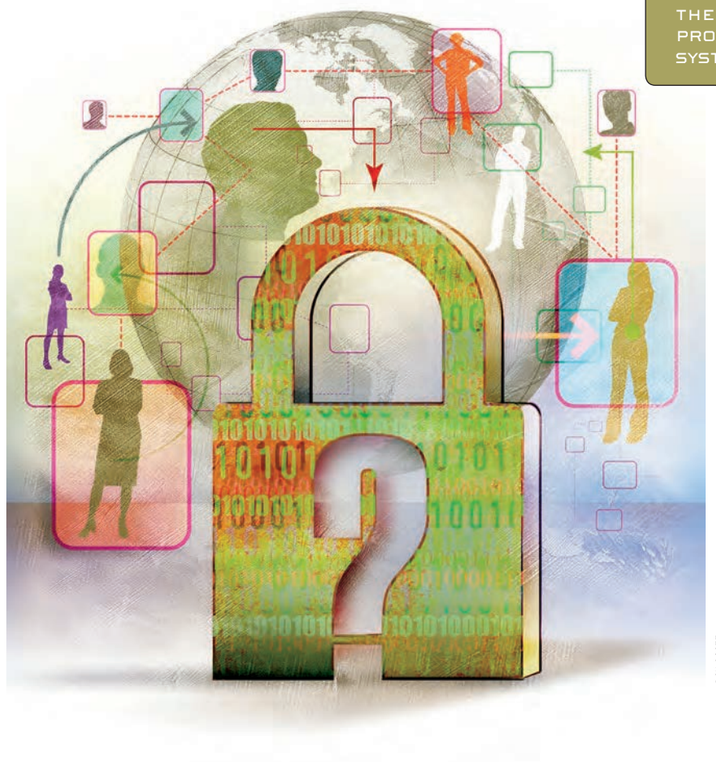
MANUFACTURING EXPERT SEES *SERU* COMING TO THE U.S.

BY GLENDA VOSBURGH

AND SHE ALREADY HAS WRITTEN A HOW-TO FOR THE FLEXIBLE PRODUCTION SYSTEM.



ROY SCOTT

Manufacturing is a key driver of the U.S. economy, but American manufacturers have sometimes struggled to keep pace with their global counterparts.

Those looking to improve their competitive edge could benefit from research done by Dr. Kathryn E. Stecke, Ashbel Smith Professor of Operations Management in the Naveen Jindal School of Management, an internationally recognized scholar in flexible manufacturing and supply chain issues.

Purdue University, where Stecke earned two master's degrees and a PhD in industrial engineering, named her one of its 2014 Distinguished Women Scholars at a ceremony in early March.

Her body of work shows why this and so many other honors have come her way. Stecke is widely considered the U.S. expert on the *Seru* Production System, a work-cell-based manufacturing structure created in 1992 by Sony in Japan. Unlike traditional production lines, *serus* (production cells), are comprised of equipment and one or several multiskilled workers who produce one or more types of parts.

Stecke has spoken about *seru* almost exclusively for the past two years, at universities and conferences in the United States and around the world. "*Seru* started and is mostly used in electronics production, but it certainly is appropriate for other types of manufacturing," she says. While it is not currently known — or therefore used — in the U.S., she believes it is probable that it will be in the future.

Seru is a more efficient and productive way of making certain types of products, she says, resulting in an increased production output that requires fewer people. "An Implementation Framework for *Seru* Production," a study published in the January issue of *International Transactions in Operational Research* (Vol. 21, No. 1, pages 1-19) that Stecke co-authored with ChenGuang Liu and Jie Lian of Xi'an University of Technology in China and Yong Yin of Yamagachi University in Japan, provides practical guidance for creating a *seru* system.

A guidance study Stecke did on supply-chain risk issues, "Sources of Supply Chain Disruptions, Factors that Breed Vulnerability, and Mitigating Strategies," was co-authored with Dr. Sanjay Kumar of Pennsylvania State University – Erie. The work appeared in a special issue of the *Journal of Marketing Channels* (2009, Vol. 16, Issue 3, 2009, pages 192-226) devoted to managing risks and disruptions in global supply chains. One of the journal's most-read and oft-cited works, the study provides steps that can be taken to prevent disorder and interruptions due to calamities such as floods, earthquakes and fires, as well as manmade catastrophes, such as terrorist attacks, train derailments and sabotage of infrastructure.

Another area of research that interests Stecke is operations/marketing interface — the relationship of the marketing side of a business, which creates customer demand, and the operations management side, which is the supply and fulfillment side. That relationship — whether in conflict or in sync — can affect a company's success.

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Stecke's significant scholarly productivity and ongoing involvement in professional groups has led to many awards and recognitions. Last year, the Institute for Operations Research and the Management Sciences (INFORMS) gave her its Women in Operations Research and Management Sciences (WORMS) Award for the Advancement of Women in OR/MS. The WORMS Award each year recognizes a professor who has helped promote the professional development and recognition of women in the OR/MS field within their own institutions and professional organizations.

Stecke has been an active member of INFORMS, the largest professional society worldwide for professionals in the field, since her days as a graduate student. She has chaired national and international INFORMS meetings, twice served on the institute's board and was elected an INFORMS fellow in 2009.

She also has served on the board of directors of the Productions and Operations Management society, which recently re-elected her.

Early this year, Stecke was named guest professor of Northwestern Polytechnical University in China. Past international appointments have taken her to Australia, France, Germany, Hong Kong, Hungary, Italy and the Netherlands.

Above: Kathryn E. Stecke (left), Ashbel Smith Professor of Operations Management, being recognized March 7 as a Purdue University 2014 Distinguished Woman Scholar

Right: Dr. Stecke often uses her expertise to mentor PhD students during the dissertation process.