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SEM Analysis of the Impacts of Job Demands on Employees' Work Engagement

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Abstract

The aim of the present paper is to examine the role of job demands on employees' work engagement. There are four antecedents of work engagement including quantitative, problem solving, attention and responsibility demands. The antecedents of the present study were proposed to enhance employees' work engagement. The data of this study have been collected from a group of employees of Somaliland telecommunication sector through questionnaire survey. The data were analysed using SmartPLS. The findings revealed that job demands and its second order construct have negative significant impact on employees' work engagement.

Keywords
Job demands, work engagement, SEM Analysis and Telecommunication Sector.

1. Introduction

As a result of increasing work-related stressors, the effect of job demands on individual and organizational outcomes is increasingly a significant issue for workforce and organizations. Job demands are "the things that have to be done" (Jones and Fletcher, 1996) at the job. The job demands-resources model (JD-R) has defined job demands as "those physical, psychological, social or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" (Demerouti *et al*., 2001). The JD-R theory has assumed job demands as health impairing since it "exhaust employees' mental and physical resources and may therefore lead to the depletion of energy and to health problems" (Bakker & Demerouti, 2007). Job demands are most crucial to employees and have the pertinent effect on employees' attitudes, strains and performances. Job demands may be related to both well-being and poor health (such as burnout). Investments of emotional and cognitive effort in performing challenging job may result in fatigue and exhaustion. However, LePine et al. (2005) have assumed that "the positive, indirect effect of challenge stressors through motivation to be stronger than the negative indirect effect of challenge stressors through strains". Extant literature has associated job demands with positive work-related consequences such as work engagement, learning performance, job satisfaction and commitment. Therefore, this paper focused to analyse the impacts of job demands on employees' work engagement.

2. Research Design

Data collection for this study was conducted through the use of a questionnaire. Although the sampling method was random, an attempt was made to include a variety of companies in order to obtain a fairly diverse sample in terms of work sectors. According to Helen & Thomas, (2012), sampling is the process whereby some elements from the population are selected to represent the whole population. Sample size is the number of units that is required to get accurate findings (Fink, 2003). For the purpose of this paper, a sample of a group of 183 employees (126 men,

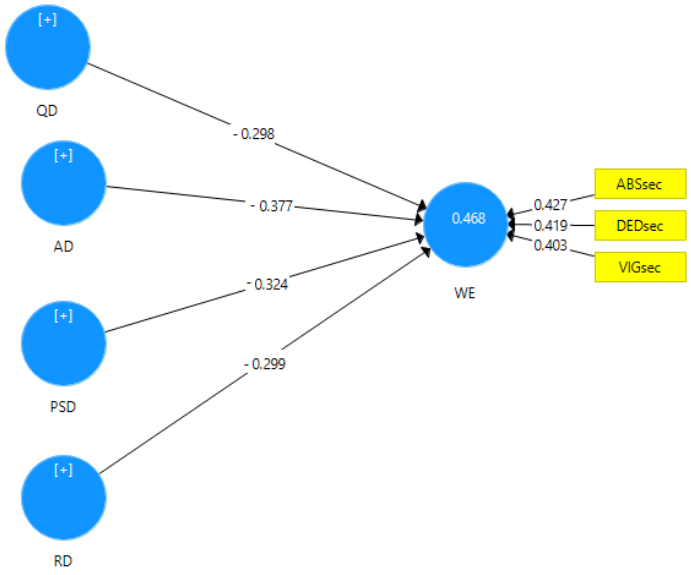
68.9%; 57 women, 31.1%) from Somaliland Telecommunication sector. The majority of participants (36.1%) were between thirty and thirty-four years of age and held a bachelor degree (57.4%). Their mean organizational tenure was less than one year (39.9%), and the response rate was 87.1%.

