This book by Joe Tidd and Frank Hull is about managing innovation in the service sector in the broadest sense. In contrast to research and management prescriptions based on the experience of manufacturing and high-technology, relatively little is known about managing innovation in the service sector. Thus, the goal of the book is to shed light on the question of what is applicable to services, what must be adapted, and what is distinct and different.

The book is divided into three parts. In Part I, a collection of conceptual and analytical frameworks is introduced in order to better understand the organization and management of services. In Part II, empirical evidence from a range of national and sector studies is presented. This features country studies from many advanced economies, including the USA, UK and Germany, and sector studies of the most significant service industries, including healthcare, financial services, as well as less commonly researched but emerging segments of the service economy, such as construction and manufacturing-related services. Finally, in Part III, a model of innovation in services is developed, focusing on the development and delivery of services.

The five contributions forming the first part of the book offer conceptual and theoretical frameworks to identify good practices in the management and organization of innovation in services. These have to be adapted to different contexts, specifically the scale and complexity of the tasks, degree of customization of the offerings, and the uncertainty of the environment. In the first contribution – written by the two authors of the book – a typology of organization and management of product development practices in service firms (observed in 38 UK service firms) is developed. The typology provides a theoretical context for hypothesizing “best management practices.” Patrick Vermeulen’s and Wietze van der Aa’s research shows a strong focus on certain types of innovation (new product development) and certain industries (banking, insurance). When insights from new product development in manufacturing are compared with the development of new services, the empirical results illustrate that the process of new service development in the (financial) services industry differs only slightly from the same processes in the manufacturing industries. Sandra Vandermerwe shows the limitation of the so-called product approach (innovation on the product) and presents an alternative model which involves articulating and creating new market opportunities which allow companies to “lock-on” customers (i.e. where customers want the organization as their sole or dominant choice because they have become indispensable to them in a market space). For Ian Miles, the rise of knowledge-intensive business services (KIBS) illustrates the growing centrality of knowledge, and the ways the increased variety of technological and administrative knowledge, and the complexity of the combinations of knowledge that are required, requires new agents for creating, integrating and bearing knowledge. In acting as interfaces with clients and in becoming intermediary agents in innovation systems, KIBS are considered to be crucial for technological adjustments of different branches and for the renewal of regional innovations systems. Finally, Tony Clayton points out evidence and examples of suc-
successful service innovation — most related to the critical importance of focus and complexity avoidance. Business and economic rationale for the findings are summarised under the headings “Customer knowledge”, “Experience without sale”, and “Simple architecture”. The evidence shows that clear aims in each of these areas are critical for winning performance in service innovation.

The second part of the book offers a whole series of sector and national studies of innovation in services. Frank Hull and Joe Tidd explore the extent to which a framework for organizing and managing new product development, derived from good practice in manufacturing, predicts variation in performance in service companies in the USA and UK. The framework they developed is based on proven good practice in the manufacturing sectors, and adapted to encompass services as well as goods. Christiane Hipp et al. raise two main questions with evidence from Germany: How does innovation in services relate to the received understanding of innovation in manufacturing? What is the relationship between innovation and economic performance in services? The pattern of innovation was related to the size of the innovating firms, the broad sector of their activities, and by the extent to which their sales were due to “standardised”, “partially-customised” or “bespoke” services. Jane Bower’s chapter on Innovation in Healthcare Delivery discusses three forces that currently drive powerful, often conflicting demands for innovation in every aspect of healthcare: technology opportunity, growth in demand, and growth in costs. These forces dominate a dynamic and testing environment in which service innovation must be managed. She comes to the conclusion that confidence/credibility of expertise is critical to the effectiveness of service delivery. Circumstances, events and action which reduce shared understandings and mutual trust between stakeholders at the level of individual interactions impact directly on the quality of outcomes. Two chapters discuss product development and innovation in financial services: Evangelia Chortatsiani argues that leadership matters as far as the successful development of new products is concerned, with leadership style and top management involvement being factors significantly affecting a product development project’s success. Paul Nightingale’s chapter aims to give an outline of the nature of innovation in financial services, concentrating on the role of infrastructure technologies. Particular attention is paid to the institutional and regulatory environment in which financial service firms operate and the impact of software and technical complexity on innovation. The second to last chapter of the second part of the book explores innovation in the delivery of design, engineering and project management services in the production of the building industry. In doing so, David M. Gann and Amraam J. Salter identified a range of new upstream and downstream services and explained the reasons for their emergence, together with a deepening of technical specialisations in existing markets. They conclude that the future of new forms of service delivery will happen in an increasingly dynamic environment and that deregulation and internationalization are expanding and changing business opportunities. Finally, Andrew Davis examines the evidence for a shift to high-value services and integrated solutions, focusing on firms that supply complex products and systems. Davis argues that the movement is not simply in one direction, away from manufacturing and towards services. In order to provide such service-based solutions, firms have to develop their systems integration capabilities.

