

INTELLECTUAL PROPERTY RIGHTS MANAGEMENT

Rookies, Dealers, Strategists and Strategic Dealers

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Intellectual Property Rights Management

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Strategic Dealers**

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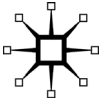
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Foreword

The management of intellectual property and other intangibles as business assets has been evolving over the past 20 years. During that time my own career has involved working with companies to define, enhance, and apply best practices relating to intellectual property management (IPM).

The year 2014 marks the 20th anniversary of the founding of the ICM (Intellectual Capital Management) Gathering, an informal group of managers utilizing corporate intangibles as business assets. These companies have been meeting three times per year to share new ideas, processes and capabilities relating to IPM. The group, initially formed for knowledge-sharing, pioneered the creation and implementation of many of the commonly accepted IP management methods and techniques in general use today. The list includes: dealing with IP and other intangibles as business assets (not solely as legal assets); relating the IP strategy to the company's business strategy; defining value and valuation characteristics of intangibles, such as recognizing that they may generate multiple, simultaneous value streams, or that a patent may be viewed as an option on a potential value stream, not necessarily only as a generator of a unique value stream.

Intellectual property continues to be a hot topic in the business community, if not the academic community. Patent lawsuits and their business implications are constantly in the news. Increasingly, sophisticated businesses are finding new and compelling ways to use their IP as a competitive business tool. Intellectual property has now increased sufficiently in importance to have become one of the focal points of national policy disputes between and among nations. All of this may cause one to ask why, if IP is so important, is it not the focus of university teaching and academic research?

This book explores that very question. It provides the introduction and fundamental concepts necessary to understand how businesses may use their IP for competitive advantage. The authors would like to create a reading audience that is capable of understanding those concepts and is interested in applying them to their own business right away.

The past 20 years has seen a large body of knowledge evolve around the management of intangibles and specifically IP. Given the continued interest and focus of the ICM Gathering, there is still much ground to cover in finding new, interesting, and profitable ways for companies to use their intellectual property to create strategic and tactical competitive advantages. I hope readers find the ideas in this book stimulating and that they provide a pathway to a brighter business future.

Suzanne Harrison Partner Percipience, LLC

Preface

Intellectual property (IP) rights management receives increasing attention among academic scholars as well as business managers. We see a growing body of research being published on intellectual property management and the topic is no longer a small part of existing courses like industrial economics, strategy or law, but has emerged as a specialized full course, either as part of an obligatory greater educational package or offered as an elective in a specialized program.

One of the main reasons for the upsurge in interest in intellectual property rights is undoubtedly that a greater share of firms now operate with IP and pursue activities that are IP related. It is no longer reserved for the few large organizations but is also pursued by small- and medium-sized firms seeking to reap the benefits that IP may represent. Managers have realized that IP may solve many of the challenges they face. But once they have started the adventure into the world of IP, they quickly discover that IP management by no means is a simple voyage.

This book seeks to provide insight and advise as to how firms can consider and manage IP-related issues. The authors do not make any positive or negative normative statements as to the questions pertaining to IP. Their goal has been to assess the role and decisions with regard to IP from an objective perspective. In doing so, the book puts forward arguments in favor and against the use of IP as an instrument for overcoming challenges and hurdles. The aim has been to furnish an understanding of the virtues and limitations of IP and to offer the reader an appreciation of the many facets of IP.

The authors hope that the reader will find the book useful for making informed decisions with respect to their IP conduct. IP is indeed a strategic matter and can be thought as an integrated part of the firms' overall strategizing. Yet, there are also circumstances in which IP should not be considered a part of the firms' management activities. This book will indeed debate and ponder under which circumstances firms are able to pursue IP successfully. It will also present finer and more elaborate debates on the different ways firms may consider using IP strategically.

The book builds on empirical data drawn from extensive interviews, workshops with patents lawyers and practitioners, register data at the firm and the individual level as well as IP registrations covering not only the usual suspects like patents but also design rights, copyrights, trademarks and utility patents. Authors have kept the details of the analytical investigations to a minimum, making the book more enjoyable and welcoming for the untrained researcher. The book is thought to be a potential entry into course syllabus at all levels at higher educational institutions. We do, however, suggest combining it with more research-oriented readings at higher levels of education. We also believe the book can prove highly useful for managers already engaged in firms or in IP management as the book forwards some rather practical recommendations and observations with regard to the considerations the IP manager may need to take into account. In particular, the book may seem inviting for teaching purposes and for more popular readings due to the fact that it presents a taxonomy of firm archetypes with regard to IP management. By identifying with an archetype, a firm may quickly be able to assess some of the IP challenges and potential solutions that they are facing and act accordingly.

We believe that the book's strength not only lies in the extensive data work that is preceding the publication, but also in the multidisciplinary nature of the discussions. The book does not only pursue a single paradigmatic way of thinking; it crosses borders to provide a more elaborate picture of IP-related issues. An open-minded reader will recognize this and hopefully be intrigued by the novelty that this approach represents.

Acknowledgments

In writing this book, we have benefitted immeasurably from the support and thoughtful comments provided by many people who we wish to thank. Their encouragement, skilled feedback, valuable suggestions, constructive criticism, project management expertise, and practical understanding of corporate IP are echoed in this book.

We are particularly grateful to two people without whom this project would never have emerged. Jesper Kongstad (Director at the Danish Patent and Trademark Office) and Mads Lebech (CEO of the Danish Industry Foundation) strongly supported the need for having an academic input to a project seeking to furnish greater awareness among business managers with regard to the potential and difficulties with managing IP. This book would never have materialized without their support and encouragement to include this work as part of the “IPR Turnaround Projects” (<http://www.industriensfond.dk/> and <http://www.boostyourprofit.org> for more information on the project).

We owe special thanks to Marie Friis Madsen and Camilla Hjermand for their insightful comments and critique, for the many discussions on the way, as well as being in charge of organizing the interviews and feedback sessions with the many project participants. Marie, Camilla, and the team at the Danish Patent and Trademark Office have been instrumental in adding detail and richness to the contents.

From the very beginning we have been very fortunate to have Suzanne Harrison advising us on the content and structure of the book. We would like to thank her for her valuable insights and comments which have made the book much more compelling, and an easier and more thoughtful read.

Over the past two years, we have also been privileged to have a steering committee commenting and following the work as we went along. It has been a pleasure to work with Frank Petersen, Ulla Klinge, Jakob Krag Nielsen, Jesper Kongstad, Birgitte Krejsager, Lars Holmegaard and Søren Salomo from the early drafts of the research design to the full draft of the book. The steering committee provided

critical and straight-to-the-point suggestions as to shaping the book and offering views and visions that has benefitted us greatly.

The qualitative data for this book were gathered by many very insightful patent and trademark agents together with highly skilled IP consultants from the Danish patent and trademark office. Reading and analyzing their semi-structured interviews have been delightful and inspiring, providing many details on IP and IP-related issues. We extend our thanks to them for being a part of the project and for participating in the workshops. Their inputs have been instrumental in forming a more comprehensive overview of how IP is really managed among managers and agents. We hope that they find their wisdom has been presented well in the book.

