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Validation of Teachers Decision Making as Multi-Dimensional Construct; SmartPLS-3.2.4 Analysis

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Abstract

Due to complexity of duties, roles as well as responsibilities in the academic setting, teachers' decision making as a construct has been very difficult to measure. This pilot study was carried out to validate the decision making instrument suitable for University teachers, as a second order construct through rigorous validation procedure. An instrument with 41 items measuring lecturers' decision making on five point Likert scale were adapted from various studies and were distributed to seventy lecturers across seven faculties in Modibbo Adama University, Nigeria. The sixty-nine usable questionnaires collected, representing 99.1% response rate were analyzed with smartPLS 3.2.4. The findings of the study revealed that the items were valid and reliable for measuring teachers' decision making. Findings also revealed that decision making was second order variable. Essentially, decision making questionnaire have demonstrated good psychometric properties in terms of internal consistency reliability as well as construct validity; it is suggested that further study should be carried out to replicate the study using a larger sample size.

Keywords: Decision making; Teachers; Construct; Validation.

1. Introduction

Decision making is a subjective characteristic which reflects how an individual defines, perceives problem, and chooses an alternative solution to it. The decision making is viewed in the form of identification of a stimulus for action, and end with specific commitment to action. Decision making aims at to prevent or solve problems that influence the personnel in school or organization (Colakkadioglu, 2013). Conversely, Aydin (2010) defines decision-making as a process of selecting the most suitable choice from the probable alternatives to the solution of a problem. Forman and Selly (2002), posited decision making as a process of choosing between alternative courses of action in order to attain goals and objectives. Essentially, decision making is in the form of flexible behavior, which means that individuals may act and decide differently from each other in similar cases.

Fundamentally, many other scholars like Pacheco and Webber (2010) asserted that decision making is an action purposely taken from other alternatives in achieving school or organisation objectives. While, Bamidele and Ella (2013) opined that decision making is a tool that sustain higher education administration and achievement. In this study, the dimensions of decision making are rational, intuitive, avoidance, dependent and spontaneous decision making (Scott and Bruce, 1995). Moreover, Scott and Bruce (1995) and other scholars acknowledged decision making with the following definitions in the following order: Rational decision-making involves logical methods when collecting information, determining alternatives, evaluations, and acting on the preferred decision (Yildiz, 2012). İntuitive decision-making hinges on ideas and events together in relations to interactions (Yaslioglu, 2007). Avoidant decision-making-style is the process at which decision maker is at the point of postponing the task, or assigning the responsibility of making a decision to someone else (Colakkadioglu, 2013). Dependent decision-making relied on the makers being avoid taking responsibility and need a lot of social support before taking a decision (Girgin and Kocabiyik, 2003). Meanwhile, spontaneous decision-making is viewed as decision maker to be impatient and indecisive on people in exploring alternatives, and they might settle on the most immediately pleasing choice rather than taking time to think through the process of decision making in a logical way (Sardogan *et al.*, 2006)

Certainly, different studies abound on the measure of the decision making and likewise different instruments have been developed in measuring decision making (Hariri, 2011). As such, some studies viewed decision making as uni-dimensional construct (Bamidele and Ella, 2013), others see it as a multi-dimensional construct (Scott and Bruce, 1995). The challenges that arise on which instrument to choose from the limited decision making measures tend researchers to develop their own instrument (Olcum and Titrek, 2015). Despite such numerous decision making

measures that abound literature, only very few studies have addressed decision making of teachers' in Universities respectively. Similarly, an instrument validated for measuring teachers' decision making in a Nigerian university will contribute to the body of knowledge in the field of higher education research and thus the essence of this study which examined decision making as multidimensional construct with five dimensions.

1.1. Research Objective

This study was carried out to detect challenges in the operationalization of construct in research. As such, this study was conducted and established the validation of teachers' decision making as multi-dimensional construct. Specifically, this study assessed the psychometric properties of decision making instrument, loading and cross loading.

1.2. Research Questions

1. What are the psychometric properties of lecturers' decision making instrument?
2. What are the loading and cross loading of lecturers' decision making instrument?

2. Methodology

Assuredly, the study adopted quantitative research design using survey approach. The target population was lecturers in Modibbo Adama University, Nigeria. This study is a pilot study to validate an instrument on decision making with a sample of 70 lecturers purposively selected across 7 faculties in Modibbo Adama University, Nigeria.

At first, a questionnaire titled Lecturers' Decision Making Questionnaire (LDMQ) was drafted, face and content validity was conducted. The questionnaires were distributed to 3 experts for face and content validity in Educational Management Unit, Faculty of Education, Modibbo Adama University, the three expects made some meaningful observations, suggestions and additions which reflected on the final copy of the questionnaire.

Most importantly. the decision making questionnaire has 5 dimensions with 41 items. Respondents were asked to rate each item on a five-point Likert scale ranging from Strongly Agree (SA=5); Agree (A=4); Undecided (UD=3); Disagree (DA=2) and Strongly Disagree (SD=1).

Similarly, the final copies of the questionnaires were administered to 70 lecturers. Certainly, 69 out of 70 questionnaires administered were returned and found usable for the analysis. The analysis was done using Smart Partial Lease Square –3.2.4. (SmartPLS-3.2.4).