In the third part of the book, the two editors develop a model of innovation in services, focusing on the development and delivery of services. The generic framework was adapted from goods industries and applied to services. Its applicability to services was confirmed by carrying out an empirical study of US service enterprises. On the basis of product development effectiveness, mostly similar patterns of relationship were observed. However, some important differences were observed. One difference is that tools and technology seem to play a much weaker role in services. Another is that the intangibility of many services means that they are relatively more amenable to continuous development than physical goods. In the final chapter excerpts from 27 qualitative studies of service enterprises in the New York area are provided. This collage provides recent trends and practices in the development and delivery of service products.

In my view, Tidd’s and Hull’s book created many useful insights into managing and organizing innovation in the service sector. The strength of the book is the integration of contributions from leading researchers, consultants and practitioners in the field. The mixture of theoretical and empirical contributions (both quantitative and qualitative) as well as sectoral and national
studies appear to be adequate. In part II of the book, the discussion of sectoral studies of dynamic knowledge and technology fields, where paradigmatic changes can be expected (e.g. biotechnology, nanotechnology), would have been desirable. Furthermore, national and supranational policy initiatives aiming at fostering the (knowledge-intensive) service sector gained in importance. Thus, the inclusion of case-studies of (successful) policy programmes and their impact on the organization of the innovation process on the firm-level, would add another interesting perspective.

All things considered, the results presented work well to develop and sharpen a model of innovation in services. The variety in the service industries and the variety in forms of innovation and knowledge orientation legitimize the exploration of new directions in the research of innovation processes in the service sector in general but also—from a regional research point of view—on the significance of the regional environment and on the importance of (knowledge-intensive) service companies for regional and sectoral renewal processes.

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This book contains a collection of 11 journal papers published over the period 1990–2001, accompanied by an introduction and a new chapter that is presented as the conclusion of the volume, but is in many ways the starting point for the reader who is interested in becoming a practitioner. Besides the two authors whose names appear on the cover (as authors, not editors), there are six others who appear as authors of one or more of the chapters (Bruce Banks, Ricardo J. Caballero, Michael S. Fogarty, Bronwyn H. Hall, Rebecca Henderson and Josh Lerner). Zvi Griliches, to whose memory the book is dedicated, is omnipresent as the pater familias of the versatile research group that produced the volume.

As the title suggests, the 11 collected papers are an attempt to use patent data (including patent citations) to quantify crucial aspects of the knowledge economy. The research fits into a tradition initiated in the 1950s at the U.S. National Bureau of Economic Research (NBER). With the computerization of the U.S. patent database, this line of research became rather productive, because the researchers could rapidly apply the large database to a set of theoretical ideas that goes back to early contributions by, among others, Arrow, Nelson, Schmookler, Griliches and Kuznets.

The use of patent citation data in the book is based on three main ideas. The first is that of citations as an indicator of commercial value. The more citations, the higher, on average, the value of a patent. This idea was raised first in the 1990 paper by Manuel Trajtenberg (Chapter 2), which presents a detailed analysis of patents in CT scanners. Nowadays it is one of the central tenets of a large literature on the skewed nature of innovation sizes (Scherer, Harhoff and collaborators have published numerous papers on the issue, e.g., Harhoff et al., 1999).

