Introduction

Why a Handbook?

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Why a handbook? We can answer that question with a question: What does a service scientist need to know? This volume presents multidisciplinary perspectives on the nature of service, on research and practice in service, and on the future of research in service. It aims to be a kind of reference, a collection of papers by leading thinkers and researchers from across the spectrum of service research – the collected basics for a budding service scientist.

Service science is the study of value cocreation

Service science is an interdisciplinary approach to study, improve, create, and innovate in service (Spohrer & Maglio, 2008, 2010). We think of service as value cocreation – broadly speaking, as useful change that results from communication, planning, or other purposeful and knowledge-intensive interactions between distinct entities, such as individuals or firms (Spohrer & Maglio, 2010). And so we think of service science as the systematic search for principles and approaches that can help understand and improve all kinds of value cocreation (Spohrer & Maglio, 2010).

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To start, there are many kinds of value cocreation. There are many ways to divide up the expertise, labor, and risk associated with diverse human activities. Traditional service sector activities include transportation, retail, healthcare, entertainment, professional services, information technology services, banking, and insurance, to name just a few (see also US Census Bureau, 2007). One firm provides a service, such as banking, and a customer benefits by being able to securely store and access funds. The bank cannot exist without the funds customers store and the customer cannot have the convenience of access through various mechanisms (checking, automatic tellers, bank branches) without the capabilities the bank provides. Value is cocreated by the interaction of the two. A broader view supposes that all economic activity depends on value cocreation between different entities, and more specifically, that all economic activity is fundamentally an exchange of service for service (see, for instance, Vargo, Maglio, & Akaka, 2008, and the chapter by Vargo, Lusch, and Akaka in this volume). The key point is that different entities bring different capabilities and resources to bear and value results from interaction of resources and capabilities.

There are many different theories and methods that might be useful in the search for principles and approaches to understand and improve value cocreation. Disciplines that have focused on service include marketing, operations, industrial engineering, information systems, computer science, and economics, to name just a few. Marketing has long held that certain kinds of service activities need to be characterized and sold differently from goods (see, e.g., Shostack, 1977), and operations and industrial engineering have long understood that service processes need to be constructed differently from goods production processes (e.g., Levitt, 1972) and particularly in the context of specific technologies (e.g., Mills & Moberg, 1982). Modern computer science focuses on web services and service-oriented computing (e.g., Marks & Bell, 2006; Zhang, 2007), which aim to transform the way programs and applications are built from small components. Economics has long distinguished tangible goods from intangible services (e.g., Smith, 1776/2000; see also Delaunay & Gadrey, 1992).

It is ambitious – and perhaps a little silly – to suppose there might be a single science that can cover all of service, a science that combines theories and methods from such a wide range of existing disciplines and applies them to such a wide range of value-cocreation phenomena. At the very least, service science is already enhancing the conversation among different people and different disciplines focused on service (see also, Rust, 2004; Hefley & Murphy, 2008; IfM & IBM, 2008; Spohrer & Riecken, 2006). Some commonalities are already evident, and some progress is already being made. For example, we see Vargo and Lusch's (2004) service-dominant logic as one of the corner stones of service science (Maglio & Spohrer, 2008). Its primary definition is that service is the application of competences for the benefit of another entity, and its primary tenet is that all economic activity is an exchange of service for service. Drawn to its logical conclusion, this effectively flips the usual "goods-dominant" worldview on its head and takes service to be the primary category. According to service-dominant logic, rather than service being a kind of inferior, intangible good, goods themselves

embody the tangible aspects of service competence and obscure the true nature of the underlying service for service exchange. Such a profound shift in worldview is difficult to make, and not everyone agrees with it (e.g., Achrol & Kotler, 2006; Levy, 2006). More importantly, it is not always easy to get it right, and we admit to being inconsistent in how we have viewed service over the last few years (see the chapter by Vargo, Lusch, and Akaka in this volume). But we are coming around.

Another potential fundamental of service science is the service system (Maglio, Srinivasan, Kreulen, & Spohrer, 2006; Maglio & Spohrer, 2008; Maglio, Vargo, Caswell, & Spohrer, 2009; Spohrer, Maglio, Gruhl, & Bailey, 2007). This idea of service emerging out of systems of interacting components goes back much further than our use of it, of course: Some have focused on service systems for optimizing waiting and queuing processes (e.g., Riordan, 1962), some for the interaction among parts of a production process that includes firms and customers together (Chase, 1978), and some for the larger constellation of stakeholders (including suppliers, competitors, customers, and others) that together conspire in the generation of mutual value (Normann, 1984). For us, the key point is that value cocreation emerges from the interaction of many parts – and it can be formalized, analyzed, and designed despite its complexity.

