

Technology Market Transactions

Auctions, Intermediaries and Innovation

Frank Tietze



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For Elfriede Margarethe Emma Dora Tietze

Foreword

This book is a product of the 21st century. For a number of reasons it could hardly have been produced in or before the 1990s. First, the by now substantial interest in patents and IP management among economists and management scholars had not by and large taken root, at least not in Europe. Second, the business model of auctioning had not yet been applied to patents, despite the many centuries of history of both auctions and patents. Rapid developments in auction technology and patenting in the 1980s and 1990s paved the way for an encounter in the 2000s, however. Third, platforms for inter-university research collaboration in technology and innovation management hardly then existed in Europe.

Various entrepreneurial activities are behind the current situation. Industrial entrepreneurs have increasingly invested in and commercialized patents, business entrepreneurs have created patent auctions, academic entrepreneurs have created collaborative platforms and entrepreneurial researches have entered the IP field.

This study is the result of a joint research project between the Hamburg University of Technology (Germany) and Chalmers University of Technology (Sweden). Both participating institutes are founding members of the European Institute for Technology and Innovation Management (EITIM).

With this book Frank Tietze makes a substantial contribution to the research and literature on transactions of patents and technologies as well as the effects of intermediaries acting on the markets for technology and innovation (MfTI). His work clearly helps to better understanding auctions, their functioning and role in technology trade, innovation and exploitation through conceptual, empirical, theoretical and practical contributions.

This study comes at the right time since technology-based firms have in recent years widely realized the importance of exploring different strategies to appropriate the benefits from investing in technology development and innovation. Today firms increasingly innovate openly, sourcing and exploiting technologies outside the boundaries of their own firm. For this purpose they eagerly need to learn how to successfully market technologies and ideas on the markets. In this context the MfTI are becoming increasingly attractive alternatives.

This affects management skills and practices and the implicit learning needs to address the challenges to manage transactions, specifically when it comes to the acquisition and exploitation of technologies for the benefit of the firm.

But many practical hurdles still complicate efficient clearing on the MFTIs causing high management and transaction costs. These costs in turn offer opportunities for intermediaries to enter the MFTIs, offering innovative services and novel transaction models. In this realm among others, technology auctions have recently become popular. But are these suitable for all types of technology and patents? Probably not and firms need to (as always) decide on a good if not the best suitable model with a favorable transaction governance structure adapted to the specific characteristics of the technologies and patents to be auctioned. This again is likely very context dependent; but how to optimally decide?

Working together with experts Frank Tietze developed a set of variables for designing technology transaction models, based on transaction cost theory. Building on these insights he further developed and tested them with multiple case studies and analyzed over 390 patented technologies from six technology auctions using inferential statistical techniques.

His results show that technology auctions appear suitable as a transaction model primarily for technologies with moderate market values. Such technologies are difficult to transact efficiently via "classical" bargaining negotiations commonly characterized by high search and transaction costs. On the other hand, the highly standardized transaction governance structure of technology auctions - particularly the perceptual, non-limited commission fees - imposes constraints on high value technologies. These can anyhow be transacted profitably via costly bargaining negotiations that also allow for a higher degree of flexibility in contract design. The governance structure of the investigated technology auctions should further not be considered preferable for transactions of highly complex technologies that need additional transfer of tacit knowledge complementing the ownership rights of the related intellectual property assets. Rather auctions can be seen as spot market exchanges of technologies that can simply be transacted without the need to structure and negotiate complex royalty schemes.

The results of this study are especially relevant to firms, universities, independent inventors and their support institutions through offering a much better understanding of technology transaction processes in general and auctions in particular. The results further support intermediaries and particularly auction firms to help optimize the design of transaction models. Furthermore, the results of this study support innovation and intellectual property policy makers when designing schemes to further develop the technology markets. This study's contribution to the current debate must not

least be considered highly relevant because Frank Tietze has integrated the micro level perspective of innovating firms (reflected well by the expertise at the partner institute in Hamburg) with the market perspective (reflected through the industrial economics orientation of the Swedish partner institute).

As an entrepreneurial researcher Frank Tietze has produced this book with its underlying study as one of the first of its kind. As such he charts new territory, not crafting complete maps but rather finding fertile new areas and directions for further investigations, be they theoretical, statistical or managerial. It is with great pleasure that we can recommend this book to a broad range of readers. All in all, it is highly relevant to both academia and industry: Comprehensive, interdisciplinary, containing almost all elements to be expected, and as such very well structured and readable.

Hamburg/ Gothenburg

November 2011

Cornelius Herstatt

Ove Granstrand

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PART I

Setting the Scene

1. Introduction

1.1 INNOVATION, TRANSACTIONS AND MARKET INTERMEDIARIES

To create and sustain a competitive advantage and subsequently ensure continuous growth, many firms focus on the creation of innovations. These firms often find themselves in an innovation race against competitors, thus being forced to accelerate their processes from ‘simply being ideas’ to their actual launch on the markets (Cooper, 2008). While firms’ tendency to innovate depends primarily on their internal resources in their research and development (R&D) departments, this has become difficult mainly due to the increasing ‘complexity of modern technology’ resulting from the cumulative nature of many technologies¹ and technical products (Hall, 2004: 4). According to Granstrand (2000b: 9), ‘products and services are not only becoming increasingly based on new technologies, but increasingly based on many different technologies. That is, products and services become more multi-technological’.²

Nowadays, for instance, automobiles can hardly be regarded as discrete products but must be seen as complex technical systems that include a wide range of electronics and software components that were not built into automobiles in the 1970s (Miyazaki and Kijima, 2000). The global system for mobile communications’ (GSM) standard for mobile telephony is another example. According to Bekkers et al. (2002), GSM includes at least 140 essential patent families with the major share being scattered across large multinational competitors (that is Motorola owns 18 per cent; Nokia 13 per cent; Alcatel 10 per cent; Philips 9 per cent, and Telia 7 per cent).³ There are various other examples. For instance, the DVD media technology consists of 500 patents from 28 countries owned by nine patent holders, the MPEG four technology is made up of 196 patents from 21 countries owned by 22 patent holders, the Ethernet technology comprises 70 patents from four countries owned by 65 patent holders, and Wifi technology (802.11 wire-