Chapter 8.5
Service Science, Management, Engineering, and Design (SSMED):
An Emerging Discipline – Outline & References[1]

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ABSTRACT

The growth of the global service economy has led to a dramatic increase in our daily interactions with highly specialized service systems. Service (or value-cocreation) interactions are both frequent and diverse, and may include retail, financial, healthcare, education, on-line, communications, technical support, entertainment, transportation, legal, professional, government, or many other types of specialized interactions. And yet surprisingly few students graduating from universities have studied anything about service or service systems. Service Science, Management, Engineering, and Design (SSMED), or service science for short, is an emerging discipline aimed at understanding service and innovating service systems. This article sketches an outline and provides an extensive, yet preliminary, set of references to provoke discussions about the interdisciplinary nature of SSMED. One difficult challenge remaining is to integrate multiple disciplines to create a new and unique service science. [Article copies are available for purchase from InfoSci-on-Demand.com]

THEORETICAL AND PRACTICAL FOUNDATIONS

The emerging discipline of Service Science, Management, Engineering, and Design (SSMED) or service science, for short, is outlined in this article (IBM Research 2004; Chesbrough, 2005; Horn,

2005; Chesbrough & Spohrer, 2006; Hidaka, 2006; Monahan, Pym, Taylor, Tofts, & Yearworth 2006; Spohrer, Maglio, Bailey, & Gruhl, 2007; IfM & IBM, 2008; Spohrer & Maglio, 2008). This section provides some of the key theoretical and practical foundations of service science. What is truly new and unique about service science? Haven't people been doing service research for over thirty years? What's changed? The next section provides the primary connections to existing disciplines. How does service science relate to existing academic disciplines? Does every service scientist need to know about all these disciplines?

How is service science changing and being changed by these disciplines? The last section provides the primary connections to existing professions. How does service science relate to existing professions? Which professions are likely to benefit from the rise of service science?

Concepts and Questions

Why now? The International Labor Organization released a report[2] in January 2007 that stated there are, for the first time in human history, more service jobs (40%) than agricultural jobs (39.6%) and nearly doubles those of manufacturing jobs (20.4%). Nowadays most people survive (and some thrive) even though they do not create new physical things, such as food or tangible products, in their jobs. Over the past thirty years, a growing number of academics and practitioners have begun to study "service" as a distinct phenomenon, with its own body of knowledge and rules of practice. The growth of service value in society is undeniable.

However, aside from the statistics is there really anything new in this "growth of service" phenomenon, and is there anything worthy of a new science? And what is service? From von Mises (1998), we see that service relates to increasing value from more and more sophisticated forms of cooperation, or what we term *value-cocreation mechanisms*. Many have begun to observe that

over time, service-for-service exchanges not only dominate in an economy, but become more specialized and knowledge-intensive, and further increase the value creation density of societies (Normann 2001). The growth of service also means interacting more with strangers (Seabright 2005); even though we know the role someone is playing in a service system, we do not always know the person. So what is going on? What is behind the growth of service? Ludwig von Mises (1998) wrote, near the middle of the last century, about the fundamental understanding of value and cooperation: "Within society, cooperation substitutes interpersonal or social exchange for autistic exchange. Man gives to other men in order to receive from them. Mutuality emerges. Man serves in order to be served. (Pg. 194)"

More recently, Vargo & Lusch (2004, 2006, and 2008) in their Service-Dominant Logic *define service as the application of competence (e.g., knowledge, resources, etc.) for the benefit of another entity*. They point out that most people today use a Product-Dominant Logic that has arisen from two centuries of measuring value as increases in physical output. For example, bushels of wheat or palettes of consumer goods are physical output. This focus on the physical products is quite understandable, in part, given that manufacturing production efficiencies have lead to enormous improvements in material wealth (Beinhocker, 2006). However, now with the rise of the internet and low-cost global communications, information and knowledge as a contributor in value-cocreation is becoming more quantifiable. Foray (2004) points out that information is easy to copy (known digital encoding in machines), while knowledge is hard to copy (unknown neural encoding in people). The growth of service is truly tied to the growth of information and knowledge.

What's new? While division-of-labor and cooperation are not new thoughts, the growth of service provides a new lens through which to see the world. The growth of service, seen as the evolution of value-cocreation mechanisms between

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