Structure of the book

No organization is perfect. No matter what structure we choose, something will seem out of place. With that in mind, the book is organized in three main parts: Context, Research and Practice, and Future. We outline each in turn.

The first part is Context. It sets the stage for what's to come, introducing many of the basic concepts about service that will recur throughout. It is organized in two parts, Origins and Theory. Origins celebrates some of the seminal and pioneering work in service research with updates to several classics. Richard Chase reviews his seminal Harvard Business Review article (Chase, 1978) in "Revisiting 'Where Does the Customer Fit in a Service Operation?' Background and Future Development of Contact Theory;" Chase's customer contact theory remains important and influential, and here he reviews and places it in the modern service context. James Heskett and Earl Sasser update their seminal Harvard Business Review article (Heskett, Jones, Loveman, Sasser, & Schlesinger, 1994) on the service profit chain in "The Service Profit Chain: From Satisfaction to Ownership," incorporating new research findings and new concepts that have followed from it. Benjamin Schneider and David Bowen recap their popular book (Schneider & Bowen, 1995) in "Winning the Service Game: Revisiting the Rules by Which *People* Co-Create Value," demonstrating that the key to service is people, front-stage, backstage, client-side, and everywhere. Roland Rust and Gaurav Bhalla provide an overview of critical notions of customer equity

and customer lifetime value in "Customer Equity: Driving the Value of the Firm by Driving the Value of Customers," focusing squarely on the revenue side – the customers – rather than the cost side – the operations (see also Rust, Zeithaml & Lemon, 2000). John Bryson and Peter Daniels set a broad service context in "Service Worlds: The 'Services Duality' and the rise of the 'Manuservice' economy" by summarizing a bit of their book (Bryson, Daniels, & Warf, 2004), and then taking it further, arguing that service might not be its own category, but is blended with manufacturing and so we have to understand it at a much finer grain.

The section on Theory lays out several different but related approaches to weaving a comprehensive approach or theory of service. Scott Sampson follows the tradition of Chase by emphasizing the role of the customer in service operations to create a powerful framework for understanding service in "The Unified Service Theory: A Paradigm for Service Science" (see also Sampson and Froehle, 2006). Stephen Vargo, Robert Lusch, and Michelle Akaka connect the influential service-dominant logic (e.g., Vargo & Lusch, 2004) to the foundation of service science in "Advancing Service Science with Service-dominant Logic: Clarifications and Conceptual Development". Finally, James Spohrer and Paul Maglio develop concepts and theory around service systems in "Toward a Science of Service Systems: Value and Symbols" (see also Maglio, Vargo, Caswell, & Spohrer, 2009; Spohrer & Maglio, 2009).

The second part is Research and Practice. It emphasizes empirical data and practical experience through the study and implementation of real-world services. It is broken into four sections: Design, Operations, Delivery, and Innovation. The section on Design takes the perspective of the service itself, considering mainly issues in effective service creation and development. In "Technology's Critical Impact on the Gaps Model of Service Quality, "Mary Jo Bitner, Valerie Zeithaml, and Dwayne Gremler review and update the now standard gaps model of service quality (see also Parasuraman, Berry & Zeithaml, 1990), particularly in the context of modern service technology. In "Seven Contexts for Service System Design," Robert Glushko develops a kind of taxonomy for service design that aims to bridge front-stage and back stage concerns across a variety of service situations (see also Glushko & Tabas, 2009). In "Business Architecture for the Design of Enterprise Service Systems," Susanne Glissmann and Jorge Sanz describe the fundamentals behind business architecture, particularly from the perspective of business services. In "People, Activities, and Information in Highly Collaborative Knowledge-based Service Systems," Cheryl Kieliszewski, John Bailey, and Jeanette Blomberg discuss their research and insights into service work practices and their implications for service system design.

