6. Proposed Model – Extended and Modified VAIC™ (E-VAIC)

Contemporary literature increasingly agrees that IC can be sub-divided into three components—Human Capital, Structural Capital and Relational or Customer Capital (Hsu and Fang, 2009; Martín-de-Castro et al., 2011; Martínez-Torres, 2006; Seetharaman et al., 2004; Subramaniam and Younutt, 2005). But in VAIC™, Pulic (2004) misses out on Relational Capital. In the extended and modified model of VAIC™ proposed in this study, all the three components have been included in the VAIC™ equation. Consequently, the Eq. (5) derived earlier changes to:

\[ E-VAIC = HCE + SCE + RCE + CEE \]  (9)

Here, \( RCE \) = Relational Capital Efficiency Coefficient, and;

\[ E-VAIC = \text{Extended and Modified VAIC™} \]

The proxy selected for Human Capital is Employee Cost i.e. the investment in salaries and wages of people in an organization (Pulic, 2004). In addition to employee cost, the expenses towards Directors’ Remuneration have also been included to compute HC. In view of the dominant role played by the directors in policy making process of a firm, it is reasonable to include this expense under Human Capital.

For Structural Capital, the cumulative figures of Administrative Expenses (Jhunjhunwala, 2009; Liebowitz and Suen, 2000) and Research and Development (R&D) Expenses (Jhunjhunwala, 2009; Liebowitz and Suen, 2000; Sydler et al., 2013, Vishnu and Gupta, 2014) have been used as the indicator. These items denote the organizational processes and innovation–related activities of a firm.

Relational Capital is the new variable in this model. It has been estimated through the expenses related to Advertising, Marketing, Selling and Distribution activities of a firm (Jhunjhunwala, 2009; Nazari, 2010; Sydler et al., 2013). The assumption is that
such expenses are incurred to establish and maintain relationship with external stakeholders.

In accordance with Pulic (2004), Capital Employed (CE) has been selected as the proxy to represent the Physical and Financial capital of a firm. In general terms, CE is the value of all the assets employed in a business. As stated in Section -4, the data for this research has been collected from the ‘Capitaline’ which calculates Capital Employed as the aggregate of Paid-up Equity capital, total reserves (excluding revaluation reserves) and total debt. Supporting VAIC™, Iazzolino and Laise (2013) assert that with proper interpretation, Value Added Income Statement is capable of measuring value created through intangibles. Similar logic has been applied to the selection of proxies. It is assumed that if the chosen proxies are appropriately interpreted, they capture elements of HC, SC and RC. While selecting proxies, following factors have been considered:-

(1) **Literature on IC**: Intellectual Capital, being intangible, is difficult to measure. Its valuation has to be done through indirect means. Existing literature on Intellectual Capital, Knowledge Management and related domains describes about probable surrogates of HC, SC and RC. After review of literature, suitable proxies have been selected from the financial statements.

(2) **Data availability**: Review of literature reveals that authors, especially those applying survey and case study methods, have used multiple proxies for calculation of each component of IC. In contrast, scholars using accounting data-based methods have reinterpreted the financial statements to select proxies. Use of accounting data restricts a researcher’s choices for selection
of proxy because the relevant data may not be reported by a firm. Hence, those indicators have been selected for which data are available.

(3) **Extensively reported data:** While data on a particular proxy may be available, possibility is that it might not be widely reported across industries. For example, literature suggests R&D expense as an indicator for Structural Capital. However, data on this indicator may not be reported by certain sectors. In such cases, Administrative Expenses can be a better proxy for SC due to its wider reporting. VAIC™ model is commendable on this account because the indicators chosen to measure the variables are widely reported, making it possible to apply this model in multiple industry settings.

After selection of the proxies, different variables of E-VAIC have been computed. The efficiencies of the variables (Inputs) have been benchmarked against Value Added (VA) which appears as the numerator quantity (Output) in all the ratios. In order to distinguish the nomenclature of variables from those used in VAIC™ model, suffix –VA (Value Added being the success parameter) has been added in the variables. Hence,

\[ \text{HCEVA} = \frac{VA}{(\text{Employee Cost} + \text{Director’s Remuneration})} \]  
\[ \text{SCEVA} = \frac{VA}{(\text{Administrative Expenses} + \text{R&D Expenses})} \]  
\[ \text{RCEVA} = \frac{VA}{(\text{Advertising, Marketing, Selling & Distribution Expenses})} \]  
\[ \text{CEEVA} = \frac{VA}{\text{Capital Employed}} \]
When Relation Capital is added in the Pulic’s model, Eq. (4) changes to:

\[ \text{ICEVA} = \text{HCEVA} + \text{SCEVA} + \text{RCEVA} \]

Here, ICEVA denotes the efficiency of Intellectual Capital. It is the aggregation of the efficiencies of HC, SC and RC. After modifications, Eq. (9) can be rephrased as:

\[ \text{E-VAIC} = \text{HCEVA} + \text{SCEVA} + \text{RCEVA} + \text{CEEVA} \]

![Diagram showing the extended and modified VAIC™ (E-VAIC) model]

*Figure – 2: The extended and modified VAIC™ (E-VAIC) model*

Where E-VAIC is the new value added for every monetary unit invested in these resources. Value Added (VA) is one of the distinguishing features of the VAIC™ model (Iazzolino and Laise, 2013). Firer and Williams (2003), opine that in comparison to other financial returns, Value Added is a better way of assessing firm’s performance. Although Stähle et al. (2011) criticize the use of VA; scholars such as Riahi-Belkaoui and Fekrat (1994) have found this performance measure to be consistent and stable. Morley (1979) has provided detail assessment of Value Added statements. The author asserts that it is preferable to use Net Value Added rather than
Gross Value Added. According to Morley (1979), Value Added statement lacks standardization and hence, it may be calculated in different ways. In this dissertation, the formula of net VA used by Pal and Soriya (2012) has been applied because it is simpler to calculate and gives more robust results for independent variables. This has been derived after rearranging the net VA statement as shown in Riahi-Belkaoui and Fekrat (1994). Hence,

Value Added (VA) = W + I + T + NI

(14)

Here, W= Wages and Salaries;

I= Interest expenses;

T= Taxes; and,

NI= Net Income.