough opportunity in my job to find out on how I am doing	1	2	3	4	5
15	I know how well I am performing on my job	1	2	3	4	5

SECTION D: JOB DEMAND

Please read each statement carefully and decide if you ever feel this way about your job demand. If you have never had this experience, please circle the agreement scale that best describe your job demand.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

NO	ITEMS	SCALE				
1	I do not have enough time to perform quality research	1	2	3	4	5
2	The number of hours I am expected to teach has increased in recent years	1	2	3	4	5
3	The amount of administration I am expected to do is manageable, given my other responsibilities	1	2	3	4	5
4	My workload has increased over the past 12 months	1	2	3	4	5
5	I often need to work after hours to meet my work requirements.	1	2	3	4	5
6	The amount of administration I am expected to do is reasonable	1	2	3	4	5
7	The number of students I am expected to teach and /or supervise is reasonable	1	2	3	4	5
8	I feel pressured to attract external research funding	1	2	3	4	5
9	I believe the promotions procedures recognize the variety of work that staff do	1	2	3	4	5
10	I believe that teaching and research achievements are considered equally by promotions committees	1	2	3	4	5
11	My work is emotionally demanding	1	2	3	4	5
12	In my work, I confronted with things that personally touch me	1	2	3	4	5
13	I face emotionally charged situation in my work	1	2	3	4	5
14	In my work, I deal with people who incessantly complain, although I always do everything to help them	1	2	3	4	5
15	In my work, I have to deal with demanding people	1	2	3	4	5
16	I have to deal with people who do not treat me with the appropriate respect and politeness	1	2	3	4	5

SECTION E: WORK ENGAGEMENT

Please read each statement carefully and decide if you ever feel this way about your work engagement level. If you have never had this experience, please circle the agreement scale that best describe your engagement level.

1	2	3	4	5
Never	Rarely	Sometimes	Often	Always

NO	ITEMS	SCALE				
1	At my work, I feel bursting with energy	1	2	3	4	5
2	At my job, I feel strong and vigorous	1	2	3	4	5
3	I am enthusiastic about my job	1	2	3	4	5
4	My job inspires me	1	2	3	4	5
5	When I get up in the morning, I feel like going to work	1	2	3	4	5
6	I feel happy when I am working intensely	1	2	3	4	5
7	I am proud on the work that I do	1	2	3	4	5
8	I am immersed in my work	1	2	3	4	5
9	I get carried away when I'm working	1	2	3	4	5

-END OF SURVEY-
- THANK YOU FOR YOUR PRECIOUS TIME! -

Appendix B: SPSS Output

B.1 Frequency Analysis

Statistics

		Gender	Age	Emp_Status	University	Position	Service_length
N	Valid	132	132	132	132	132	132
	Missing	0	0	0	0	0	0

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	39	29.5	29.5	29.5
	Female	93	70.5	70.5	100.0
	Total	132	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 - 30	28	21.2	21.2	21.2
	31 - 36	35	26.5	26.5	47.7
	37 - 42	31	23.5	23.5	71.2
	43 - 48	17	12.9	12.9	84.1
	49 - 54	14	10.6	10.6	94.7
	55 and above	7	5.3	5.3	100.0
	Total	132	100.0	100.0	

Emp_Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Permanent	132	100.0	100.0	100.0
	Total	132	100.0	100.0	

University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	USM	54	40.9	40.9	40.9
	UUM	47	35.6	35.6	76.5
	UiTM	31	23.5	23.5	100.0
	Total	132	100.0	100.0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Professor	10	7.6	7.6	7.6
	Associate Professor	12	9.1	9.1	16.7
	Senior Lecturer	65	49.2	49.2	65.9
	Lecturer	43	32.6	32.6	98.5
	Visiting Lecturer	2	1.5	1.5	100.0
	Total	132	100.0	100.0	

Service_length

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than a year	23	17.4	17.4	17.4
	1 year to 5 years	32	24.2	24.2	41.7
	6 years to 10 years	30	22.7	22.7	64.4
	11 years to 15 years	27	20.5	20.5	84.8
	More than 16 years	20	15.2	15.2	100.0
	Total	132	100.0	100.0	