3. Research Findings and Data Analysis

The measurement model was assessed using confirmatory factor analysis (CFA) and SmartPLS 3. Construct validity was tested by assessing the model for convergent and discriminant validity (Hair et al., 2010). Cconvergent validity was assessed by considering outer loadings, average variance extracted, composite reliability and Cronbach's alpha. To demonstrate convergent validity, the standardised loadings (in SmartPLS, outer loadings) in the model should be 0.70 or higher, and items with a loading of less than 0.4 are excluded (Hair et al., 2011). The average variance extracted (AVE) should be 0.50 or higher. The composite reliability (CR) value and α of each latent variable should be 0.70 or higher (Hair et al., 2010). Discriminant validity was assessed by using the method described in Fornell and Larcker (1981), which entails comparing the square root of the AVE for each pair of constructs in the model with the correlation between the two constructs. For evidence of discriminant validity, the square root of the AVE of two constructs must be higher than the correlation between the two constructs. Cross-loadings can be inspected for evidence of discriminant validity (Hair et al., 2011).

3.1 The Effects of Job Demands on Work Engagement

This section discussed the role of job demands on work engagement (WE). Work engagement has second order formative construct, therefore, the analysis of both first and second order of work engagement was conducted. The relationship between job demand indicators and work engagement (second order construct) and its indicators such vigor (VIG), dedication (DED) and absorption (ABS) was illustrated in Figure 1. Figure 1a represents the association between the four dimensions of job demands such as quantitative, problem solving, attention and responsibility demands, and the second order of work engagement (WE). The results revealed that the second order of work engagement reported the highest R2 of .468 with negative and significant relationships from all variables of job demands, compared to its indicators. Figure 1b depicts the relationship between the four dimensions; of job demands and vigor. Vigor has negative and significant relationship with indicators of job demands with an R2 value of .380.



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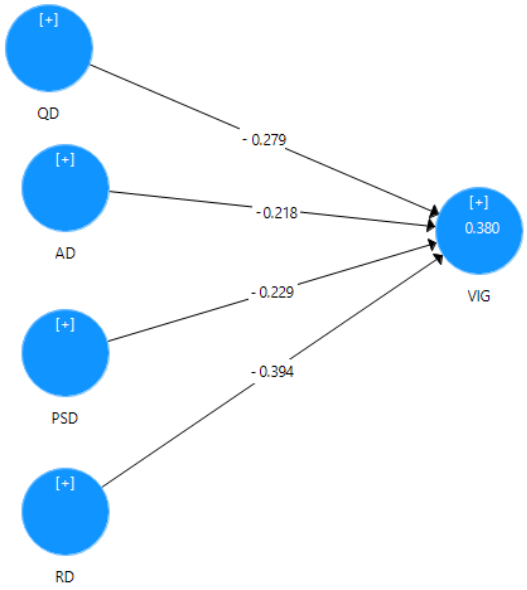

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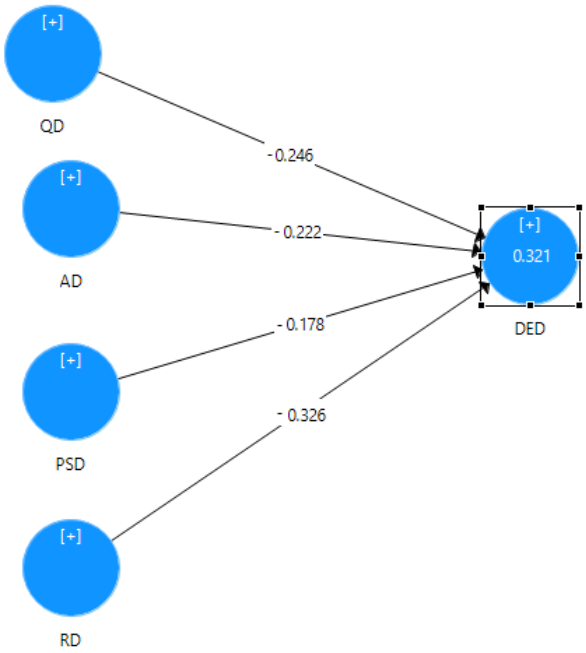

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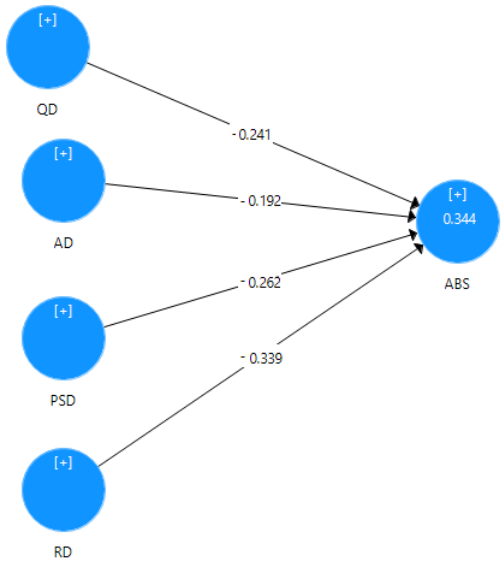