We would also like to thank our colleagues in the Department of Innovation and Organizational Economics at Copenhagen Business School for their comments on the ideas presented in this book, and for supporting us in undertaking the burden of this large research project. A special thanks to Lee Davis for her comments on the full draft and to Jesper Lindegaard Christensen for his comments on earlier drafts.

Finally, we should stress the usual disclaimer that even though we have benefitted tremendously from the help of others all remaining errors are our own.

1

Introduction

Abstract: *The creation and usage of intellectual property (IP) is central to a wide variety of firms. Firms engaged in new technologies or other intangible assets often find it difficult to reap the rewards of their efforts, not least because of competitors imitating or copying their products. IP is a useful tool for avoiding these infringements, for protecting ideas, for investments and for the future of the firm. However, IP is not only useful for gaining or retaining market share. It may be used as a directly tradable asset or as part of the firm's strategy to increase competitiveness or positioning in a variety of markets. An IP strategy is a crucial element in the overall strategy of the firm, which addresses marketing, production and sales. The number of IP registrations is increasing globally. IP is hence increasingly relevant to a firm's ability to operate efficiently and satisfactorily. This chapter argues for the relevance of working with IP as part of the firm's strategy. The objective and outline of the book is presented in the closing section.*

McDonalds does it, Sony does it, Johnson & Johnson does it, not to mention Honda Motor Company and L'Oreal, who also do it. Large firms do it and small firms do it. Old established and newly founded firms do it. Firms in all sorts of industries do it, as do individuals, both men and women. Universities, agencies, committees, and public and military organizations also do it. It is a widespread activity that transcends institutional borders and barriers. These days it is hard to read a newspaper without hearing about it. The creation and utilization of Intellectual Property (IP) has become common in today's world and is here to stay.

Intellectual property is an integral part of our daily lives but it is something that we cannot see, touch or even discern. This book would not exist without IP. If you are reading it on a computer, tablet or smartphone, those devices all tend to be protected by, covered by or simply registered as IP. If you have a physical copy of the book, both the printing presses and the software it was created with are IP protected. Almost every aspect of our lives involves IP protection and yet we rarely think about it or even understand it. The food we eat, our homes, entertainment, communication, medicines, even art tend to be coupled with IP one way or another.

IP rights were first used in Europe over 500 years ago. However, it was not until the 19th or 20th century that IP was first introduced into the language. IP rights were so important to the emerging United States that they were written into the Constitution. More recently, Asia has been jumping onto the IP bandwagon, with South Korea, Japan and China becoming IP powerhouses. Historically, Japan and the US have been world leaders in IP, registering more IP rights than any other nation. This image is rapidly changing and China overtook the US in 2012 in the number of patents. IP management, the routine activity of generating, maintaining and utilizing IP, is something that happens in each and every corner of the world. IP is one of today's most widespread activities, and is rapidly becoming a geopolitical tool. But what are IP and IP Management and how do they relate to firms?

What is IP?

IP generally refers to the creation of technological inventions, literary or artistic works, designs, shapes, symbols, names or images that are used for the purpose of commerce or commercialization. It is therefore the outcome of a creative process in which the firm or individual generates something not previously seen. Such creative outputs are often used to obtain a competitive advantage or to gain some benefit other than those that may be found through direct competition in a given market. These advantages and assets can be protected through the granting of patents, trademarks, designs or copyrights, which are often the byproduct of intellectual capital, a term introduced by Tom Stewart of *Fortune* magazine in 1994 that refers to intangible assets in the form of skill, knowledge and information. It is that subset of intellectual capital which can be legally protected which we refer to as IP.

Apart from the more informal use of IPp like secrecy, firms also make use of more formal IP assets. In principal, there are four major formal IP assets that are debated and registered. These are patents, trademarks, copyrights, and design rights.

Patents

The patent in its basic form is a legal tool granting an exclusive right to the owner to a technical invention, software or business method. In return for a period of exclusivity granted by the patent, the inventor discloses important information about the technology as part of their patent application. The patent application must describe how the technology works, how it can be applied and must contain sufficient information to allow a person skilled within the application area of that technology to reproduce it. These requirements ensure that society as a whole will benefit from the patented technology when the period of exclusivity granted to the inventor expires.

The patent is granted based on three distinct criteria of patentability: novelty, non-obviousness and industrial applicability. Novelty requires, as the name implies, that an invention is new and not previously disclosed or published. The second patentability requirement, non-obviousness (also referred to as the inventive step), exists to prevent patents from being granted to technologies that follow normal product development, and ensure that only inventions that go beyond the current state of the art can be patented. The final requirement of industrial applicability covers whether the invention can be utilized in an industry. While the concept of industry is broad, this requirement exists to ensure that patented inventions have the potential to be used in the development or manufacturing of products, or as products themselves.

Once a patent is granted, it works as a legal tool for a limited period. Patent protection is granted for 20 years from the date the patent application was handed in to the patent office. The length may vary in a few instances. There are, however, significant differences in the extend of technological coverage across countries. During this period of protection, the owner of the patent has the right to prevent others from using, manufacturing, selling, marketing or researching and developing (with exceptions) the technological inventions protected by the patents. The patent owner is therefore effectively granted a means to defend the invention from infringement and has a foundation to

initiate litigation should infringement take place. The patent owner can also choose to generate revenues from the patent, for example, by out-licensing the right. Once protection ends the patent reverts to a public good and the owner is stripped of the right of exclusivity. Note that patenting is not free; in addition to the costs of developing the patent application, translation fees, application fees and renewal fees must be paid to process an application. While these costs may seem small on their own, a firm with a large patent portfolio can incur quite high costs from these fees alone. For small firms even engaging in undertaking one patent application can seem overwhelming.

Trademarks

Trademarks come in different shapes and sizes, from simple word marks covering the name of the firm or product, to more exotic types, such as scent or 3D marks. Unlike the patent, trademarks are not protecting a specific technology or invention, but a specific image or brand. A trademark essentially functions as a signal to the customer, a promise of the consistent quality of a particular brand. This reduces the customer's search costs and makes it easier to choose between different products. Walk into a Starbucks anywhere in the world and you know beforehand what kind of coffee you will get. In return for those lower search costs a well-known trademark allows a firm to charge a higher price compared to similar rival products and to build, over time, a base of loyal customers who prefer a specific brand. As with other types of IP protection, the trademark is intended to motivate the firm to invest further in product development, using the trademark as a method of protecting their investment from imitators.

A trademark needs to be distinctive; no common words or phrases can be used and it cannot be similar to existing trademarks. A trademark commonly refers to a firm name or brand in the form of a word mark, or a picture or logo as a figure mark. While these remain the most common trademarks, multiple other marks are available. Shapes, sounds, colors, 3D shapes, holograms and scents are also potential trademarks. Some well-known examples include Intel's Leap Ahead music, the Pullman Brown color of the UPS truck and the triangular shape of Toblerone chocolate bars. However, 3D shapes, holograms and scents are less commonly used, mainly because they are difficult to register since the public can find them difficult to distinguish distinctly.