B.2 Descriptive Analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
WE	132	2.37	5.00	3.8597	.45901
PR	132	2.75	5.00	4.0057	.54604
Auto	132	1.50	5.00	3.8636	.65116
SS	132	2.25	5.00	3.7216	.57222
PF	132	1.00	5.00	3.6761	.80120
WL	132	1.50	5.00	3.3535	.68270
EDD	132	1.83	4.83	3.4343	.64394
Valid N (listwise)	132				

B.3 Reliability Analysis

B.3.1 Personal Resources

Reliability Statistics

Cronbach's Alpha[a]	N of Items
-.046	10

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Item Statistics

	Mean	Std. Deviation	N
E1R	2.77	1.055	132
E2	3.61	.931	132
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132
N1R	2.39	.905	132
N2	3.02	1.011	132
O1R	2.32	.952	132
O2	3.92	.706	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E1R	31.27	6.169	.109	-.164[a]
E2	30.43	6.201	.169	-.202[a]
A1	29.83	6.903	.110	-.121[a]
A2R	30.04	7.151	.011	-.058[a]
C1R	30.16	6.120	.150	-.196[a]
C2	30.10	6.868	.046	-.088[a]
N1R	31.65	7.496	-.093	.020
N2	31.02	8.404	-.268	.167
O1R	31.72	8.112	-.215	.116
O2	30.11	7.582	-.058	-.015[a]

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
34.04	7.854	2.802	10

Deleted Personal Resources Items

Scale: PR

Reliability Statistics

Cronbach's Alpha	N of Items
.167	9

Item Statistics

	Mean	Std. Deviation	N
E1R	2.77	1.055	132
E2	3.61	.931	132
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132
N1R	2.39	.905	132
O1R	2.32	.952	132
O2	3.92	.706	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E1R	28.26	6.345	.178	.054
E2	27.42	6.840	.143	.092
A1	26.82	7.249	.159	.098
A2R	27.02	7.244	.116	.117
C1R	27.14	5.941	.303	-.043[a]
C2	27.08	7.298	.070	.144
N1R	28.64	8.462	-.167	.287
O1R	28.70	8.576	-.193	.310
O2	27.10	8.028	-.031	.195

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
31.02	8.404	2.899	9

Scale: PR

Reliability Statistics

Cronbach's Alpha	N of Items
.310	8

Item Statistics

	Mean	Std. Deviation	N
E1R	2.77	1.055	132
E2	3.61	.931	132
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132
N1R	2.39	.905	132
O2	3.92	.706	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E1R	25.94	6.638	.152	.264
E2	25.10	6.624	.227	.218
A1	24.50	7.229	.209	.243
A2R	24.70	7.538	.086	.301
C1R	24.83	5.992	.326	.143
C2	24.77	7.158	.137	.274
N1R	26.32	8.799	-.194	.446
O2	24.78	7.730	.089	.298

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
28.70	8.576	2.929	8

Scale: PR

Reliability Statistics

Cronbach's Alpha	N of Items
.446	7

Item Statistics

	Mean	Std. Deviation	N
E1R	2.77	1.055	132
E2	3.61	.931	132
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132
O2	3.92	.706	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E1R	23.55	7.012	.121	.461
E2	22.71	6.741	.246	.387
A1	22.11	7.277	.252	.392
A2R	22.32	7.577	.127	.444
C1R	22.44	5.943	.383	.304
C2	22.38	7.077	.202	.410
O2	22.39	7.798	.128	.441

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
26.32	8.799	2.966	7

Scale: PR

Reliability Statistics

Cronbach's Alpha	N of Items
.461	6

Item Statistics

	Mean	Std. Deviation	N
E2	3.61	.931	132
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132
O2	3.92	.706	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E2	19.95	5.608	.122	.480
A1	19.35	5.481	.294	.386
A2R	19.55	5.806	.141	.461
C1R	19.67	4.420	.382	.309
C2	19.61	5.216	.254	.401
O2	19.63	5.838	.198	.432

