IMPACT OF INTELLECTUAL CAPITAL COMPONENTS ON FIRM PERFORMANCE: AN EMPIRICAL STUDY ON INDIAN COMPANIES

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Abstract

In knowledge economy, the significance of Intellectual Capital (IC) for sustained success of an enterprise cannot be overstated. It being a relatively new concept, scholars and practitioners have continually endeavoured to design better models and methods to recognise, measure and manage Intellectual Capital. The Value Added Intellectual Coefficient (VAIC™) model by Ante Pulic is one such successful effort which has attracted many a scholars and has formed the basis of numerous research works. The present study is no exception. However, in recent years, VAIC™ has faced criticism pertaining to the interdependency of variables and non-inclusion of Relational Capital in the model. In this dissertation, an attempt has been made to address these issues. The model has been extended by addition of Relational Capital as a component of IC. It has been modified as well to reduce the interdependency between variables. This extended and modified VAIC™ (E-VAIC) model has been used to measure the efficiencies of IC and its components which are further linked with the financial performance of firms. This apart, the expounding power of VAIC™ and E-VAIC models has also been compared by applying multiple regression analysis on the data obtained from three Indian industries – Pharmaceutical, Information Technology (Software firms) and Healthcare. Time period of this study extends from the year 2002 through 2013.

General research hypotheses have been tested separately on the three industries. Efficiencies of Intellectual Capital, Physical Capital and IC components form the predictor variables. Financial performance measures – Return on Assets (ROA), Return on Equity (ROE) and Return on Sales (ROS) are the response variables. The first set of hypotheses predicted a positive relationship between Intellectual Capital Efficiency and performance of firms. Best results have been shown by Pharmaceutical firms where the independent variable is positively related to all the three performance measures. The second set of hypotheses envisaged a positive association between Physical Capital Efficiency and firm performance. Pharmaceutical firms show positive relationship with all the performance variables. For Software and Healthcare firms, the regression results are not as favourable.

Among the three components of Intellectual Capital, Human Capital has consistently shown strong association with the performance of firms across industries. In comparison, regression results for the other two components – Structural Capital and Relational Capital, are not as consistent. A noted novelty of this research work is inclusion of Relational Capital Efficiency in the overall schema of the VAIC™ model. This inclusion is based on the predominant literature which indicates Relational Capital as an essential component of Intellectual Capital. The regression results provide partial support for inclusion of this variable. For Pharmaceutical firms, Relational Capital has shown positive association with all the three performance measure. Nevertheless, for Software and Healthcare firms, it has been found to be positive and statistically significant in case of ROS only.

Another objective of this research study has been to compare the predictive powers of the two models – VAIC™ and E-VAIC. The assumption is that the new model shall perform better. Research outcome has been 'mixed', with data supporting both the models. In Pharmaceutical sector, VAIC™ has performed better. For Software and Healthcare firms, the new model has shown stronger association with performance variables. These results build up a definite case in favour of E-VAIC. Apart from testing the effect of IC efficiency on firm performance and comparing the two models, this research investigates interaction effects as well. Regression results support presence of this effect.

There is a section of scholars who use accounting data for research on Intellectual Capital. The present study adds to this stream by proposing an alternate model which holds promise. Academicians can use E-VAIC as a template to develop better models in future. Managers can use this model to assess the efficiency of Intellectual Capital and its components in their firms and take appropriate measures. Owing to use of secondary data, this model shall find utility with external stakeholders who, unlike managers, do not have access to in-house information on an enterprise.

Keywords: Efficiency, E-VAIC, healthcare, India, intellectual capital, IT, performance, pharmaceutical, relational capital, return on assets, return on equity, return on sales, software, VAIC™ model.

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List of Abbreviations

Acronym	Expanded Form
CE	Capital Employed
CEE	Capital Employed Efficiency (VAIC™)
CEEVA	Capital Employed Efficiency (E-VAIC)
EBITDA	Earnings before Interest, Taxes, Depreciation and Amortization
E-VAIC	Extended & Modified VAIC™
FiMIAM	Financial Method of Intangible Assets Measurement
HC	Human Capital
HCE	Human Capital Efficiency (VAIC™)
HCEVA	Human Capital Efficiency (E-VAIC)
IC	Intellectual Capital
ICE	Intellectual Capital Efficiency (VAIC™)
ICEVA	Intellectual Capital Efficiency (E-VAIC)
IPR	Intellectual Property Right
IT	Information Technology
KM	Knowledge Management
R&D	Research and Development
RC	Relational Capital
RCE	Relational Capital Efficiency (VAIC™)
RCEVA	Relational Capital Efficiency (E-VAIC)
ROA	Return on Assets
ROE	Return on Equity
ROS	Return on Sales
SC	Structural Capital
SCE	Structural Capital Efficiency (VAIC™)
SCEVA	Structural Capital Efficiency (E-VAIC)
VA	Value Added
VAIC™	Value Added Intellectual Coefficient
VIF	Variance Inflation Factor