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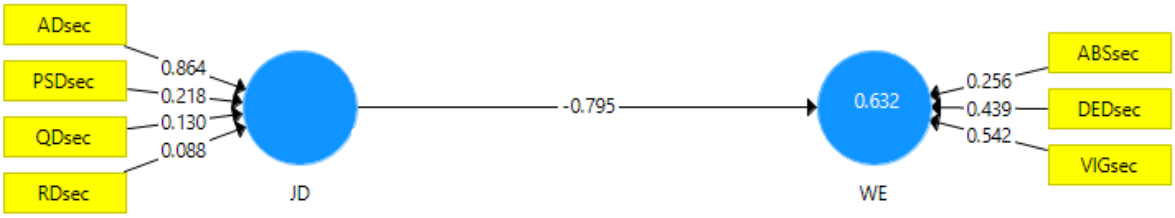
Figure 1: The second order analysis of Job demands dimensions: (a) JD and WE, (b) JD and VIG, (c) JD and DED and (d) JD and ABS.

Figure 1c illustrates the connection between the four dimensions of job demands and dedication (DED). The results revealed that dedication reported and R2 of .321 with negative, moderate and significant relationships from all indicators of job demands. Figure 1d illustrates the effects of the four dimensions of job demands on absorption. The indicators have negative and significant relationship with absorption. The results also shown that absorption reported an R2 value of .344. Table 1 summarizes the effects of first order dimensions of job demands on employees' work engagement.

Table 1: The effects of first order indicators of job demands on work engagement

Dependent Construct	Independent constructs	Path Coefficient	T Statistics	R^2
Work engagement				**.468**
	Quantitative Demands	-.298	3.856	
	Problem Solving Demands	-.377	4.749	
	Attention Demands	-.324	4.378	
	Responsibility Demands	-.299	3.849	
Vigor				**.380**
	Quantitative Demands	-.279	3.763	
	Problem Solving Demands	-.218	2.978	
	Attention Demands	-.229	3.159	
	Responsibility Demands	-.394	4.943	
Dedication				**.321**
	Quantitative	-.246	3.376	

	Demands			
	Problem Solving Demands	-.222	3.175	
	Attention Demands	-.178	2.008	
	Responsibility Demands	-.326	4.401	
Absorption				**.344**
	Quantitative Demands	-.241	3.317	
	Problem Solving Demands	-.192	2.209	
	Attention Demands	-.262	3.619	
	Responsibility Demands	-.339	4.365	



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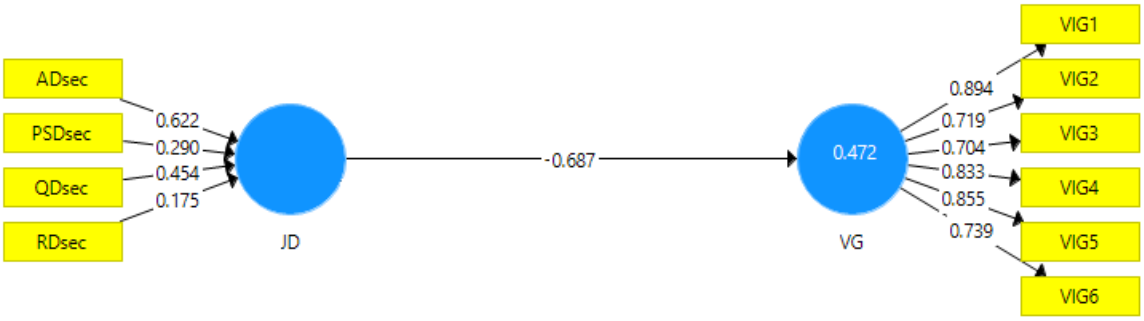

