Plenary Session 1

A Design-Based View of Manufacturing and Accounting

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ABSTRACT

This presentation proposes an evolutionary framework of design-based (or architecture-based) comparative advantage based on a hypothesis that dynamic fit between organizational capability in manufacturing and product-process architecture tends to result in international competitive advantage of an industry. The proposed framework includes the following components: (i) the design-based concept of manufacturing ("monozukri" in Japanese), which reinterprets firms' development-production-sales activities as creation and transfer of value-carrying design information flowing toward the customers; (ii) the generic logic of comparative advantage, which assumes that a fit between country characteristics and product attributes creates competitive advantage of a given product in a given country; (iii) the evolutionary theory of manufacturing capabilities,, which explains ex-post rational objects without fully depending upon ex-ante rational reasoning, which explains ex-post rational objects without fully depending upon ex-ante rational reasoning; ; (iv) the concept of product-process architecture, originated from a theory of axiomatic design in engineering.

This presentation also tries to reinterpret cost accounting from the view point of design-based (broad) concept of manufacturing, which aims at making "good flows of good design information" for customer satisfaction, industry competitiveness and firms' growth. The long history of tensions between cost accounting and flow-oriented (lean) manufacturing management are discussed here. This presentation regards a product (a tradable artifact) as a combination of design information and its medium. Price is related to customers' evaluation of design information, whereas cost (its productivity component) is related to the concept of "media-occupation," or the amount and the time that the product's design information

occupies various media of productive resources. A framework of cost accounting that may fit the concept of continuous improvements (kaizen) and flow-oriented management (lean manufacturing) is explored.