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
23.55	7.012	2.648	6

Scale: PR

Reliability Statistics

Cronbach's Alpha	N of Items
.480	5

Item Statistics

	Mean	Std. Deviation	N
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132
O2	3.92	.706	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A1	15.74	4.208	.291	.407
A2R	15.95	4.341	.181	.474
C1R	16.07	3.209	.394	.311
C2	16.01	3.748	.318	.381
O2	16.02	4.770	.110	.508

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
19.95	5.608	2.368	5

Scale: PR

Reliability Statistics

Cronbach's Alpha	N of Items
.508	4

Item Statistics

	Mean	Std. Deviation	N
A1	4.20	.728	132
A2R	4.00	.810	132
C1R	3.88	.996	132
C2	3.94	.880	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A1	11.82	3.509	.268	.464
A2R	12.02	3.320	.269	.462
C1R	12.14	2.506	.403	.326
C2	12.08	3.161	.267	.466

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
16.02	4.770	2.184	4

B.3.2 Autonomy

Reliability Statistics

Cronbach's Alpha	N of Items
.164	3

Item Statistics

	Mean	Std. Deviation	N
Auto1	3.97	.741	132
Auto2	2.58	.989	132
Auto3	3.76	.743	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Auto1	6.33	1.415	.211	-.164[a]
Auto2	7.73	1.696	-.132	.703
Auto3	6.55	1.303	.283	-.344[a]

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
10.30	2.335	1.528	3

Deleted Autonomy Item

Reliability Statistics

Cronbach's Alpha	N of Items
.703	2

Item Statistics

	Mean	Std. Deviation	N
Auto1	3.97	.741	132
Auto3	3.76	.743	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Auto1	3.76	.551	.542	.
Auto3	3.97	.549	.542	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
7.73	1.696	1.302	2

B.3.3 Social Support

Reliability Statistics

Cronbach's Alpha	N of Items
.825	8

Item Statistics

	Mean	Std. Deviation	N
SS1	3.82	.889	132
SS2	3.63	.868	132
SS3	3.72	.927	132
SS4	3.64	.991	132
SS5	3.89	.807	132
SS6	3.09	.976	132
SS7	3.97	.565	132
SS8	4.02	.725	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SS1	25.95	16.181	.557	.803
SS2	26.14	15.101	.756	.774
SS3	26.05	15.058	.700	.781
SS4	26.14	14.592	.711	.778
SS5	25.89	16.926	.509	.809
SS6	26.68	18.173	.220	.853
SS7	25.80	18.068	.534	.810
SS8	25.75	17.471	.488	.812

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
29.77	20.956	4.578	8

B.3.4 Performance Feedback

Reliability Statistics

Cronbach's Alpha	N of Items
.883	4

Item Statistics

	Mean	Std. Deviation	N
PF1	3.61	1.002	132
PF2	3.55	.952	132
PF3	3.62	.937	132
PF4	3.92	.825	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PF1	11.10	5.448	.816	.821
PF2	11.15	5.672	.815	.822
PF3	11.08	6.046	.726	.857
PF4	10.78	6.844	.636	.889

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
14.70	10.271	3.205	4

B.3.5 Workload

Reliability Statistics

Cronbach's Alpha	N of Items
.571	10

Item Statistics

	Mean	Std. Deviation	N
Wload1	3.38	1.095	132
Wload2	3.31	1.057	132
Wload3	3.27	1.099	132
Wload4	3.78	.841	132
Wload5	3.76	.917	132
Wload6	3.33	.985	132
Wload7	3.65	.847	132
Wload8	3.88	.933	132
Wload9	3.23	1.109	132
Wload10	3.33	1.157	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Wload1	31.54	20.159	-.039	.623
Wload2	31.61	16.882	.343	.520
Wload3	31.64	15.941	.436	.491
Wload4	31.14	18.607	.229	.551
Wload5	31.16	19.310	.102	.580
Wload6	31.59	16.793	.398	.507
Wload7	31.27	19.479	.105	.577
Wload8	31.04	18.235	.235	.550
Wload9	31.69	16.109	.409	.499
Wload10	31.58	16.504	.333	.521

