Chapter 2

Concept of VAIC
2.1 Introduction to Value creation
2.2 Value and Classification
2.3 Knowledge Value
2.4 Efficiency and Value Creation Process
2.5 Value Added Intellectual Coefficient
Chapter Overview

This chapter deals with the concept of Value Added Intellectual Capital (VAIC). It has five sections. The first section deals with Introduction to Value creation. The second section describes importance of Value and it’s classification. The third section describes what is meant by Knowledge Value whereas the fourth section describes Efficiency and Value creation process. The last section presents details description about Value Added Intellectual Capital (VAIC).

2.1 Introduction to Value Creation

The following section presents introduction to value creation.

From the industrial age we have entered the knowledge age. More precisely, in the same way as the machine substituted human and animal work force a few centuries ago, knowledge today has substituted manual work (in the factory as well as in the office) as a base for industrial production. This is the future that has already happened. What one is experiencing today is actually a dramatic shift from material sources to knowledge resources, from hardware to software. Nowadays expansion and growth are basically based on knowledge. This new “production factor” has already substituted energy to a certain degree and natural sources as well, aiming to substitute routine work and finally physical capital. Economic growth can no longer come either from putting more people to work - that is, from more resource input, as much of it has in the past - or from increase in consumers’ demands. It can come only from a very sharp and continuing increase in the productivity of the one resource in which the developed countries still have a competitive edge (and which they are likely to maintain for a few more decades): knowledge work and knowledge workers.

A whole new economical system has been trying to adapt to this transformation which is mainly visible in the transformed way of value creation and value creation is entirely based on knowledge. Today business as an organization which adds value and creates wealth. There is a shift from costs to the creation of value. Earlier, wealth creation was based on quantity and mass while knowledge economy creates wealth by employing creativity.
In recent years, companies have needed to merge two distinct types of investment decisions. Those with a focus on physical and financial assets, and those that focus on intellectual resources. Many modern authors understand that, when evaluating the surplus value created though the match between “working capital” and “financial capital,” one must also give some weight to “intellectual capital.” It is fundamental that one understand the resource management used to create value, for which one will take a step back and first define two key concepts: “value” itself, and “efficiency.”

2.2 Value and Classification
The following section presents introduction to value, classification of values.

“Value creation” is the process by which one accumulates value. The key question when examining particular instances of value creation, is why goods and services are priced as they are, and how the value of these goods and services is determined. Theories of value fall into two main categories:

- Intrinsic.
- Subjective.

The intrinsic value theories hold that the price of goods and services are not a function of subjective judgment. An example of this is the “labour theory” of value, which states that prices in a market are a function of how much labour is put into the productive process. The subjective value theories hold that for an object to have an economic value (a price), the same object must be useful in satisfying human needs and must be in limited supply. This introduces us to the “diamond-water paradox.”

Adam Smith explained this paradox by stating that the concept of value has to be understood in the context of its two distinct meanings:

1. Value in use.
2. Value in exchange.

Those objects that have the greatest value in use have frequently little or no value in exchange and, on the contrary, those with the greatest value in exchange have frequently little or no value in use. Furthermore, Smith proposed the idea that value is determined by labour. The real price of everything, what everything will really cost the man who hopes to acquire it, is the trouble of acquiring it. Value, when seen from
this angle, is related to production factors, and not strictly to consumer input. Proponents of the labour theory of value saw this explanation as a resolution of the quoted paradox. The paradox of value (also known as the diamond-water paradox) is the apparent contradiction, or paradox, that although water is on the whole more useful, in terms of survival, than diamonds, diamonds command a higher price in the market. The economist Adam Smith is often considered to be the classic presenter of this paradox. Nicolaus Copernicus, John Locke, John Law and others had previously tried to explain the disparity.

The labour theory shortly lost its popularity and was substituted by “marginal utility” theories. These theories, in explaining the diamond water paradox, state that it is not the total usefulness of diamonds or water that matters, but the usefulness of each unit of water or diamonds. Just to clarify, since water is in large supply in the world, the marginal utility of water is lower than that of diamonds. Each additional unit of water that becomes available can be applied to less urgent uses as more urgent uses for water are satisfied. Therefore, each unit of water will become less valuable as the overall supply of water increases. On the other hand, diamonds are much lower in supply. It is this low supply that makes the usefulness of one diamond greater than the usefulness of one glass of water, which is abundant in supply. Thus, diamonds are more valuable to the average person, those who want diamonds are willing to pay a higher price for one diamond than for one glass of water, and the seller may ask a higher price for diamonds than for water.

2.3 Knowledge Value

The following section presents introduction to knowledge value and it's importance in 21st century organizations.

Given that the price of an object is equal to the cost of production plus profits, how can one incorporate the value and impact of 21st century knowledge into the marginal theories?

