

Preface



Today, the service sector dominates the global economy. It comprises roughly 75 percent of the gross domestic product of developed nations and employs more people worldwide than either agriculture or manufacturing. Service revenues accounted for more than one-half of the total revenues of IBM in 2006, and many familiar manufacturing companies, including General Electric and Rolls-Royce, are generating significant revenues by incorporating services into their business models.

As the dominant role of services in individual businesses and entire economies has become evident, many in academia and industry have suggested that there is a need for a new science of service systems, which aims to increase service innovation by applying scientific understanding, engineering discipline, and management practices to designing, improving, and scaling service systems. The theme of this issue of the *IBM Systems Journal*, service science, management, and engineering (SSME), reflects the need for research in this emerging field.

The first group of papers in the issue discusses fundamental issues in creating a science of service. In “Toward a conceptual foundation for service science: Contributions from service-dominant logic,” Lusch, Vargo, and Wessels present “service-dominant logic,” which provides a lexicon for the creation and exchange of value and may serve as an appropriate underlying logic for service science. In “Designing a service science discipline with discipline,” Glushko describes the University of California, Berkeley’s approach to designing a discipline of service science in a rigorous, principled, and

theoretically motivated way. In “Service science: Catalyst for change in business school curricula,” Davis and Berdrow suggest that service science requires a radical change in the curricula for business schools, away from the business model of vertical and largely independent functional “silos” and embracing a more holistic and integrated model. In “Service science: At the intersection of management, social, and engineering sciences,” Larson presents an overview of the infrastructure of service science along with several examples of successful applications of this type of analysis.

The second group of papers explores the theory underpinning value creation in service systems. In “Complexity of service value networks: Conceptualization and empirical investigation,” Basole and Rouse present a conceptual model for investigating service value and explore how service value is created in a network context. In “Service system fundamentals: Work system, value chain, and life cycle,” Alter proposes three interrelated frameworks (named in the paper’s title) to characterize service systems and uses two examples to illustrate their use in the description and analysis of these systems. In “Estimating value in service systems: A case study of a repair service system,” Caswell, Nikolaou, Sairamesh, Bitsaki, Koutras, and Iacovidis address the growing complexity of the economic structure of service systems and propose a descriptive structure for the analysis of this complexity that combines graph theory and network flows with economic tools.

In “BEAM: A framework for business ecosystem analysis and modeling,” Tian, Ray, Lee, Cao, and

Ding propose a game-theory-based computational framework to help study business model design in a complex service ecosystem, and show how the framework can be used to provide insight into the distribution of value, the identification of relationships, and the evaluation of business model performance.

The final group of papers presents diverse service system studies that elaborate on some principles, issues, and challenges. Because not all styles of innovation in service industries are captured in conventional statistics or are targeted by innovation policies, Miles, in “Patterns of innovation in service industries,” provides a basis for characterizing distinctive innovative patterns and offers suggestions for the organization and management of innovation. Clarke and Nilsson, in “Business services as communication patterns: A work practice approach for analyzing service encounters,” describe an approach to the characterization of business processes and services that views work practices as recurrent patterns of communication.

In “Legal research topics in user-centric services,” Pitkänen, Virtanen, and Kemppinen discuss the legal issues, including those related to privacy and government regulation, that arise in the implementation of many service systems. In “Managed service paradox,” Leon and Davies describe how traditional service industries, such as hospitality, have largely succeeded in automating service production and delivery, whereas many high-technology industries have not. In “Improving service delivery through integrated quality initiatives: A case study,” Hickey and Siegel advocate the integration of processes and diagnostics and the reuse of documentation used in determining the quality of a service source through a case study that illustrates the adoption of two quality standards, ISO 9001:2000 and the eSourcing Capability Model for Service Providers (eSCM-SP), showing how they may be used to improve service delivery. Verma, Plaschka, Hanlon, Livingston, and Kalcher, in “Predicting customer choice in services using discrete choice analysis,” present an overview of discrete choice modeling for service sector applications, which provides a sophisticated toolkit for assessing the needs and preferences of customers.

The next issue of the *IBM Systems Journal* is devoted to real-time and event-based systems.

Paul P. Maglio, Senior Manager,
Service Systems Research

Jim Spohrer, Director,
IBM Almaden Service Research

David I. Seidman, Associate Editor

John J. Ritsko, Editor-in-Chief