Unlike patents, a trademark does not necessarily entail an application process. Some countries employ a first-to-use regulation, whereby an unregistered trademark can be obtained simply through its use. In spite of unregistered trademarks being freely available, most firms choose to register their trademarks. A trademark provides the owner with the exclusive right to prevent others from marketing similar or identical products using the same or a confusingly similar trademark. Other than application and maintenance fees, which are miniscule compared to patent fees, the costs of a registering a trademark are low. In comparison to a patent application, very little information has to be disclosed about the trademark and firms often register trademarks while still developing the product.

Copyrights

A copyright covers a range of intellectual, creative, literary and artistic “works”. The specifics of what can be protected by copyright varies by jurisdiction, but copyrights can apply to works such as books, theses, poems, plays, films, sound recordings, broadcasts, paintings, music, dance performances, computer programs, software, and even industrial products such as lighting, furniture and toys. In general copyright protection is not registered, but is obtained automatically when the creative work is articulated and presented in a tangible form (usually written down or drawn).

The length of protection also varies across jurisdictions and type of product, and is dependent on the ownership of the right. The most common length of time that copyright protection is in force is 70 years after the death of the creator of the work. However, in some cases protection can run for only 25 years after the creation of the work.

In general, copyright protection is used mainly by firms in the music, movie or literary industries where copyright is the primary form of protection available. Copyright can be applied in other industries, such as protecting marketing material and photos used on websites and print; however, outside the industries mentioned above, copyright has a limited application and is therefore often used in combination with other types of IP rights.

Designs rights

A design right is an exclusive right to the visual appearance of a product or part of a product, such as its lines, shapes, and contours or

its ornamentation. A design must be an original creation, sufficiently different from what is already in the market. As with trademarks, designs can be both registered and unregistered depending on the jurisdiction. To obtain a registered design the creator must hand in drawings and/or photographs that illustrate the details of the product that is to be protected by the design registration. Designs are different from patents in that not only do they cover visual rather than technical aspects, but also the ability to produce and market the product during the registration. In some jurisdictions there is a 12-month period where the creator can market the design without destroying the novelty demand, effectively allowing the firm to delay handing in and thereby publishing their design only when the product is ready. The length of protection is different in different geographical locations; in the EU the length of protection is a maximum of 25 years, whereas in the US it is limited to 20 years.

The design right is narrow in its protection, meaning that only small differences in the visual appearance of a product may fall outside the protection of the individual protection. In this respect a design right is to keep competitors from directly copying a product, rather than from making a similar product. The design right has some resemblance to 3D shape trademark registrations, however they differ in a number of key points. The design right is generally much easier and faster to obtain than a 3D mark, partly because a design right in many jurisdictions are granted without any examination, whereas a 3D mark is under substantial examination, especially considering the distinctiveness of the product or packaging sought protected.

IP management

On the surface, it seems to be child's play to engage in IP and actively start to consider IP as part of a business. At least, it seems obvious that such assets can be translated into gains and benefits for an organization. But the task of managing IP is certainly not easy. This is evident from the fact that firms often spend a relatively large share of their budget to utilize IP in a productive and useful manner. In fact, a group of 20 prominent international firms, active in various industries meet three times a year to devise management practices that routinely create, identify and realize value from IP. The challenge is to understand how best to translate intellectual capital into IP in a pragmatic and efficient

manner and to unravel how an organization should manage their IP in such a way that they gain the most from these assets. These firms spend a fair amount of resources in order to improve the organization and management of their IP and IP portfolio. Clearly, IP management is something that challenges even the most skillful and experienced organization. In economics we are led to think that having IP assets automatically gives you a competitive edge, leading to a monopoly-like position. Yet, in management, it is often debated how the firm should go about handling and managing these assets in order to realize the advantages that they, theoretically, represent.

Two takeaways from the above:

1. **Intellectual property is both a legal and a business asset** – While IP is technically a legal right to exclude others, it can also be used as a business asset. That is, as a means of competitive advantage. More and more companies are viewing IP as a revenue generator and as a way to differentiate. Prior to mid-1990s, IP was something that only lawyers did and was hidden away in the bowels of the firm. Today, many CEOs of larger firms in particular are fluent in IP speak and understand it is a potential competitive lever at their disposal.
2. **IP only has value in context** – This idea took a long time to figure out. Why isn't valuable IP valuable all the time? History is littered with inventions whose value was not fully realized until they changed hands. The computer mouse was invented at Xerox but, because it was not ink, toner or paper (the three most important inventions to Xerox at the time), it was not useful to them. Paired with the newly emerging computer industry however, the mouse became an integral part of computing today. Inventions happen all the time, however their value and utility is in the eye of the beholder. The IP Dealers market has made this value more readily available to inventors, however it still has significant limitations, which we will discuss later in the book.

These are clear and precise takeaways that suggest a general pattern. Yet, they offer little guidance with respect to management decisions such as selecting the particular intellectual capital that should be converted to IP, when to do so, how to do it, whether to combine different IP tools, under what circumstances it may be fruitful,

whether it should be used in different ways, how aggressive to be with IP, and how to form a strategy with respect to IP. These questions and many more may be a relatively large hurdle for many firms to overcome and demand substantial resources before allowing them to break the barrier. Indeed, even the more driven and knowledgeable firms make major mistakes in their management of IP and lose out on optimal benefits they could gain from their IP activities.

Even if the potential pitfalls and challenges to IP are overwhelming, there has been increasing emphasis on IP as a means of competitive advantage to firms (Teece 1986). Additionally, IP practices are gaining increasing attention among firms as a means through which they can catch-up to, keep up with or forge ahead of their rivals (Pitkethly 2001). Pre-2000, firms largely utilized IP as a defensive mechanism, for instance purely to protect their product sales. Since 2000, firms and practitioners have learned that IP can provide value to the firm beyond the product (Harrison and Sullivan, 2012). That, in fact, IP has become its own product to transact. And yet, there are still many firms around the world that do not utilize IP and IP Management in their activities. In particular, small to medium enterprises (SMEs) are more likely *not* to utilize IP management when compared to large companies. They may find the hurdle too steep and the risks too great.

Why do it?

Why do it if engaging in IP is so difficult and resource demanding and the potential pitfalls are so great? There are many reasons for engaging in IP Management, and they differ depending on both the type of IP being utilized and the industry within which the firm competes. We will discuss the various types of assets in more detail in later chapters. IP is, by definition, something that is unique to your firm and an asset nobody else has at their disposal. For this reason it may be the core element that separates your firm from competitors. In fact, it is often through these assets that you are able to create value and reap economic benefits.