The idea that knowledge has a role in the creation of value processes is ancient. In the first century A.D., Juvenal claimed that “(a)ll wish to know but none wish to pay the
price.” In the 19th century, Cloridge stated that “(t)he worth and value of knowledge is in proportion to the value and the worth of its object.” Auerbach asked: “What is all our knowledge worth?” although he proposed no answer. Only towards the end of the 20th century did the value of knowledge, in the context of business, generally become recognized. This idea has since become something of a management jargon. It is understood today that knowledge about how to produce products and provide services, as well as the knowledge embedded in these services, is often more valuable than the products and the services themselves or the materials that they contain. Firestone was the first to relate knowledge to business when he stated that “(t)hought, not money, is the real business capital” (Pulic, 1998). Amidon (1999) compared knowledge and product values, observing that the knowledge about how to produce a given product may be more valuable than the product itself. One may also quote Leonard: “Products are just physical manifestations of knowledge and their worth depend largely on the value of embedded value”

Davis and Botin (1994), however, suggested that, whereas many businesses have a general awareness of the worth of knowledge, they do not know how to go about extracting this knowledge from the goods and services in which it is embedded. In fact our ability to analyze the value of knowledge has not progressed much beyond an understanding that traditional accounting practices can be misleading, or that they can lead one to make poor choices.

Amidon (1999) illustrates that the shift from tangible to intangible assets is the truly revolutionary way to measure enterprises and, in doing so, he has exposed an entirely new manner by which one can value economic wealth.

Let us consider knowledge in a new context. Let us afford employees—with their acquired knowledge, skills and overall abilities—the status of investments and no longer that of simply costs. For sure it is not easy to accept this conceptual shift without some additional clarification, as follows:

Value based on knowledge is not based on tangible “quantity,” rather it is based on the perception that potential clients have. It is “value creation” and not the
“production of prices” that serves principal actors in the new economy. “Quantity” is now substituted with “value.” Whereas in the old economy, wealth was equal to an increase in the quantities produced of a product, with the measurement of quantities captured by models based on cost/income ratios, in the knowledge economy, the attention has been switched from quantity to value, with the adoption of a new model of measurement based instead on concepts of “efficiency.”

Our new paradigm juxtaposes the relationship between “clients and products” against the relationship between “value created and resources employed” in the productive process. The correlation between resources and results is what economists usually define as “efficiency.”

Table No. 2.1 Paradigm Shift in Knowledge Economy

<table>
<thead>
<tr>
<th>Model of Measurement</th>
<th>Old Economy</th>
<th>New Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantities</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>Prices</td>
<td>Efficiency</td>
<td></td>
</tr>
</tbody>
</table>

Source: Appuhami and Zhang (2007)

2.4 Efficiency and Value Creation Process

The following section presents introduction to value creation process, it’s importance in 21st century organizations, definition of efficiency.

When a researcher uses the word “efficiently,” he refers to efficient usage: The physical concept of getting the most output for the least input. When an economist uses the word “efficiently,” he most often means efficient distribution. Economic efficiency thus does not refer to strictly tangible correlated concepts. A system can be called economically efficient if:

- No one can be made better off without making someone else worse off.
- More output can be obtained without increasing the amount of input.
- Production proceeds at the lowest per-unit cost.

An economic system becomes more efficient if it can provide more goods and services to society without expending more resources. But in order to analyze
efficiency at an enterprise level, one must also consider it as an economic category that defines a system’s capacity to turn tangible and intangible input into output.

The ultimate purpose of an enterprise is its yield of profit. But is making profit enough to call an enterprise efficient? Modern indicators for quantifying performance at a macro-economic level are built on the concept of value creation. It is through this concept that one can best determine the level of efficiency within a given enterprise, and it often underlines a surplus value, which appears after the cost of the invested capital has been covered by the operation results. In economic terms, this surplus value is called “value added” or “value created”. As long as an enterprise does not generate a profit higher than the cost of capital employed, it registers a loss. The enterprise thus yields less output to the economic environment than the input it uses as resources. In this case one can state that it does not create wealth (value), but rather wastes it. The value created (and also value added) indicator acknowledges that the use of any sort of capital implies the existence of costs that have to be paid.

Irrespective of the origin of capital and of the form in which it is supplied, it can never be used for free. The earnings that add value to a company can be recorded only after all costs have been covered.

\[ VA = OUT - INP \]

where

\[ VA = \text{Value Added} \]
\[ OUT = \text{Output} \]
\[ INP = \text{Input} \]

The value added indicator is measured in monetary units (units of value): Money earned by an enterprise is what provides this enterprise with value. The indicator is simple, and intellectual capital is one of its central contributing factors. Each and every employee takes part in the process of value creation, as well as company stockholders, suppliers and clients. To conclude, the value creation approach is a useful indicator for the measurement of enterprise efficiency because it is:

a. A clear and efficient method of economic and financial administration of business enterprise.
b. A reliable method of quantifying the company performance.

c. A motivation tool for both managers and working staff.

d. An instrument to improve global strategic plan.

e. A very simple and efficient method to evaluate an enterprise.