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
34.92	20.978	4.580	10

Deleted Workload Items

Reliability Statistics

Cronbach's Alpha	N of Items
.623	9

Item Statistics

	Mean	Std. Deviation	N
Wload2	3.31	1.057	132
Wload3	3.27	1.099	132
Wload4	3.78	.841	132
Wload5	3.76	.917	132
Wload6	3.33	.985	132
Wload7	3.65	.847	132
Wload8	3.88	.933	132
Wload9	3.23	1.109	132
Wload10	3.33	1.157	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Wload2	28.23	16.452	.302	.595
Wload3	28.27	14.395	.546	.524
Wload4	27.76	18.536	.126	.632
Wload5	27.78	19.226	.011	.658
Wload6	28.21	15.191	.521	.539
Wload7	27.89	18.361	.149	.627
Wload8	27.66	18.074	.153	.629
Wload9	28.31	14.796	.484	.543
Wload10	28.20	15.080	.416	.562

Scale Statistics

Mean	Variance	Std. Deviation	N of Items

31.54	20.159	4.490	9

Scale: WL

Reliability Statistics

Cronbach's Alpha	N of Items
.658	8

Item Statistics

	Mean	Std. Deviation	N
Wload2	3.31	1.057	132
Wload3	3.27	1.099	132
Wload4	3.78	.841	132
Wload6	3.33	.985	132
Wload7	3.65	.847	132
Wload8	3.88	.933	132
Wload9	3.23	1.109	132
Wload10	3.33	1.157	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Wload2	24.47	15.854	.268	.649
Wload3	24.51	13.336	.583	.559
Wload4	24.00	18.260	.036	.691
Wload6	24.45	13.960	.584	.566
Wload7	24.13	17.014	.214	.656
Wload8	23.90	17.509	.108	.681
Wload9	24.55	13.761	.515	.579
Wload10	24.45	13.822	.473	.591

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
27.78	19.226	4.385	8

Scale: WL

Reliability Statistics

Cronbach's Alpha	N of Items
.691	7

Item Statistics

	Mean	Std. Deviation	N
Wload2	3.31	1.057	132
Wload3	3.27	1.099	132
Wload6	3.33	.985	132
Wload7	3.65	.847	132
Wload8	3.88	.933	132
Wload9	3.23	1.109	132
Wload10	3.33	1.157	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Wload2	20.69	15.513	.196	.710
Wload3	20.73	12.230	.627	.587
Wload6	20.67	12.801	.637	.592
Wload7	20.35	15.862	.249	.691
Wload8	20.12	16.779	.080	.729
Wload9	20.77	12.803	.532	.617
Wload10	20.67	12.758	.504	.625

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
24.00	18.260	4.273	7

Scale: WL

Reliability Statistics

Cronbach's Alpha	N of Items
.729	6

Item Statistics

	Mean	Std. Deviation	N
Wload2	3.31	1.057	132
Wload3	3.27	1.099	132
Wload6	3.33	.985	132
Wload7	3.65	.847	132
Wload9	3.23	1.109	132
Wload10	3.33	1.157	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Wload2	16.81	14.338	.166	.774
Wload3	16.85	11.030	.622	.641
Wload6	16.80	11.446	.655	.637
Wload7	16.47	14.190	.293	.734
Wload9	16.89	11.347	.562	.661
Wload10	16.79	11.344	.526	.672

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
20.12	16.779	4.096	6

B.3.6 Emotional Demand

Reliability Statistics

Cronbach's Alpha	N of Items
.784	6

Item Statistics

	Mean	Std. Deviation	N
EDD1	3.52	.984	132
EDD2	3.57	.754	132
EDD3	3.23	.879	132
EDD4	3.25	.960	132
EDD5	3.74	.879	132
EDD6	3.30	1.082	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
EDD1	17.08	11.482	.371	.792
EDD2	17.04	12.037	.444	.772
EDD3	17.38	10.634	.614	.732
EDD4	17.36	9.804	.699	.708
EDD5	16.86	10.729	.595	.737
EDD6	17.31	10.200	.514	.759