Firms that create new technologies, business models, services or other intangible assets all face the difficulty of capturing the value

of their efforts. Historically this has been achieved by stopping competitors from copying an invention and allowing the inventing firm to reap the subsequent rewards. However, both taking the time and money to create an intangible asset (such as a patent, trademark, copyright, design or trade secret) takes considerable time and resources and so governments wanted to reward inventors and firms for this effort while still allowing the world to use their inventions as the basis for new research and/or designs. This is evident from the US Constitution, which reads:

The Congress shall have power...to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries.

US Constitution, Article 1, Section 8, Clause 8.

While this quote is taken from a US context, it is also representative of many other developed and developing countries. It clearly indicates that IP is beneficial for any business and that IP protection is viewed as a way to reward inventors and firms for their efforts. Investment in the pursuit of R&D, branding, trademarks and other IP instruments can be a highly risky undertaking. Often it involves *going where no one has gone before*. Indeed, it is the development of something never seen before and therefore the creative process itself, which is not only risky but is also filled with uncertainty. But the payoff to the inventor or firm that succeeds can be seen as making it a worthwhile undertaking for both investors and the markets.

However, IP is not only useful for gaining market shares through sales and market operations and thereby increasing profits. It can also be used as an asset that is directly tradable or used in a more strategic way that leads to increased competitiveness. Strategic conduct and IP go hand in hand.

Strategy and IP

IP is often part of a firm's strategy or strategic positioning. Before we can understand how firms work strategically with IP, we would need to understand the concept of strategy. So, what is strategy and what does it consist of?

As noted by Williamson (1991), strategy tends to be a highly complex subject, involving economics, politics, organization theory, and aspects of the law. A strategy is a statement that clearly articulates how the firm will position itself and is used as a tool for signaling. This signaling is mostly in the form of overall aims and objectives and is a means by which the firm plans to achieve their goal within a foreseeable future, which also is specified in the strategy. It often contains a scope dimension spelling out the targeted customer segment, the geographical location of the business activities and the firm's aims for spreading into new potential product markets (vertical integration). Finally, the strategy should clarify: why the firm is in a favorable position to reap the benefits; what it is that gives the firm a competitive edge and allows it to offer value for money and thereby capture customers; what the firm's competitive advantage is and how it makes the firm distinct.

The strategy is a way for managers to convey a message to an organization's stakeholders, who may include customers, investors, employees, or business partners to mention just a few. By having an articulated strategy, firms can avoid unnecessary frustration among employees at all levels and avoid wasting scarce resources. Employees may, for instance, have been developing a new way of conducting business, which unfortunately does not fit the firm's strategy. This time and effort could easily have been spent on other more important and strategically consistent efforts. It may also assist the sales department in targeting their efforts on specific segments and provide them with guidelines to the type of customer that is more important to keep and therefore which customers to pursue further and which ones to sweeten with favorable deals. The strategy can therefore be a tool for securing the smooth operation of business.

Some firms may have a number of different strategies depending on the size of the different sections of the business and their importance. So far we have been talking about the overall business strategy of the firm, but there may be strategies for different sections, especially in larger organizations. Marketing, production, and sales and distribution are some of the strategies at the lower levels of operation. In a similar way, firms may have an IP strategy.

Forming an IP strategy may be the first step in changing how employees see the importance of intangible assets to their work environment. It may shift the focus of the business by establishing a

stronger IP position. Strong IP positions can be utilized to avoid legal expenses, not to mention acting as a barrier to entry into the market. From a financial aspect, strong IP may lead to direct revenues through licensing and to direct value in the balance sheet, which provides collateral. In 2013, the Apple brand was assessed as being the most valuable brand in the world, to the amount of \$87.1 billion; followed by Microsoft and Coca-Cola at \$54.7 billion and \$50.2 billion, respectively. In the top ten we also find firms from the restaurant business (McDonalds) and the automotive industry (BMW). Firms operating in more diversified settings have also established highly valuable brands, such as General Electric (\$33.7 billion). Such brands can be used for direct trading where firms are licensing out the right to use their brands. The firms may also use these brands to obtain loans based on the estimated value of the intangible asset. It may also be used as a signal, not to customers, but to potential collaborators by making the firm visible and clearly articulating a strategy which dictates cooperative behavior. As such the value of IP assets is indeed as an engine for further expansion and business generation, thereby representing flexibility in, and an option for, further business development.

Strategically, some assets can be used in various ways and for different reasons. This book discusses strategic considerations regarding IP in detail. For now we emphasize that IP may be used to protect the firm's own assets or it may be used, in one way or another, to limit a competitor's scope. As such, it remains an exceedingly strong foundation for strategic conduct and strategic positioning in a given market and context. Yet, we often see IP being used actively to generate revenue through its exchange and trade. Indeed, there is an upsurge in the exchange of IP among asset holders. This may be in the form of a direct exchange of IP assets or through agreements on up-front payments, milestones or royalties to be paid by the receiving firm to the IP's original owner. IP may hence be used as a way to boost the firm's revenues directly. This is a business model that tends to be the rule rather than the exception in the biotech industry. However, as we will see in the coming chapters, these are not easy decisions since they also involve opening up the safe containing the firm's trade secrets to external partners.

IP strategy need not, however, center on securing rights and decision making with regard to the firm's IP assets. For example, Twitter announced in 2012 what they called the IPA (Inventors Patent

Agreement).¹ The agreement was openly argued to be part of the firm's IP strategy to give engineers and programmers control over their own creations. Twitter fully acknowledged an increasing tendency among firms to use IP aggressively. Strategies that had the aim not only to secure their own technology platform but also to create obstacles for others. Twitter therefore announced that it wanted the IP inventors and creators to decide whether it should be used for the purpose of shielding their asset or as a weapon. Certainly, it can be argued that Twitter's stand was due to their weaker position on the IP management side, which forced them to make untraditional choices and even to use IP strategy as a marketing asset. This IP strategy, however, could also be thought of as a way to attract the most promising and able engineers and programmers and retain their existing staff of engineers and programmers. In this case the IP strategy has been integrated with a human resource strategy.

Often business managers do not even know their own firm's strategy. Even in high-tech industries a substantial number of firms have not considered forming an IP strategy, even if IP is essential to the firm's sustained operation. If the business manager does not know the strategy it is safe to say that stakeholders, employees, and other interest groups will not know it either. This is even more surprising since the few that are able to state their strategy tend to be those associated with businesses that outperform others. Indeed, businesses that either did not formulate a strategy or did not manage to execute their strategy tend to be the ones that fail. There are multiple reasons for this. One of them is that a formalized strategy ensures that the scarce resources of the business tend to be distributed to the activities that are key to the overall business model. Also, it secures a general tendency among employees to strive for a common goal in a similar fashion, making sure the organization is moving in synchronization. In essence, having an IP strategy enables an optimization of a firm's business.