3. Results and Discussion

Research Question 1. *What are the psychometric properties of lecturers' decision making instrument?*

Table-1. *SmartPLS-3.2.4 loadings of psychometric properties of lecturers' decision making.*

Construct	Dimensions	Items	Loadings	Composite Reliability	AVE
Decision Making	Rational	RDM1	0.831	0.871	0.733
	Decision	RDM2	0.821		
	Making	RDM3	0.951		
		RDM4	0.918		
		RDM5	0.806		
		RDM6	0.891		
		RDM7	0.917		
	Intuitive	IDM1	0.913	0.821	0.709
	Decision	IDM2	0.797		
	Making	IDM3	0.886		
		IDM4	0.712		
		IDM5 IDM6	0.665 0.754		
		IDM7	0.866		
		IDM8	0.964		
	Avoidant	ADM1	0.966	0.853	0.710
	Decision	ADM2	0.912		
	Making	ADM3	0.961		
		ADM4	0.947		
		ADM5	0.971		
		ADM6	0.974		
		ADM7	0.962		
		ADM8	0.957		
	Dependent	DDM1	0.960	0.852	0.708
	Decision	DDM2	0.946		
	Making	DDM3	0.930		
		DDM4	0.925		

		DDM5	0.775		
		DDM6	0.926		
		DDM7	0.856		
		DDM8	0.814		
		DDM9	0.947		
	Spontaneous Decision Making	SDM1	0.949	0.853	0.732
		SDM2	0.943		
		SDM3	0.842		
		SDM4	0.856		
		SDM5	0.932		
		SDM6	0.912		
		SDM7	0.891		
		SDM8	0.842		
		SDM9	0.828		

As all the items in the instrument are reflective indicators, the construct loadings and composite reliability were tested and reported. From the result of the analysis, the loadings for items measuring decision making are between 0.712 and 0.974. Therefore, the loadings justifies that the instrument are valid and reliable. Also, as revealed in the average variance extracted (AVE) in this study, all the AVEs and the composite reliability are above the threshold value of 0.6 (Hair *et al.*, 2014) respectively (See Table 1). Therefore, the instrument is said to be valid and reliable.

Research Question 2. *What are the loading and cross loading of lecturers' decision making instrument?*

Table-2. SmartPLS-3.2.4 loadings and cross loadings of lecturers' decision making

Items	**RDM**	**IDM**	**ADM**	**DDM**	**SDM**
RDM1	**0.833**	0.760	0.616	0.571	0.611
RDM2	**0.875**	0.791	0.601	0.619	0.643
RDM3	**0.891**	0.778	0.651	0.614	0.647
RDM4	**0.731**	0.555	0.535	0.584	0.515
RDM5	**0.734**	0.599	0.596	0.541	0.558
RDM6	**0.787**	0.591	0.772	0.690	0.645
RDM7	**0.701**	0.494	0.792	0.521	0.449
IDM1	0.714	**0.838**	0.567	0.612	0.577
IDM2	0.720	**0.866**	0.583	0.590	0.573
IDM3	0.740	**0.915**	0.587	0.625	0.609
IDM4	0.749	**0.905**	0.592	0.619	0.573
IDM5	0.717	**0.884**	0.593	0.601	0.585
IDM6	0.686	**0.858**	0.598	0.603	0.597
IDM7	0.753	**0.922**	0.583	0.620	0.592
IDM8	0.754	**0.864**	0.593	0.572	0.556
ADM1	0.654	0.476	**0.798**	0.482	0.403
ADM2	0.663	0.492	**0.856**	0.504	0.449
ADM3	0.679	0.605	**0.892**	0.553	0.496
ADM4	0.660	0.611	**0.887**	0.555	0.529
ADM5	0.682	0.597	**0.870**	0.554	0.564
ADM6	0.720	0.585	**0.827**	0.615	0.615
ADM7	0.674	0.503	**0.738**	0.553	0.534
ADM8	0.671	0.511	**0.722**	0.578	0.581
DDM1	0.604	0.546	0.528	**0.786**	0.707
DDM2	0.588	0.543	0.510	**0.842**	0.700
DDM3	0.724	0.662	0.618	**0.855**	0.754
DDM4	0.640	0.570	0.621	**0.836**	0.722
DDM5	0.577	0.532	0.515	**0.814**	0.753
DDM6	0.591	0.570	0.492	**0.771**	0.710
DDM7	0.596	0.550	0.527	**0.813**	0.723
DDM8	0.635	0.588	0.566	**0.861**	0.774
DDM9	0.616	0.561	0.526	**0.798**	0.728
SDM1	0.472	0.388	0.380	0.598	**0.719**
SDM2	0.511	0.539	0.398	0.581	**0.702**
SDM3	0.566	0.488	0.557	0.663	**0.703**
SDM4	0.550	0.502	0.530	0.746	**0.727**
SDM5	0.622	0.520	0.468	0.652	**0.782**
SDM6	0.549	0.453	0.452	0.674	**0.727**

SDM7	0.578	0.461	0.463	0.675	**0.773**
SDM9	0.601	0.522	0.537	0.654	**0.767**

Note: *Rational Decision Making-RDM, Intuitive Decision Making-IDM, Avoidant Decision Making-ADC, Dependent Decision Making-DDM, Spontaneous Decision Making-SDM.*

4. Implication and Conclusion

The present study was set to validate teachers' decision making measures using partial least square (PLS-3.2.4). In validating an instrument using PLS-3.2.4, the measurement model and the hierarchical model in case if the construct is a second construct is carried out. Decision making is a multi-dimensional construct in this study. As revealed in the loadings and cross loadings, the items of the questionnaire are said to be valid. The result of the composite reliability, and AVE is also an evidence that the items are reliable. Therefore, any higher education teachers' that want to improve their decision making are expected to take seriously the 5 dimensions of decision making as identified in this study. Literally, numerous study identified teacher decision making as a uni-dimensional construct, this study have contributed to literature by examining decision making as a multi-dimensional construct. Although the result of the analysis revealed that 5 dimensions of decision making in this study are valid and reliable for measuring teachers decision making in higher education settings, a larger sample size will be appreciated in future study for the stability of the psychometric properties.

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