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Intellectual capital: An empirical study of ITRI

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Abstract

Intellectual capital (IC) could provide a new instrument for observing organizational hidden value. While most intellectual capital studies are either theoretical or exploratory, some western research facilities are publishing annual reports based on intellectual capital. Nevertheless, Asian empirical studies are much rarer than western ones, let alone conducting comparison among them. Industrial Technology Research Institute (ITRI), founded in 1973, is a non-profit national R&D organization, aiming to develop Taiwan industrial technologies. This paper firstly attempts to associate the components of the intellectual capital, namely, human capital, structural capital and relational capital with the value/performance of ITRI. Secondly, we find intellectual capital highly relevant to the value creation process and warrant strategic accumulation for R&D organizations.

Keywords: Intellectual capital (IC); Non-profit organization; Industrial Technology Research Institute (ITRI); R&D; Performance evaluation

1. Introduction

1.1. Intellectual capital: recent hot research topic for knowledge-base societies

The most critical ingredients of firm resource endowment are not tangible such as financial or physical assets, but are intangible and, thus, rare, valuable, imperfectly imitable and non-substitutable [1]. During the decade of the knowledge economy, businesses have attempted to encode and store their intangible capital, including experience and knowledge. Business produced Intellectual Capital Reports

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(IC Reports) based on supplementary materials or amendments of their annual reports. The process attempted to specifically measure intangible assets, the sources of knowledge-based organizations, and to describe the knowledge-based value creation process. Hopefully, through a complete presentation of the true nature of the business, the firm could provide a report on the organization to related parties.

In the process of finding a method for assessing internal intangible assets and intangible production procedures of organizations, intellectual capital can provide a completely new model for observing organizational value. The components of intellectual capital indicate firm future value and the ability to generate financial results. This is why a more systematic method of reporting on and managing these intangible dimensions is required. While most intellectual capital studies are either theoretical [2–4] or exploratory [5,6], some western research facilities are publishing annual reports based on intellectual capital (Austrian Research Center [7]; German Aerospace Center [8]). However, Asian empirical studies are much rarer than western ones, let alone conducting comparison among them.

1.2. ITRI: the most important and well-known R&D institute in Taiwan

The impressive development of Taiwanese high-tech industry can be partially attributed to Industrial Technology Research Institute (ITRI), a unique national industry technology application research institute established by the government in 1973. ITRI has improved technology core competence and supplied well-trained experienced human resources specialized in various high-tech fields. Notable spin-offs such as the United Microelectronics Corporation (UMC group) and Taiwan Semiconductor Manufacturing Company (TSMC) all resulted from timely research by ITRI on semiconductors and enabled the subsequent rapid development of the Taiwanese semiconductor industry.

1.3. Perspective of intellectual capital to assess the value of ITRI

ITRI non-profit nature makes it difficult to assess the value of ITRI. Key questions in relation to study are why value of ITRI should be assessed from an intellectual capital perspective and how an intellectual capital framework could enhance measurements that other methods could not. As ITRI has a 30-year history, its area of business and accumulated data have facilitated the conduct of an empirical study to assess the value of an Asian national R&D institute and its intellectual capital. Over the past decade, the rapidly growing realization of the importance of intangible assets and intellectual capital in organizational operations has created the need to manage companies and measure their performance in new ways. Unlike a research facility belonging to a regular business establishment, it is impossible to use operating income- or profits-generated by-products produced by ITRI to measure the rate of return on the resource investment in ITRI. Even if it was possible to quantify the input and output in financial terms, traditional financial report worksheets would not be a suitable means of measuring cost efficiency. In fact, financial worksheets measure short-term and tangible assets. Additionally, indices are lagging indices, and moreover, it is impossible to quantify or declare the external performance, deferred results, and intangible assets of ITRI. These concerns have made intellectual capital reporting extremely informative and desirable as a means of objectively assessing ITRI.

The important point here is that the value of ITRI is from the viewpoint of the customers, government and industries. Simultaneously, the value of ITRI should be systematically structured to examine the nature of intellectual capital in ITRI and its role in the value creation processes. To date, most intellectual capital research is theoretically based. There is a lack of empirical studies, particularly Asian case