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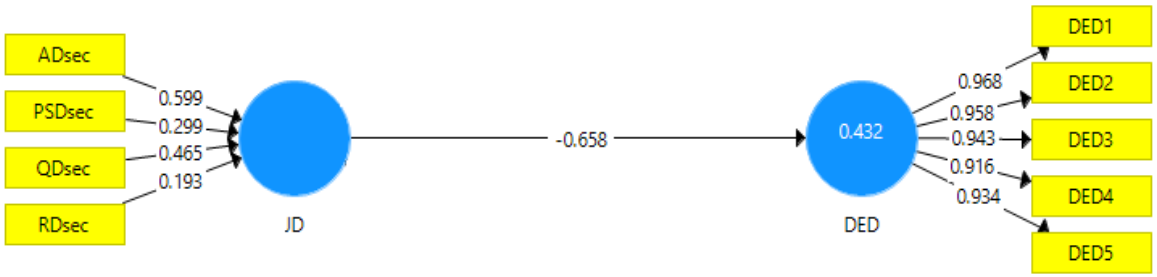

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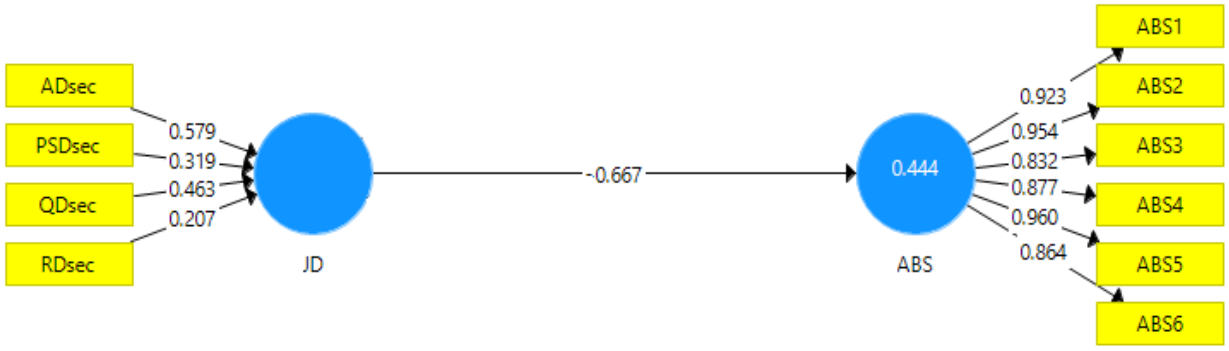

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Figure 2: The second order analysis of Job demands dimensions: (a) JD and WE, (b) JD and VIG, (c) JD and DED and (d) JD and ABS.

Figure 2 depicts the effects of second order formative construct of job demands on employees' work engagement and its indicators. Figure 2a illustrates the effects of job demands second order construct on the employees' work engagement's second order construct. The result showed strong, negative and significant relationship between the two constructs with path coefficient of -.795 and R2 value of .632. Moreover, it also shown that all outer weights of the indicators and their formative constructs of job demands and work engagement are significant. Figure 2b represents the relationship between job demands second order construct and vigor (VIG). It was shown that job demands has strong, negative and significant on vigor with path coefficient of -.687 and R2 value of .472. Also, the results have shown that all outer weights between the four indicators and their formative construct of job demands are significant. Figure 2c shows the association between job demands second order construct with dedication (DED). The results showed strong, negative and significant path coefficient of -.658 with an R2 value of .432 between the two constructs. All outer weights between the four indicators and their formative construct of job demands are significant. Figure 2d represents the relationship between job demands second order construct and absorption (ABS). It was shown that job demands has strong, negative and significant on absorption with path coefficient of -.667 and R2 value of .444. Also, the results have shown that all outer weights between the four indicators and their formative construct of job demands are significant. Table 2 represents the summary of the effects of second order construct of job demands on employees' work engagement.

For summary, the above analyses were about the role of job demands on employees' work engagement. In other words, the above analyses answered part of the second and third research questions of the study in which a

significant influence of job demands on the dependent variables were documented. The first order and second order of job demands, job performance and work engagement were conducted. The first order of job demands deals with four independent constructs of job demands such as quantitative, attention, problem solving, and responsibility demands. Two indicators of task and contextual performance and another three indicators of vigor, dedication and absorption contributed to the second order formative constructs of job performance and work engagement respectively.