Aims and objectives of the book

Intuitively we would like to believe that there is a relationship between IP and economic gain. To date however, there has been virtually no credible investigation confirming or denying this link. There is even less evidence for this link when taking into account various ways of managing IP. Due to the lack of data and evidence, there is currently

a great debate raging in politics about whether intellectual property rights help or hinder. The pro-IP camp points to the 400-plus years of IP history as proof of the link and suggest that firms are rational and can observe the benefit of their IP activities on the bottom line and hence continue to engage actively. The anti-IP camp claims that IP causes the rate of innovation to decrease and cites increasing IP litigation and IP costs as the reasons. Public opinion is mixed. To put it in terms that everybody understands: if you want cheaper drugs, then you want patents to go away; if you want personalized medicine, then you are pro-patents. Needless to say the issue is complicated.

A multitude of IP practices and measurements are at a firm's disposal. What is more, they are not mutually exclusive but can be combined in countless ways. This makes the challenge of engaging in and developing IP conduct highly daunting and the task of linking specific IP activities to benefits exceedingly difficult. Lots of firms choose not to engage and if they do engage they only scratch the surface of IP management. Little is known about how inventors organize and combine IP instruments and practices and whether their IP choices allow them to successfully realize a competitive advantage. We know even less about the extent to which they engage in the monetization of IP rights and whether and how firms consider IP practices as an integral part of their strategy. We know relatively little about what it is that enables firms to leverage their IP assets given their established IP practices.

Answering these questions will provide more insight on the IP related choices of inventors. IP management is certainly not a given for every firm. IP activities can be an intensive and costly resource. Also, even in pursuing the most rigorous IP program and practices a firm may not receive the necessary protection of an asset since protection is imperfect, imitation is widespread and information often leaks out as early as the development stage of IP production (Mansfield et al. 1981). Understanding the choices related to IP and IP management among firms will allow us to formulate better frameworks and practices, tailored to large firms as well as SMEs, which may be used as guidance for firms that wish to pursue IP management. Indeed, much of the research around IP management has focused on large global companies because it is easier to see patterns and practices in large IP portfolios. But little focus and writing has been done on IP and IP management in small firms. Small firms are full of risk and

uncertainty. Many start-up companies fail for a variety of reasons, such as: poor or insufficient technology; bad management decisions; lack of funding; time to market issues; and, sometimes, for IP issues (either lack of focus or failure to enforce properly).

This book seeks to understand the whole toolbox of IP protection and management, how these are successfully combined and how firms generate value from IP. In particular, the book seeks to provide a framework of archetypes with which firms will be able to identify and which will allow companies to focus on the IP and IP management issues most relevant to them. By so doing, we offer further insights as to the use of IP and IP management practices across firms. By looking at empirical data covering the population of firms, the findings are appropriate not only for large organization but also reflect the practices and operations in SMEs. Additionally, we will also be utilizing labor market and company data to allow us to determine whether there is a definitive relationship between IP and economic performance at a company level.

Given the above discussion, the book seeks to:

Map the different practices and combined practices firms install with regard to IP management and provide a recipe for how managers may develop their firm's IP operations in a successful and fruitful manner.

To fulfill this aim of the book, we seek to answer the following questions, which are at the core of the overall objectives:

- To provide insight and an understanding of the involvement in and use of IP management.
- To portray different ways of thinking, strategizing and operating with IP.
- To introduce and describe IP management archetypes, which firms and managers may find useful for the purpose of understanding their own position compared to others.
- To articulate how firms go through different stages in their aim to become professional IP managers.
- To furnish clear and precise guidelines on how to manage and engage in IP.
- Provide evidence to suggest that IP may be a tool for developing the business and producing economic gains.

Without further ado let us begin our IP journey.

Note

1. <https://blog.twitter.com/2012/introducing-innovators-patent-agreement>

Recommended readings and Bibliography

- Cohen, W. M., Nelson, R. and Walsh, J. P. (2000). "Protecting their intellectual assets: Appropriability conditions and why US manufacturing firms patent (or not)." National Bureau of Economic Research.
- Hall, B. H., Helmers, C., Rogers, M. and Sena, V. (2013). "The Importance (Or Not) of Patents to UK Firms", NBER Working Paper 19089.
- Harrison, S. and Sullivan P. (2012). *Edison in the Boardroom: How Leading Companies Realize Value from Their Intellectual Assets*. Hoboken, NJ: John Wiley & Sons.
- Kitch, E. W. (1977). "The nature and function of the patent system." *Journal of Law and Economics* 20(2): 265–290.
- Lanjouw, J. O. (1998). "Patent protection in the shadow of infringement: simulation estimations of patent value." *Review of Economic Studies* 65(4): 671–710.
- Mansfield, E., Schwartz, M. and Wagner, S. (1981). "Imitation costs and patents: an empirical study." *The Economics Journal* 91: 907–918.
- Pitkethly, R. H. (2001). "Intellectual property strategy in Japanese and UK companies: patent licensing decisions and learning opportunities." *Research Policy* 30(3): 425–442.
- Schankerman, M. (1998). "How valuable is patent protection? Estimates by technology field." *RAND Journal of Economics* 29(1): 77–107.
- Teece, D. J. (1986). "Profiting from technological innovation – implications for integration, collaboration, licensing and public-policy." *Research Policy* 15(6): 285–305.
- Williamson, O. E. (1991) "Strategizing, economizing and economic organization." *Strategic Management Journal*, 12(s2): 75–94.

2

IP Archetypes: Rookies, Strategists, Dealers and Strategic Dealers

Abstract: *Firms approach IP in different ways. This is not only evident in their varying use of different IP rights, such as patents, trade secrets, trademarks, design or copyright, but also in the degree to which IP functions as an integrated part of daily operations. Firms who consider IP an integral part of securing competitiveness may employ an aggressive approach, using IP to block competitors or registering IP rights specifically to sell or license. Alternatively, firms may adopt a more defensive approach, only using IP to protect their most vital products. We introduce a crude but illustrative and manageable taxonomy of IP management by identifying two key dimensions: 'integrated IP management' and 'IP exchange oriented'. Based on these two dimensions we present four IP archetypes; the IP Rookie, the IP Strategist, the IP Dealer and the IP Strategic Dealer. Each one represents a way a firm may work with and think about IP. Firms will be able to identify with different archetypes, and thereby understand the degree of their involvement in IP and how they may be able to transform their business in terms of IP management.*

There are a myriad ways firms can engage in IP, not least because there are many different types of IP instruments and countless ways of thinking strategically about IP. Firms can choose to work with patents, trademarks, design rights or copyrights; they may choose to do so a few times, occasionally or more frequently, intensively as part of their business model or almost accidentally. Some firms use IP as an integrated part of their daily operations. IBM, for instance, consider daily how to operate through IP and how to form their business through IP management. Indeed, in terms of patents alone it is

possible to identify more than 80,000 USPTO applications for which IBM have been listed as the assignee. In terms of trademarks, IBM are listed as the owner of more than 2,000 wordmarks and logos. It is safe to say that IBM consider IP a central part of their business and engage actively in securing economic and competitive advantages through IP management. This is also evident from IBM's statement with regard to intellectual property licensing:

