

Manufacturing system may stem cost effects

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High costs of production and labor, combined with high rates of technological change, often cause manufacturers in developed countries to take their production offshore to lower-cost sources.

Dr. Kathryn Stecke, Ashbel Smith Professor of operations management, recently studied a production system called seru that is used by the electronics industry that creates an exception to this trend.

The study, published online in the Journal of Operations Management, describes seru as a cellular assembly approach. The system, used by companies including Canon and Sony, appears to offer promise for manufacturing in dynamic, high-cost markets, Stecke said.

"Seru is like going back to trade manufacturing, before Henry Ford's assembly line innovation. A focus is on extremely highly trained workers, emphasizing both speed and quality," said Stecke, who teaches [operations management](#) and flexible manufacturing strategies in the Naveen Jindal School of Management at UT Dallas.

This type of cellular manufacturing is distinguished by the ability to configure the cells quickly and its use of the cells for assembly, packaging and testing rather than only fabrication.

Seru uses highly skilled and flexible workers to achieve the responsiveness required by the changes in demand and the fast development of an innovative product. Its strategy also prioritizes responsiveness over cost reduction.

The study analyzed Canon's and Sony's histories, the factors that led to the development of seru systems and their successful implementations.

The researchers conducted studies of nine sites of Sony and Canon, interviewed managers at both companies, participated in industrial seminars and meetings, and reviewed company documents and handbooks, as well as published research.

Seru is not new, Stecke said. A 1992 Wall Street Journal article discusses the system, but most of the world outside of Japan has not been aware of this electronics assembly innovation.

"Many companies in Japan, mostly electronics, have applied seru to improve productivity, quality, efficiency and flexibility," Stecke said. "Seru is an example of production remaining competitive in a high-cost environment."

For example, the production of Sony's PlayStation 2 console was moved from an assembly line of 19 workers in a 700-square-foot space to a set of serus staffed by 10 workers in a 484-square-foot space. The total cost of production was reduced, and PlayStation 2 volume increased 200 percent.

The study found that competitiveness and productivity increase when the focus is on using precisely the resources needed to respond to actual customer demand.

"Although seru mostly has been used in electronics, its use can be expanded to other appropriate industries in the future," Stecke said. "Non-electronics companies currently using seru production systems include Denso (machining) and Yamasaki (motorcycle assembly)."

More information: Yong Yin et al. Lessons from seru production on

manufacturing competitively in a high cost environment, *Journal of Operations Management* (2017). [DOI: 10.1016/j.jom.2017.01.003](https://doi.org/10.1016/j.jom.2017.01.003)

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