Table 2: The effects of second order construct of job demands on work engagement

Dependent Construct	Independent constructs	Outer Weight	T Statistics	Path Coefficient*	R^2
Work engagement	**Job Demands**			-.795	**.632**
	Quantitative Demands	.130	2.116		
	Problem Solving Demands	.212	3.033		
	Attention Demands	.864	9.292		
	Responsibility Demands	.088	1.986		
Vigor	**Job Demands**			-.687	**.472**
	Quantitative Demands	.454	5.372		
	Problem Solving Demands	.290	3.839		
	Attention Demands	.622	6.562		
	Responsibility Demands	.175	2.275		
Dedication	Job Demands			-658	**.432**
	Quantitative Demands	.465	5.729		
	Problem Solving Demands	.299	3.981		
	Attention Demands	.599	6.001		
	Responsibility Demands	.193	2.728		
Absorption	Job Demands			.667	**.444**
	Quantitative Demands	.463	5.739		
	Problem Solving Demands	.319	4.078		
	Attention Demands	.579	6.128		
	Responsibility Demands	.207	2.983		

*Path Coefficient: Significant at the .01 level

4. Conclusion

The results found support for the proposed conceptual claim and confirm that job demands have negative significant impact on employees' work engagement. Hence, the findings of this research contribute by helping the Somaliland Telecommunication industry in the development of employees' psychological state. As job demands have direct effects on work engagement of employees, the findings of the present study offer information regarding factors affecting employees' work engagement. Future researchers should test this framework in other settings in order to further generalize the findings.

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Biographies

Abdul Talib Bon is Professor of Technology Management in Department of Production and Operations Management, Faculty of Technology Management and Business at the Universiti Tun Hussein Onn Malaysia. He has a PhD in Computer Science, which he obtained from the Universite de La Rochelle, France in the year 2008. His doctoral thesis was on topic Process Quality Improvement on Beltline Moulding Manufacturing. He studied Business Administration major in Quality Management at the master's level in the Universiti Kebangsaan Malaysia for which he was awarded the MBA in the year 1998. He's bachelor degree and diploma in Mechanical Engineering which his obtained from the Universiti Teknologi Malaysia. He received his postgraduate certificate in Mechatronics and Robotics from Carlisle, United Kingdom in 1997. He is Director of Teaching Factory and Manager of Centre for Technology (Furniture Innovation Technology) from 1 September 2016 and Head of Program Bachelor of Technology Management (Furniture Design and Manufacturing) with Honours from 2014 until 2017. Before this he was the Deputy Dean (Research and Development) at the Faculty of Technology Management and Business in the Universiti Tun Hussein Onn Malaysia from 2008 until December 2011. Dr. Abdul Talib Bon has had over 30 year experience of teaching in higher learning education. A major part of his teaching experience involves teaching mechanical engineering students in polytechnics. However, from the year 1999, he was given the opportunity to be jointed in the Institut Teknologi Tun Hussein Onn (ITTHO), Universiti Teknologi Malaysia as a lecturer in Mechanical Engineering Department. In this institute, he teaches engineering management and quality control at the under-graduate level. Dr. Abdul Talib Bon has multidisciplinary research interests that encompass industrial engineering, quality management and production and operation management. His completed 17 research grant projects as project leader include applications of forecasting in industries. His current research project is looking into developing process quality improvement (PQI) in manufacturing industries. He has supervised more than 90 undergraduate and postgraduate research projects. He has served as a reviewer for a number of engineering management and computer science conferences and journals as part of his expertise sharing initiatives. He had published more than 180 International Proceedings and International Journals and 8 books. He is also Fellow and President of Industrial Engineering and Operation Management Society (IEOMS, Malaysia), Professional Technologist of Malaysia Board of Technologists (MBOT), Council member of Management Science and Operation Research Society of Malaysia (MSORSM), member of International Association of Engineers (IAENG), member of Institute of Industrial Engineer (IIE), USA, member of International Institute of Forecasters (IIF), member of Technological Association of Malaysia (TAM) and associate member of Malaysian Institute of Management (AMIM).