IBM's vast collection of intellectual property can increase your ability to operate to grow your business, make it more efficient or launch new products. Working with IBM's IP means much more than licensing patents. Clients can work directly with members of IBM's team of 250,000 scientists, researchers, engineers, developers and technologists who built one of the world's largest IP portfolios. This broad collaboration creates a diversity of viewpoints, backgrounds and expertise that enables profound new solutions. Helping clients solve these problems is one of the many ways IBM continues to generate innovation that matters for our company and the world.¹

Clearly IBM see IP as much more than just an asset, considering it not only a means through which they can establish new linkages outside the organization to help develop their own technologies further, but also as a tool for reaching out and accessing others' technologies through collaborative arrangements. Indeed, IBM not only directly involve themselves in IP activities as a strategic conduct, but they also use it as a way to engage in markets for IP where they exchange and trade IP assets in a mutual collaborative setting or through direct payments. IBM uses IP not only to reach out to agents in their own markets but also to reach out and connect to new industries. In their own words:

IBM's know-how, along with IP assets, skills, and infrastructure, reaches into nearly every industry and every discipline of science and technology.²

However, not all firms need be as aggressive in IP management as IBM. Most (if not all) firms are less active and operational when it comes to IP. In fact, all firms have different approaches to IP

management, and there is not one way of working with IP. What works for one firm may not work for another. What works for one product or one segment may not work when applied to other products or segments. Even the method used by one firm for managing a newly developed product may not be the most optimal way for another firm, even if it is a highly similar product. It is impossible to generalize and put forward accurate principles for how to manage IP. However, getting inspired by others and understanding a firm's own position can help lay out the potential mechanisms from which a firm can benefit.

IP management has to be tailor-made to a particular case. Some firms will use multiple instruments while others will find it useful to pursue a particular type of IP. It may be optimal to use several IP rights for some products or technologies while others only require one IP right. The trick is to know why, what, how much, and when to engage in IP for the single case. It is a challenge to choose the optimal combination of IP for a given circumstance.

Combining IP management practices

Even if there is no common optimal way of engaging in IP management, there are nevertheless commonalities to different steps and operations. What is required for one activity overlaps with that required for another. In terms of IP management, firms that engage in patenting also tend to engage in trademarks or design rights. Firms with experience in formal exchanges of IP in the form of brands also gravitate towards trading other IP assets with other agents and organizations. Indeed, the resources and know-how required for one activity may indeed overlap with those of another. For this reason we may see the adoption of various practices in bundles.

Let us briefly take a closer look at why this is the case. In order to understand this we propose some mechanisms that allow firms to adopt practices in bundles.

Why do firms adopt IP practices in bundles?

There are several reasons why firms might adopt IP practices in bundles. First, different IP rights have different objectives, for instance: some may secure the firm's technology and R&D outputs; others

are designed to protect the firm from counterfeiting. By utilizing different IP rights to protect different parts of the firm's value chain, they achieve a greater degree of security in maintaining their competitive advantage. Combining several IP instruments may also provide a more optimal solution for protection and reap the advantages of the underlying asset, even if used on the same underlying asset. We term this the *combinatorial advantage mechanism*.

Second, barriers and obstacles for engaging in one type of IP activity may be similar to those of another. Having overcome the hurdle of learning about and then committing the resources to one IP engagement may make it easier to commit to another. There may be economies of scope in IP engagement in the sense that the cost of engaging in patenting may lower the costs of engaging in trademarks, wherefore firms that patent also tend to pursue trademarking. We will term this the *economies of scope mechanism* of IP bundling.

Third, engaging in one IP activity may lower the costs associated with engaging in an additional activity of the same type of IP asset. There may be an efficiency argument, since the steps that are needed in, for example, the first patent application is equivalent to the steps associated with the next patent application. This may create advantages in learning by doing, lowering the costs of the additional IP engagement and creating economies of scale. We therefore term this the *economies of scale mechanisms* for bundling IP activities.

Fourth, it may also be the case that combining various IPs may produce complementarities. Here, complementarity is when the returns of using one asset tend to increase with the use of another (Milgrom and Roberts, 1990,1995). Put differently, the benefits of using two exceed the combined benefits of the two independent uses. Hence, the full potential of one IP activity may not be realized unless combined with others. This mechanism is even stronger than the combinatorial advantage mechanism. We will term this the *complementarity mechanism* of IP bundling. Considering the IBM statement on IP licensing, combining IP for internal development with a strong IP licensing program can produce complementarities. Indeed, research has provided clear indications that the combination of making and buying IP can often lead to substantial complementarities in producing the next generation

of inventions or business developments (Cassiman and Veugelers, 2006).

Because of these mechanisms firms may have a tendency to bundle IP practices together. For the same reason, we may see commonalities in the conduct of various firms. If there are commonalities in their conduct, there may also be overarching ways in which firms approach IP management. Some firms may think of IP management as an integral part of their business model or strategy, while for others it is more of something that happens almost accidentally and not systematically. While the former type of firm formally tend to invest time and resources in converting in-house or external IP into a competitive advantage, the latter firm only experiences it as an ad hoc process. Understanding the overarching ways firms organize and think about IP may provide further insights to IP management in general. Identifying the overarching commonalities may indeed help us to understand the challenges and hurdles firms face in pursuing IP management.

Creating a taxonomy of IP management

To map the overarching commonalities of firms' IP conduct, this section identifies IP management archetypes from an extensive sample of firms and proposes a taxonomy of IP management. Some firms may be placed in several of the archetypes, depending on specific activities. But the taxonomy can nevertheless be used as a tool for understanding the degree to which a firm is involved in IP and IP management, and how the firm may transform their business according to the conduct of other archetypes. Identifying such archetypes may enable an understanding of overarching mechanisms that cause firms to select specific combinations of practices and to pursue specific managerial choices with regard to IP conduct.

The taxonomy enables us to use the identified archetypes to investigate what type of firms tend to pursue a more rigorous IP strategy and the environment in which they reside, providing a detailed understanding of the conduct of firms. It will also enable us to investigate systematically the performance measures of different IP archetypes, and to match the archetypes to firm attributes in order to identify which archetype is optimal for different performance dimensions. This may indeed provide food for thought for transforming firms

with respect to their development of IP management practices given the context in which they operate.

The archetypes may also provide a more detailed and qualitative insight into the choices made by these firms in terms of IP. We conducted in-depth interviews with representative firms from each of the identified archetypes in order to uncover some of the considerations firms in each corner of the taxonomy have made before placing themselves in a particular archetype. Prior to the interview respondents received a questionnaire containing a list of all IP registrations, asking them to assign attributes, such as value and importance, to each one. We then employed a modular interview dependent on the archetype they represented and the registered IP rights of the firm. In this way we were able to tailor questions to the individual firm. For instance, firms were asked about their strategy for registering certain types of IP rights, and their reasons for not choosing alternative methods of protection. Questions were also tailored to ask about specific tendencies which reflected the archetype with which we associated the firms. We report on these interviews in Chapters 3–6.