The idea that the set of citations made to or from a patent can be an indication for the nature of knowledge embodied in the patent is the second main input to the volume. The basic idea and the methodology are presented in Chapter 3. In an ingenious way, several measures are set up that make use of patent citation data to measure the originality, importance and generality of patents. The statistical analysis confirms that university and corporate patents are indeed different with respect to such measures. Chapter 8 presents additional analysis on larger samples of patents, and comes to the conclusion that the ‘basicness’ of patents by U.S. universities has declined after the introduction of the Bayh-Dole Act and the subsequent rise in the number of university patents. This conclusion was later

In writing this review, I have benefited from discussions with Gerald Silverberg and Jan Fagerberg, arising during joint work on innovation indicators. The views expressed, however, are solely attributable to myself.
challenged by Mowery and Ziedonis (2002), who find that the decline in 'basicness' vanishes when a longer time window is used for citations. The volume itself, in Chapters 9 and 10, finds that a decline in the 'basicness' of patents is not observed for national and federal labs such as NASA.

The third main idea is that of patents and patent citations as an indicator of knowledge spillovers. This is perhaps the one that has led to most subsequent research and debate. With regard to citations, the idea is that a citation indicates a flow of knowledge from the cited patent to the citing patent. This central idea is laid out in Chapter 4. Chapters 5–7 provide an analysis of the geographical nature of knowledge spillovers as indicated by patent citations. Using a robust and detailed methodology, these chapters provide convincing evidence that patent citations are more intense over short distances. This supports theory in the geographical literature, where it is argued that for various reasons, among which the 'tacitness' of knowledge, innovation activities are 'sticky' in geographical space. Maurseth and Verspagen (2002) found similar evidence for European regions, but Breschi and Lissoni (2001) are critical of the empirical evidence based on patent citations. They argue that, in many cases, the localized nature of patent spillovers is a result of market-transactions between the cited and citing party, and hence that there is no spillover. The validity of patent citations as indicators of spillovers is put to the test in Chapter 12 of the volume, by means of a survey that asked the citing inventors about the cited patents. The conclusion is largely positive: although there are (many) instances where citations are not accompanied by directly observable spillovers, the likelihood of a spillover is much larger in cases where a citation was made than in cases where no citation was made.

Another role of patents in knowledge flows is in the idea that patents based on university- and publicly-funded R&D may foster knowledge transfer to the private sector. While the idea as such is paradoxical (how would appropriation of knowledge foster transfer?), it was a major justification for the so-called Bayh-Dole Act that allows U.S. universities the right to patent the results of their research (see Mowery and Sampat, 2001). The logic behind the idea is that private parties interested in commercializing public knowledge will only do so when they may obtain an exclusive license on the basic knowledge. Chapters 9 and 10 find that patenting by public labs in the U.S. has indeed gone up, and this has generated some new technologies applied in private firms. Chapter 11 provides evidence on patenting and commercialization of R&D in Israel, partly against the same background of an increased transfer from public to private research.

All in all, the analysis, data and methodology indeed provide a useful ‘window on the knowledge economy’. But at the same time, it must be recognized that this window makes visible only a small part of the actual landscape. The authors themselves are aware of these limitations: “[there are also serious limitations to the use of patent data, the most glaring being the fact that not all inventions are patented . . . . Unfortunately, we have very little idea of the extent to which patents are representative of the universe of inventions, since there is [sic] no systematic data about inventions that are not patented. This is an important, wide-open area for future research” (p. 405).

This quotation is illustrative of the ‘narrow window’ that the book provides. In fact, and contrary to the authors’ assertions, there is by now a lot of information on innovation activities that do not necessarily involve patenting. It is enough to point to the Yale, PACE and Carnegie Mellon surveys (e.g., Levin et al., 1987; Arundel, 2001; Cohen et al., 2002), and the European Community Innovation Surveys (e.g., Kleinknecht and Mohnen, 2002), which have now also been carried out in Canada and Latin-America. In other words, the work by Jaffe, Trajtenberg and co-authors, although it excels in the use of sharp methodology and clever application to practical issues, is rather inward-looking into the small circle of U.S.-based economics inspired by neo-classical theory. For a broader ‘window on the knowledge economy’, the reader is advised to consult also the more heterodox economics that flourishes in Europe, which has generated many interesting ideas to which patent and patent citation data may be applied fruitfully.

Given the fact that Chapters 2–11 are all previously published, and well cited in the literature, perhaps the greatest value of the book lies in the accompanying CD and concluding chapter. The CD makes available the complete database on which the analysis in the book is based (this can also be downloaded from the NBER web server). Chapter 13 provides a hands-on introduction to all the pitfalls in using the data, for example because of the complex cohort structure of patent citations data.
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