2.5 Value Added Intellectual Coefficient (VAIC)

The following section presents introduction to VAIC, its different components, and its calculation.

Ante Pulic proposed in 1998 a coefficient to provide information about the value creation efficiency approach when determining tangible and intangible assets within a company. The model proposed is an analytical procedure that can be easily used by the relevant stakeholders of a company to effectively monitor and evaluate the efficiency of value added (VA) according to a firm’s total resources (including intellectual resources) and each major component of these resources.

Figure 2.1 Construction of the Value Added Intellectual Coefficient (VAIC)

Source: Pulic (2000)
An employee cost includes salary and other expenses on employees. Ante Pulic treat this cost as investment and it is called Human Capital.

\[
\text{Value Added} = \text{Total Income} - \text{Total Expenses} + \text{Personal Expenses}
\]

The value added (VA) of a company can be calculated as outputs less inputs, e.g.:

\[
VA = P + C + D + A
\]

P describes operating profits, C employee costs (the salaries and the social expenses of staff) and D + A, depreciation and amortisation of assets.

Labour expense is not calculated into "value added" because of its active role in the value creating process. It is instead considered part of the intellectual potential expressed by a firm. Value added grows out of physical capital and intellectual capital but, instead of directly valuing the intellectual capital of a firm, the coefficient mainly measures the efficiency of the firm's three types of inputs:

- Physical and Financial Capital (Capital Employed).
- Human Capital.
- Structural Capital.

Capital employed efficiency (CEE) is an indicator of Value Added efficiency (VA) of the capital employed. Human capital efficiency (HCE) is an indicator of VA efficiency of human capital. Structural capital efficiency (SCE) is an indicator of VA efficiency of structural capital.

The sum of HCE and SCE gives ICE and sum of the three measures results in the coefficient VAIC, calculated by Pulic: ICE and VAIC. The higher a company's ICE and VAIC value, the better its value creation potential. He also presented a table to distinguish efficient and inefficient company which is given below.

<table>
<thead>
<tr>
<th>Intellectual Capital Efficiency</th>
<th>Description of efficiency levels</th>
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</thead>
<tbody>
<tr>
<td>2.50 or more</td>
<td>Is a sign of very successful business performance. The result is mainly received by companies from h-tech business and other conjunctive sectors. This is the lowest level of efficiency that can really ensure safe business and workplace</td>
</tr>
<tr>
<td>Intellectual Capital Efficiency</td>
<td>Description of efficiency levels</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>2.00</td>
<td>This is the minimum for efficient business performance in most sectors (enough value is being created in order to cover for employees salaries, amortization, bank interests, taxes, dividends to shareholders). Enough is left for intensive investment in development.</td>
</tr>
<tr>
<td>1.75</td>
<td>Business is in relatively good shape but does not guarantee long term safety. All liabilities are liquidated, however, there is not enough for business investments and therefore future business success is uncertain.</td>
</tr>
<tr>
<td>1.25</td>
<td>Worrying – survival of company is endangered – not enough value is created to ensure business development. Some inputs are not covered, as well as some liabilities towards stakeholders.</td>
</tr>
<tr>
<td>1.00 or less</td>
<td>Much worrying, on the edge of the survival – output is insufficient for covering all inputs necessary for operational business – with this efficiency only labour expenses are covered. In case that efficiency is below 1, then not enough value is created to cover obligations towards employees.</td>
</tr>
</tbody>
</table>

Source: Pulić (2008)

This aggregated indicator allows us to understand the overall efficiency of an enterprise, including its intellectual potential. In simple terms, ICE and VAIC measures how much new value has been created per monetary unit invested in resources. The benefit of such an analysis is that ICE and VAIC also provides a standardized and consistent basis of measurement. Thereby, better enabling the effective conduct of a national comparative analysis using a large, multi-company sample size.

Alternatives to VAIC are limited in that they:

- Utilize only that information provided from a single group or country.
- Lump distinct financial and non-financial indicators into a single comprehensive measure.
- Must be customized to fit the profiles of individual companies/nations.

Considering the above limitations, the possibility of utilizing other models for the measurement of the intellectual capital ("IC") across a large and diversified sample is diminished.

What is more, all data used in the VAIC approximation are based on audited information, which means that the results obtained can be considered objective and verifiable, whereas other IC measurements contain information that is impossible to verify and subjectively interpret results. VAIC is a straightforward technique that enhances cognitive understanding and enables case-by-case calculations by various internal and external stakeholders. It is for this reason that the researcher has selected the VAIC method as a means of interpreting the efficient use of IC in the Indian public sector.