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
20.61	14.928	3.864	6

B.3.7 Work Engagement

Reliability Statistics

Cronbach's Alpha	N of Items
.816	9

Item Statistics

	Mean	Std. Deviation	N
WE1	3.86	.458	132
WE2	3.62	.796	132
WE3	3.99	.671	132
WE4	4.02	.636	132
WE5	3.67	.786	132
WE6	3.83	.783	132
WE7	4.21	.593	132
WE8	3.85	.736	132
WE9	3.67	.929	132

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
WE1	30.88	13.497	.999	.764
WE2	31.12	13.538	.494	.801
WE3	30.74	13.633	.602	.788
WE4	30.71	13.482	.681	.780
WE5	31.06	13.239	.561	.792
WE6	30.90	13.755	.464	.805
WE7	30.53	14.765	.428	.807
WE8	30.89	13.995	.459	.805
WE9	31.06	14.245	.279	.836

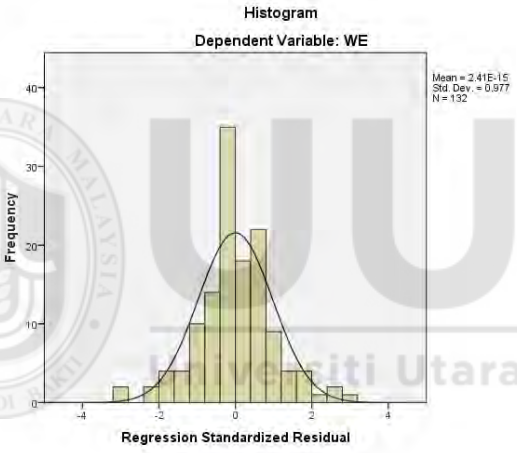
Scale Statistics

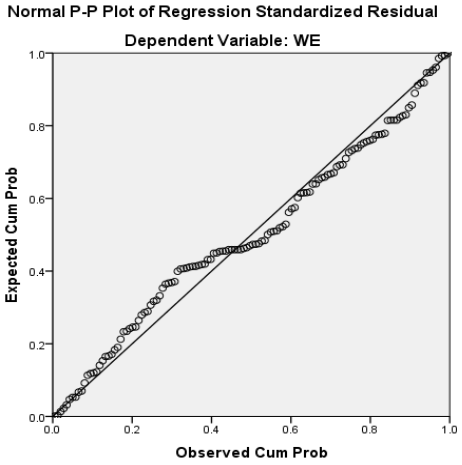
Mean	Variance	Std. Deviation	N of Items
34.74	17.066	4.131	9

B. 4 Normality Analysis

Descriptive Statistics

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
WE	132	-.334	.211	1.646	.419
PR1	132	-.150	.211	-.750	.419
Auto	132	-.574	.211	1.469	.419
SS	132	-.065	.211	.243	.419
PF	132	-.820	.211	.965	.419
WL	132	-.444	.211	-.014	.419
EDD	132	-.226	.211	-.427	.419
Valid N (listwise)	132				





B. 5 Correlation Analysis

Correlations

		WE	PR1	Auto	SS	PF	WL	EDD
WE	Pearson Correlation	1	.290**	.194*	.232**	.147	.225**	.073
	Sig. (2-tailed)		.001	.026	.007	.092	.009	.403
	N	132	132	132	132	132	132	132
PR1	Pearson Correlation	.290**	1	.115	.207*	.083	-.057	-.011
	Sig. (2-tailed)	.001		.190	.017	.345	.519	.903
	N	132	132	132	132	132	132	132
Auto	Pearson Correlation	.194*	.115	1	.493**	.405**	.222*	-.008
	Sig. (2-tailed)	.026	.190		.000	.000	.010	.929
	N	132	132	132	132	132	132	132
SS	Pearson Correlation	.232**	.207*	.493**	1	.730**	.467**	-.165
	Sig. (2-tailed)	.007	.017	.000		.000	.000	.058
	N	132	132	132	132	132	132	132
PF	Pearson Correlation	.147	.083	.405**	.730**	1	.585**	-.153
	Sig. (2-tailed)	.092	.345	.000	.000		.000	.080
	N	132	132	132	132	132	132	132
WL	Pearson Correlation	.225**	-.057	.222*	.467**	.585**	1	.054
	Sig. (2-tailed)	.009	.519	.010	.000	.000		.537
	N	132	132	132	132	132	132	132
EDD	Pearson Correlation	.073	-.011	-.008	-.165	-.153	.054	1
	Sig. (2-tailed)	.403	.903	.929	.058	.080	.537	
	N	132	132	132	132	132	132	132