Identifying archetypes

To identify archetypes we used data on company IP practices and management collected through a survey of 3,547 firms. We combined this data with register data and data on formal IP instruments firms had applied for and/or had been granted. This rich combination of data allowed us to track IP practices and investigate the degree to which the responses of the firms with regard to their IP activities were indeed reliable, allowing us to indicate the validity of the analysis. The purpose of utilizing such detailed level data was to depict the degree and development of IP activity among the firms. It contains issues regarding activities in the markets for IP, types of partners, exchange of IP within and outside the firm's own industry and technological focus, and more general IP strategy concerns. It specifically focuses on patents, utility models, design rights, trademarks, and intellectual property rights in general. In addition, it covers the advantages and disadvantages with regard to out-licensing, with particular emphasis on piracy. For these reasons the data also represents an excellent source of information for creating a taxonomy of IP archetypes (for a more detailed account of the sampling of the studied firms please see Box 2.1).

Box 2.1 The sample

The data is collected based on two combined samples. The first sample is of 1,500 firms that (1) have been granted a patent, utility model or a design right in Denmark and (2) have reported additions or reductions in immaterial assets in their accounting statistics. The second is a random sample of 2,500 firms registering ten or more employees in their accounts. The two samples total 4,000 firms. The survey was done by Statistics Denmark, a state institution under the Danish Ministry of Economic Affairs. Since the questionnaire was compulsory, virtually all sampled firms remain in the dataset. The survey has been carried out annually since 2007 and we used the most recent year available, 2010, to generate the IP archetype strategies. This dataset contained information on 3,547 firms available for scrutiny.

We used eight questions to identify the IP archetypes and create the taxonomy. The questions, as shown in Box 2.2, were chosen to capture both formal active IP related measures used in the firm's operation and their overall strategic focus on IP

Box 2.2 Questions used for taxonomy creation

No.	Question	Scale
1	To what degree is IP rights part of the firm's business strategy?	4 level
2	To what degree does the firm have formally written strategies for the purchase, sale and licensing of IP rights?	4 level
3	To what degree does the firm assess whether sale or licensing out of IP rights can be a source of revenues?	4 level
4	To what degree does the firm assess whether it is economically better to purchase or in-license knowledge in the form of IP rather than develop them in-house?	4 level
5	To what degree does the firm have procedures for identifying potential trade partners with regard to IP rights?	4 level
6	To what degree are IP rights, that the firm does not use actively or strategically, sold, out-licensed, or not renewed?	4 level
7	Has the firm purchased, in-licensed, sold or out-licensed patents or utility models in 2010?	2 level
8	Has the firm in 2011 purchased, in-licensed, sold or out-licensed design rights or trademarks in 2010?	2 level

Two different scales are used. First, a four level scale widely used in IP related literature, not least in community innovation surveys, which may have the values: “Not relevant”, “Low Degree”, “Medium Degree”, “High Degree”. We consider this an ordered categorical variable since we interpret “Not relevant” as an indicator that the firm does not consider this IP activity at all. Questions 1 to 6 make use of this scale. The second scale only contains two levels representing “Yes” and “No”. The last two questions make use of this scale.

Descriptive statistics on IP questions

To understand the details of the data, each of the used questions is summarized in terms of the number of observations in each possible outcome. This not only provides a valuable indication of how widespread each IP practice is among the studied firms, it also gives an insight into the overall distribution of firms across the dataset and the variation in practices across the investigated firms.

Figure 1 contains six bar charts representing the distribution of observations across the first six questions with four different values ranging from “Not relevant” to “High Degree”. It appeared less usual to have formal procedures for identifying potential IP trade partners (question 5). Relatively few respondents indicated that they had such procedures to a medium (150, 4.2 percent) or a high degree (55, 1.6 percent). About 13.6 percent (480) of respondents indicated that IP rights were a part of the firm’s business strategy to a medium degree while about 10.8 percent responded by saying that IP rights were a part of the firm’s business strategy to a high degree. It is important to note that among the large number of firms that responded “Not Relevant” to the questions are firms with no formal IP activity whatsoever. In fact, 1,892 firms indicated that IP was not part of their business model in terms of strategy or in terms of formal practices for IP exchange. This is an important feature of the data since these firms may dominate one of the IP archetypes identified in the factor analysis and may ultimately be classified into a group of their own.

While there are discrepancies across the six bar charts, there are also overlaps in the responses across the different questions. Firms that tend to answer high in one question also tend to answer high in other questions. This is a given since we expected to see commonalities in IP practices within firms. This pattern is revealed in the

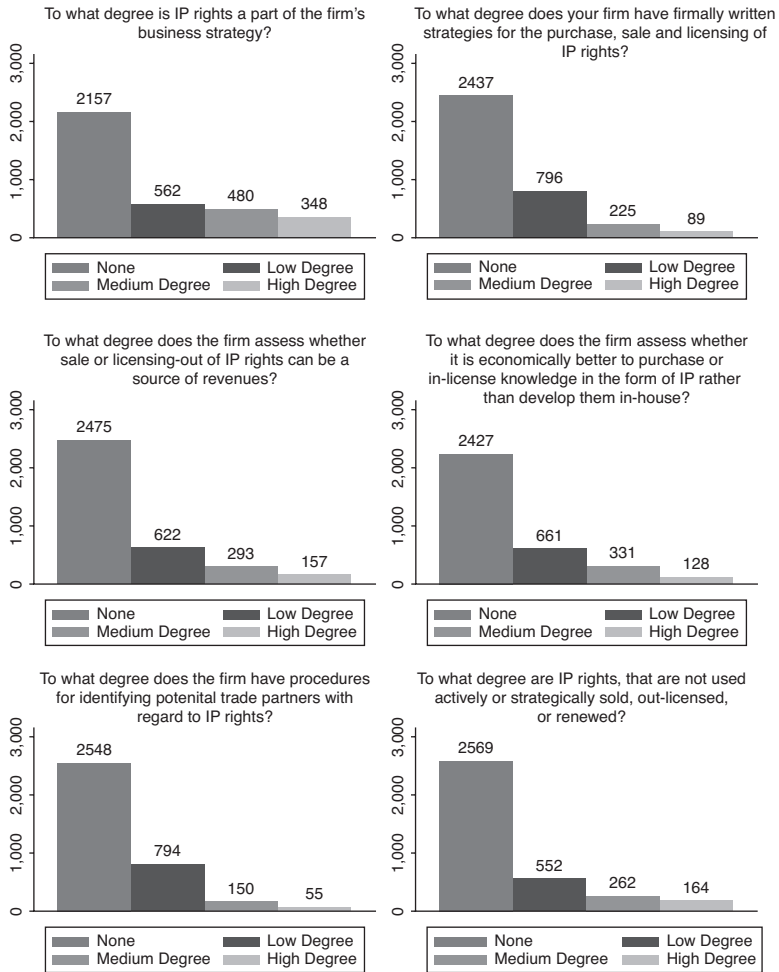


Figure 1 Descriptive statistics of questions 1–6 used for identifying archetypes

correlation and factor analyses. A first indication did show up in cross tabulations between the questions, which suggested that firms tended to bundle their IP activities significantly³.

