AN EMPIRICAL STUDY ON INNOVATION EXCELLENCE FRAMEWOR K IN MALAYSIAN HIGHER EDUCATION INSTITUTIONS BASED ON PARTIAL LEAST SQUARES STRUCTURAL EQUATION MODEL

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ABSTRACT

The purpose of this study is to develop the Innovation Excellence Framework in Malaysian Higher Education Institutions (HEIs). The Structural Equation Modelling (SEM) was used to analyze the structural relationships of latent constructs namely, Objectives & Strategy, Change Management, Best Practices, Resource Management and Innovation. A total of nine hypotheses have been put forward to test the relationships amongst these constructs of innovation excellence. Partial least squares structural equation modelling technique was used for empirically assessing the model. The data was collected from a survey that yielded 467 usable questionnaires through cluster and stratified sampling technique on the specified universities. The findings revealed that all the hypothesized relationships are significant at t-value > 1.96, two-tailed test by using 5000 bootstrap samples except for the relationship of Objectives and Strategy towards Innovation which resulted a non-significant relationship.

Key words: Innovation, **Excellence, Latent Constructs, Bootstrap**

INTRODUCTION

This study aimed to examine the structural relationships in the hypothesized model that comprised of latent constructs (Objectives & Strategy, Change Management, Best Practices, Resource Management and Innovation) supported by core values respectively. Innovation plays an important role in the development of any organisation including HEIs that forced many to embark on this issue. HEIs should be the role model in the practise of innovation so as to encourage and empower innovation for the survival of research institution.

Secondary data were used in this study that collected through questionnaires. The target population in this study was academic and non-academic staff only with permanent status in HEIs in Malaysia. The questionnaires for the innovation Performance Assessment were developed and distributed through the Ministry of Higher Education (MOHE) to 16 public universities in Malaysia were represented as sample for this population.

The model was assessed using Structural Equation Modeling (SEM) is a method that can be used to analyze causal relationships of innovation excellence in HEIs in Malaysia. Partial Least Squares (PLS) was used to construct the models that have been developed [1,2,4,5,6,7]. This PLS model was evaluated in two stages where the first stage is the evaluation towards the measurement model (outer model) and followed by second step is to examine the structural model (inner model).

First step, analysis of the measurement model is used to determine the fit between the factors and the theoretically defined constructs. Second step, the analysis for structural model, which is involving bootstrapping, evaluation of variance explanation of endogenous constructs, calculating the effect sizes and test for the predictive relevance.

MAIN RESULTS

Bootstrapping procedure was adopted to test the effects and the statistical significance of the parameters in the structural model. By using Smart PLS tool the bootstrapping procedure can generate t-statistics for significance testing. In this study, amount of a 5000 bootstrapped samples used as suggested in [3]. Figure 1 shows the bootstrap analysis in graphically and Table 1 shows the hypothesis testing which provide the descriptions of bootstrap result.
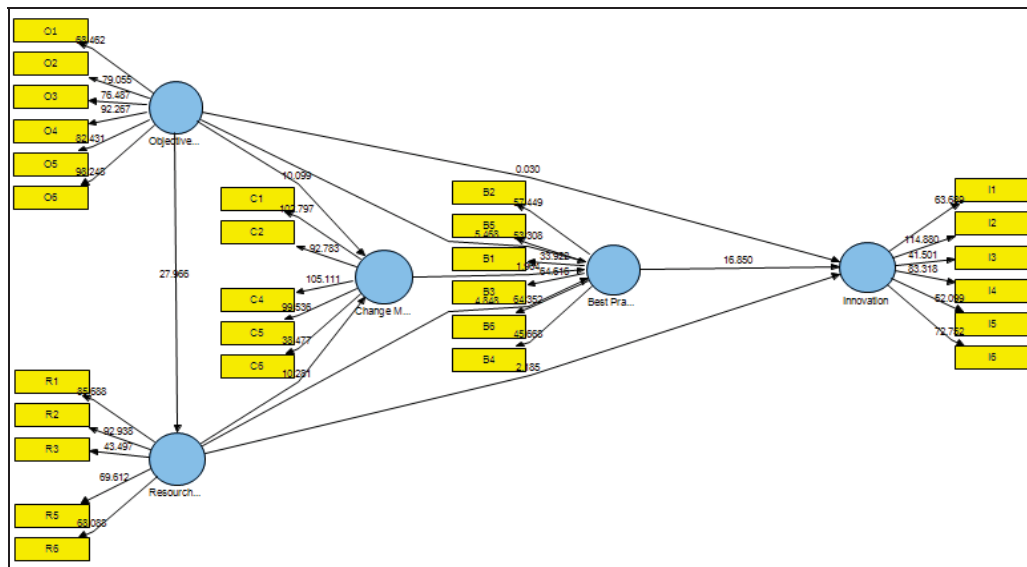

Figure 1. Bootstrap Analysis

Table 1. Hypothesis testing

Causal Relationship	S-Beta	Standard Error	t-value	Decisions	R square
Objective and Strategy -> Resource Management	0.755	0.027	**27.966	Supported	0.570
Objective and Strategy -> Change Management	0.462	0.046	**10.099	Supported	0.779
Resource Management -> Change Management	0.481	0.047	**10.281	Supported	

Change Management -> Best Practices	0.185	0.094	*1.964	Supported	
Objective and Strategy -> Best Practices	0.314	0.057	**5.469	Supported	0.635
Resource Management -> Best Practices	0.357	0.074	**4.848	Supported	
Best Practices -> Innovation	0.751	0.045	**16.850	Supported	
Objective and Strategy -> Innovation	-0.002	0.051	0.030	Not Supported	0.706
Resource Management -> Innovation	0.117	0.054	*2.185	Supported	

Note: *: p-value < 0.05 and **: P-value<0.01.

CONCLUSION

This research is important to be done to measure the performance of innovation achievement of the university in terms of the core values practiced in an educational institution, particularly in the context of Malaysia. It also can be usable in the universities as a benchmarking measurement in terms of planning, prediction, policies, decision-making and management of the innovation that should be implemented or improved. Using PLS will give the assurance of model building because the constructed items are referred from the prior literatures and subsequently assessed and tested statistically.

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