NIPPON STEEL’S E-COMMERCE AND CUSTOMIZED CASTING STRATEGY

AN EXAMPLE OF CONTROLLED PRODUCTION
ORIGINS RESEARCH

- Apparent Best Practice and "Controlled Production Paradigm" based two studies:
  - 1st examined structure and development of Japanese software industry;
  - 2d compares leading US & Japanese firms’ IT use to improve competitive advantage.
ORIGINS of CASE

• Sloan Foundation Study on Using IT to improve competitiveness

• Series of IT Case Studies (Merck, Toyota, NSC, NEC, Sanwa, Meiji Life, Takeda, Citibank, Ito-Yokado, Tokyo Steel, Citi)

• Not Analytic and Not Literature Review
CONFIRM PREVIOUS RESULTS

Persistence Japanese customization despite high cost due leading users strong belief in adapting IT to support management goals & strategies

IT Decisions User Driven and Path Dependent

Criteria Set by Users' Process & Systems
Integration of Constant Product/Process Innovation, Development and Extension
FURTHER CONFIRM

Despite installed base is support for localization and adaptation of packaged software combined with some shift to flexible open systems.

But packages and open systems still customized at great expense to maintain and integrate large firms' existing IT systems, to constantly introduce product innovation and development and to improve unique operating systems.
LEGACY, LOCK-IN, BENEFITS

Legacy multiple systems make changing difficult for large mainframe systems running mission critical applications;

This has “locked-in” users while mainframes are used to manage IT systems due difficulty and cost of converting installed mission critical systems supporting key operating systems and databases when risk failure is unacceptable and have few personnel familiar new programs.
BENEFITS OF CUSTOMIZATION

But there are benefits too: Institutionalization of firm’s tacit knowledge and processes;

Where permanent employment helps firms realize training costs in unique features of proprietary IT systems compensating for Japan’s relatively weak education in computer science through specialization and OJT in the firm’s unique system for an extended period.
VERTICAL APPLICATION IT

This is especially important where IT is not output;

But can help firm be competitive by supporting existing system and by adapting to business needs to enhance core competencies and beneficial loops that tie firm, customers & suppliers while supporting improved processes and use of new product-process technologies.
TOTAL COST CONCEPT

Growth vertical application SW plus industry & firm specific SW strategies impact competitive environment on a cost and revenue basis.

Sloan studies and NSC case explore importance vertical application and embedded SW in this context by comparing some leading US & Japanese firms’ strategic IT use to improve competitive advantage.
USER ATTITUDES

Conservative mainframe mentality while cost conscious is risk averse; so systems change slowly due organizational integration suppliers, sales networks, & production focusing new IT primarily on new technologies/products.

Little interest in pushing EDP innovations as developers are part user’s industry and depend on users’ success.
COMMON CASE RESULTS

“Best-Practice” cuts across cases in Inventory Control and Interactive Database Management to improve products, quality and delivery

IT integrates telecommunications, organizational structure, and R&D with production, marketing, delivery and after sales service

IT is part of senior management business strategy extending recruitment, training, development.
FURTHER RESULTS

Outsourcing IT critical to business strategy is usually avoided, as are EMS (enterprise management systems) packages;

They do not reorganize or reengineer to use SW.

Feel solutions available all cannot improve competitiveness unless part proprietary system while such systems can be barriers to entry.
INCREASING RETURNS

Leading to increasing returns and beneficial loops via lower costs/cycle times and better quality.

It can commit suppliers/clients to IT system to share benefits. So clear strategy supported by core competencies & organization is necessary to successful IT use. Such use to improve firm advantages can become a core competency.

This can evolve into “controlled” production.
CONTROLLED PRODUCTION

Some leading users, including NSC, follow a new production paradigm, “controlled production” (CP), where IT helps control all aspects of the business: development, production, delivery, after-sales activities, the external environment.

CP differs from mass or lean production because it seeks gains by using IT to control all aspects of delivering a product or service.
NEW PRODUCTION PARADIGM

“We are experiencing a new industrial revolution, one more powerful than any before ... the new currency will be information. How we harness it will mean the difference between success and failure, between having competitive advantage and being an also-ran.” (Seagate Technology)
“Vortex businesses … have one very powerful edge over traditional distribution and manufacturing operations: They will get increasing returns ... As a site becomes successful, the chances of its becoming more successful increase. The more buyers are attracted, the more sellers will be drawn in, and the more products that are available, the more customers will be drawn in. That, in turn, makes content aggregation easier... Everything gets drawn to the center of the vortex. The implication is clear: Great vortex businesses will tend toward monopolies, and there will be no such thing as second place.” (William Gurley)
NSC AND CP

Nippon Steel uses IT to enhance competency in managing steel production schedules, a complex task as each order is a unique steel slab: weight, coating, thickness, end use, composition, etc.

They are partnering with IBM to use new mathematical algorithm. Results may save many $ millions of in-process inventory as well as permitting efficient production and delivery of customized products even on JIT basis.
Customized Production complements e-commerce and data base projects with trading and auto companies that replace e-commerce:

TC faxes
Permit JIT delivery customized steel
Work autos simulate expected replacement part steel as NSC has one month inventory per model
IT initiatives extend influence beyond the firm and tie clients to NSC production as once assembler has integrated parts supply switching is difficult.
EXTENSIONS NSC CASE

NSC uses specific rules and routines to manage its IT strategy that are path dependent with advantage cumulating over time. It does this by supporting and enhancing core competencies and existing competitive strengths.

So “IT use” is now another competency that NSC uses to influence its external environment and establish a competitive advantage. As system is protected, monopoly is possible and Increasing Returns can extend to an industry such as steel.