Narongsak Comepa 2012: Productivity Measurement and Analysis: Adapting Intellectual Capital for Manufacturing Firms. Doctor of Engineering (Industrial Engineering), Major Field: Industrial Engineering, Department of Industrial Engineering. Thesis Advisor: Associate Professor Kongkiti Phusavat, Ph.D. 214 pages.

This research aims to examine whether the intellectual capital (IC) measurement can be used for productivity measurement. Given the increasing importance of intangible assets in an organization, traditional productivity measurement techniques and practices which were derived from tangible assets may not be applicable and appropriate. This is highlighted by the use of emerging terms such as creative or knowledge-based economy. Therefore, IC has become an important factor in an organization. This research consists of two parts. The first part deals with productivity measurement while productivity analysis is the prevailing efforts for the second part.

For the first part, the IC measurement tools are VAIC and the IC index. The correlation technique was used to validate the IC measurement tools. The findings show that both VAIC and the IC index are suitable for measuring productivity at manufacturing firms. The VAIC is a lagging indicator, and the IC index is considered as a leading indicator. For the second part, the IC development roadmap is developed to help analyze productivity information. This roadmap is derived from knowledge management cycle (KMC), learning organization (LO), self-directed learning (SDL), innovation generation process (IGP), customer knowledge management (CKM), and knowledge management system (KMS). This model shows how the IC is generated. Finally, this IC roadmap model is referred as the SMILE model.

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