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

B.6 Multicollinearity Analysis
Correlation Matrix

Correlations

		PR1	Auto	SS	PF	WL	EDD
PR1	Pearson Correlation	1	.115	.207*	.083	-.057	-.011
	Sig. (2-tailed)		.190	.017	.345	.519	.903
	N	132	132	132	132	132	132
Auto	Pearson Correlation	.115	1	.493**	.405**	.222*	-.008
	Sig. (2-tailed)	.190		.000	.000	.010	.929
	N	132	132	132	132	132	132
SS	Pearson Correlation	.207*	.493**	1	.730**	.467**	-.165
	Sig. (2-tailed)	.017	.000		.000	.000	.058
	N	132	132	132	132	132	132
PF	Pearson Correlation	.083	.405**	.730**	1	.585**	-.153
	Sig. (2-tailed)	.345	.000	.000		.000	.080
	N	132	132	132	132	132	132
WL	Pearson Correlation	-.057	.222*	.467**	.585**	1	.054
	Sig. (2-tailed)	.519	.010	.000	.000		.537
	N	132	132	132	132	132	132
EDD	Pearson Correlation	-.011	-.008	-.165	-.153	.054	1
	Sig. (2-tailed)	.903	.929	.058	.080	.537	
	N	132	132	132	132	132	132

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Tolerance and VIF

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EDD, Auto, PR1, WL, SS, PF[b]	.	Enter

a. Dependent Variable: WE

b. All requested variables entered.

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	PR1	.924	1.082
	Auto	.744	1.345
	SS	.393	2.547
	PF	.381	2.626
	WL	.614	1.630
	EDD	.925	1.081

a. Dependent Variable: WE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions						
				(Constant)	PR1	Auto	SS	PF	WL	EDD
1	1	6.867	1.000	.00	.00	.00	.00	.00	.00	.00
	2	.056	11.084	.01	.02	.00	.01	.09	.04	.25
	3	.031	14.915	.00	.12	.09	.01	.00	.32	.19
	4	.019	18.833	.01	.31	.56	.00	.00	.05	.08
	5	.014	22.034	.01	.01	.19	.02	.47	.54	.28
	6	.007	30.911	.07	.28	.15	.76	.35	.01	.00
	7	.006	34.547	.90	.26	.01	.21	.09	.05	.19

a. Dependent Variable: WE

B.7 Regression Analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EDD, Auto, PR1, WL, SS, PF[b]	.	Enter

a. Dependent Variable: WE

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.409[a]	.167	.127	.42884

a. Predictors: (Constant), EDD, Auto, PR1, WL, SS, PF

b. Dependent Variable: WE

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.613	6	.769	4.181	.001[b]
	Residual	22.988	125	.184		
	Total	27.601	131			

a. Dependent Variable: WE

b. Predictors: (Constant), EDD, Auto, PR1, WL, SS, PF

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	1.870	.432		4.326	.000	1.015	2.726
	PR1	.234	.071	.278	3.274	.001	.092	.375
	Auto	.074	.067	.105	1.111	.269	-.058	.206
	SS	.098	.105	.122	.934	.352	-.109	.304
	PF	-.078	.076	-.136	-1.026	.307	-.228	.072
	WL	.159	.070	.237	2.270	.025	.020	.298
	EDD	.045	.060	.064	.751	.454	-.074	.165

a. Dependent Variable: WE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.2957	4.3483	3.8597	.18765	132
Residual	-1.32598	1.35073	.00000	.41890	132
Std. Predicted Value	-3.006	2.604	.000	1.000	132
Std. Residual	-3.092	3.150	.000	.977	132

a. Dependent Variable: WE