The section on Operations reviews a variety of work related to management and engineering of service systems. In "The Neglect of Service Science in the Operations Management Field," Richard Metters expounds on the need for education and research in service by educators and researchers in operations in his personal essay (see also Metters and Marucheck, 2007). In "Death Spirals and Virtuous Cycles: Human Resource Dynamics in Knowledge-Based Services,"

Rogelio Oliva and John Sterman explain their system dynamics modeling approach to understanding the relation between human aspects of work and business aspects of service performance and quality (see also Oliva & Sterman, 2001). In "Service Science – A Reflection from Telecommunications Service Perspective," Eng Chew provides a case study in the application of service science ideas to telecom services, demonstrating both applicability and potential insight into process, innovation, and value. In "Service Engineering – Interdisciplinary and Multiperspective Framework to New Solution Design," Gerhard Gudergan explains the concepts and background of several approaches to service engineering.

The section on Delivery takes the perspective of implementation, focusing mainly on how service delivery actually works. In "The Industrialization of Information Intensive Services," Uday Karmarkar extends and updates his Harvard Business Review article (Karmarkar, 2004) on how industrialization of information services works, along with its social and business implications. In "Workforce Analytics for the Services Economy," Aleksandra Mojsilović and Daniel Connors show how optimization-based approaches to workforce management are critical to modern large-scale service delivery. In "Understanding Complex Product and Service Delivery Systems," William Rouse and Rahul Basole extend their article in the IBM Systems Journal (Basole & Rouse, 2008) showing how service value can be viewed as network flows through the use of many specific industry examples. In "A Formal Model of Service Delivery," Guruduth Banavar, Alan Hartman, Lakshmish Ramaswamy, and Anatoly Zherebtsov develop a formal model of service delivery that takes account of front-stage and backstage processes together in a way that enables analysis and reasoning about design.

The section on Innovation pulls together a variety of perspectives on the nature and processes of new service development and service improvement. In "Service Innovation," Ian Miles provides a broad review of service innovation studies, and starts to place them in a modern service context (see also Miles, 2008). In "Innovation in Services and Entrepreneurship: Beyond Industrialist and Technologist Concepts of Sustainable Development," Faridah Djellal and Faïz Gallouj discuss how models of sustainability and innovation do not take account of services, and show how a service perspective has a lot to offer. In "Service Innovation and Customer Co-development," Bo Edvardsson, Anders Gustafsson, Per Kristensson and Lars Witell apply service-dominant logic to understand the role of the customer in service innovation. In "Advancing Services Innovation: Five Key Concepts," Henry Chesbrough and Andrew Davies develop a novel model of service innovation based squarely on the notion of value cocreation. In "What Effects do Legal Rules have on Service Innovation?" Pamela Samuelson provides a concise history and context of intellectual property, contract, and tort law related to services, particularly digital information services and software, and suggests where the legal landscape may be heading and draws out implications for service innovation.

The third part of the book is Future. It focuses on the problems and prospects for building a truly interdisciplinary service science. Evert Gummesson gives a very personal account of the context of service, its history as a field, and the prospects for true integration of disciplines in "The Future of Service is Long Overdue."

Raymond Fisk and Stephen Grove provide their own historical perspective on the study of service, and how various strands of research (disciplines) might or might not come together in "The Evolution and Future of Service: Building and Broadening a Multidisciplinary Field" (see also Fisk, Brown, & Bitner, 1993). Michael Gorman characterizes service science as a kind of trading zone that brokers knowledge between different areas in "Normative Scenarios and Their Role in Service Science Trading Zones." James Spohrer, Guangjie Ren, and Michael Gregory review and update the recent "Cambridge Report" (IfM & IBM, 2008), defining key terms for Service Science and showing global progress toward the vision of service innovation roadmaps for all nations in "The Cambridge-IBM SSME White Paper Revisited." Kazuyoshi Hidaka describes service research and educational activities in "service science, Management, and Engineering in Japan." Linda Macaulay, Claire Moxham, Barbara Jones, and Ian Miles connect specific skills and service science education needs in "Innovation and Skills: Future Service Science Education."

In the end, of course, it is not clear there is – or there will be – a single, unified service science. But it is clear there is progress. There are common elements and themes, and common concerns and approaches that converge on the central real-world phenomena of value cocreation. A dialog has emerged among many proponents who aspire to a deeper scientific foundation for their views on service, one that attempts to define key terms and to incorporate them into fundamental insights and principles. We hope this collection has furthered that dialog and has captured much of what every service scientist should know.

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