Confirmatory Factor Analysis for Entrepreneurial Framework Conditions

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Abstract

Entrepreneurship is increasingly recognised as an essential component of economic growth, employment generation, innovation as well as socio-economic development (OECD 2003). Global Entrepreneurship Monitor (GEM) is a large scale database for internationally comparative entrepreneurship that includes information about many aspects of entrepreneurship activities of a large number of countries. This project has two main sources of primary data: the Adult Population Survey (APS) and the National Expert Survey (NES). NES provides detailed information about entrepreneurship activities and its model suggests that the different institutional environments (economic, political and social) create different Entrepreneurial Framework Conditions (EFCs) that may vary among different types of economies and may change along with economic development. The GEM model defines 12 basic EFCs modelling entrepreneurship dynamics in economies: Financial environment; Governmental policies; Governmental programs; Entrepreneurial education and training; R&D transfer; Commercial and professional infrastructure; Internal market openness; Physical and services infrastructure; and Social and cultural norms (GEM, 2011).

In this work the 2011 National Expert Survey dataset, second to last available on the project website, is studied. Our goal is to test the structure proposed by GEM for EFC's, using Confirmatory Factor Analysis (CFA). Unlike Exploratory factor analysis (EFA), CFA produces many goodness-of-fit measures to evaluate the model but do not calculate factor scores. CFA is a special case of the structural equation model (SEM), also known as the covariance structure (McDonald, 1978) or the linear structural relationship (LISREL) model (JÃűreskog & SÃűrbom, 2004). Goodness-of-fit statistics obtained with the original structure chi^2 is 5400.242 which is so large that the null hypothesis of a good fit is rejected at the .05 level (p<.000). The degrees of freedom is 1208. Root Mean Square Error of Approximation (RMSEA) 0.043 is not large enough to reject the null hypothesis (p=1,000). Comparative Fit Index (CFI) 0.895 is small. Therefore, this factor model shows a poor fit and needs to be modified somehow. The modifications needed for this dataset are presented and then is tested in 2012 National Expert Survey dataset, last available on the project website.

Keywords

Multivariate statistical analysis, Environmental data, Water quality, Reservoirs, MANOVA.

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