Figure 2 is a bar chart for the questions related to purchasing, or selling or some involvement in IP licensing. The chart on the right

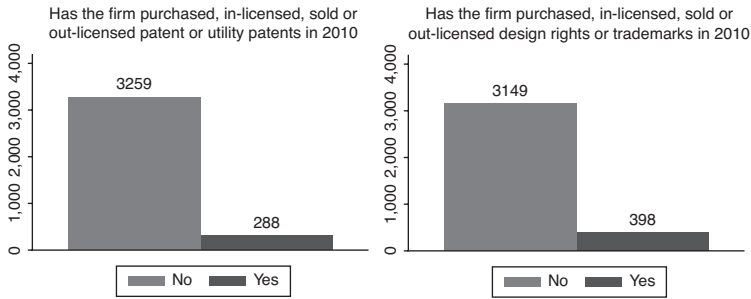


Figure 2 Descriptive statistics for questions 7–8 used for identifying archetypes

shows the distribution of firms active in IP markets specifically for patents or utility models. Only 288 (8.1 percent) of the 3,547 firms investigated indicated some involvement in this type of IP exchange. The corresponding number when considering design rights and trademarks was 398 (11.2 percent).

It would appear that the tendency to engage in the exchange of design and trademarks is stronger than in patents and utility models; that firms are more willing to enter into a market-based exchange for these types of IP assets. This is not necessarily the case for two reasons. First, there is a significant tendency for a firm that involves itself in one form of exchange to also participate in another IP market. This is clear evidence of bundling IP activities. Second, design rights and trademarks are much more widely dealt with between firms. Firms actively considering dealing in design rights and trademarks do so much more extensively in comparison to those moving into patents and utility models. The markets for design rights and trademarks therefore have a much greater potential with a much greater volume at the outset.

Identifying dimensions of IP management

To identify the archetypes and construct the taxonomy of IP management, we considered how the firms answered the eight selected questions on IP and how they chose specific responses. Some questions tended to be grouped together, others grouped into a different bundle, indicating a bundling behavior by firms. These bundling effects

indicated the degree to which firms considered different statements about IP management to be part of a similar conduct and practice.

We used factor analysis to identify the different dimensions of IP management (see Box 2.3 for details). This exercise indicated that we could identify two clear dimensions contributing to the overarching way of engaging and dealing with IP. Across these eight questions, respondents indirectly indicated that they considered the questions to be part of two different aspects of IP.

Table 1 shows how the different questions contributed to the two different dimensions of IP conduct among the firms. A high value (above 0.6) in the table indicates that the question contributed significantly to the firms understanding of this dimension of IP management. It is evident that the first six variables exhibited a commonality with each other, which is less present with respect to the final two questions. The final two questions tended to co-vary, making them load highly into the second factor. The questions are therefore grouped with the first six questions into one dimension while the last two questions load into the second dimension.

Table 1 Loadings showing how the eight questions contributed to the two identified dimensions of IP management

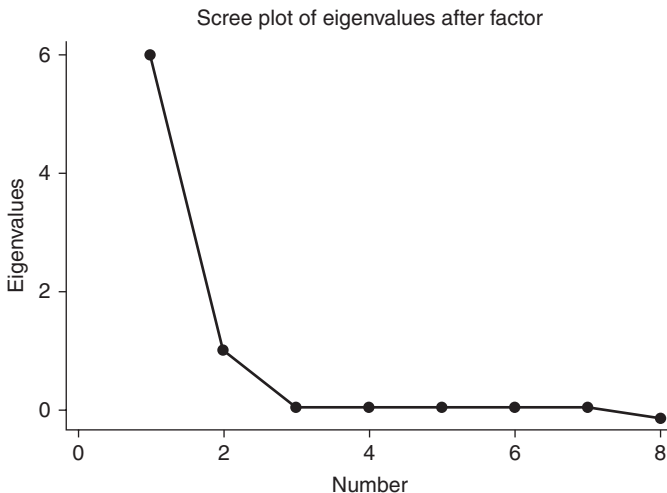
No.1	Variable	Scale	Factor 1	Factor 2
1	To what degree is IP rights part of the firm's business strategy?	4 level	0.887	0.239
2	To what degree does the firm have formally written strategies for the purchase, sale and licensing of IP rights?	4 level	0.886	0.212
3	To what degree does the firm assess whether sale or licensing out of IP rights can be a source of revenues?	4 level	0.913	0.141
4	To what degree does the firm assess whether it is economically better to purchase or in-license knowledge in the form of IP rather than develop them in-house?	4 level	0.920	0.156
5	To what degree does the firm have procedures for identifying potential trade partners with regard to IP rights?	4 level	0.893	0.241
6	To what degree are IP rights, that the firm does not use actively or strategically, sold, out-licensed, or not renewed?	4 level	0.816	0.252
7	Has the firm purchased, in-licensed, sold or out-licensed patents or utility models in 2010?	2 level	0.320	0.707
8	Has the firm in 2011 purchased, in-licensed, sold or out-licensed design rights or trademarks in 2010?	2 level	0.184	0.702

Box 2.3 Method for creating archetypes

We employed factor analysis to identify the IP archetypes, specifically tetrachoric factor analysis since the employed items were categorical values. The standard and most widely used factor analysis tools assume inputs to be continuous. However, in order to take into account the categorical nature of the responses, we converted the four level scales into two level scales separating the values into “Not Relevant” and “Low Degree” as representing the zero value and one respectively. This step provided eight dummies, which allowed us to use the tetrachoric correlation matrix for conducting the factor analysis (Woods, 2002). In order to obtain more easily interpreted factor loadings, we employed a varimax rotation approach.

To test the robustness of the factor loadings we ran the analysis on the original values of the items using a principal component analysis, a principal factor analysis, and a confirmatory factor analysis with very similar results. We consider the generated factors to be robust for the same reason.

We relied on eigenvalues to determine the number of factors. Eigenvalues express the degree to which the variance in the input variables are accounted for by the factor. Low values indicate a relatively low level of the variable variance that is captured by the factor. Following the standard prescriptions of factor analysis we chose to put the threshold for accepting a factor to be an eigenvalue of one. This graph shows the scree plot of the number of factors and corresponding eigenvalues:



Identifying archetypes

The questions and the content they captured led us to label the factors in two respects and thereby identify the overarching two dimensions of IP management. Questions with a high loading on dimension one concerned a firm's strategic considerations with regard to IP management. In particular, they captured the degree to which an individual firm considers IP management as an integrated part of their strategy. For this reason we labeled the first dimension *integrated IP management*. The second dimension primarily contains variances that pertain to active involvement in the exchange of IP instruments. For this reason we labeled the second dimension *IP Exchange Oriented*.

These two dimensions of IP management are used to extract latent constructs, which will be the basis for classifying firms into different archetypes given their usage and consideration of IP related measurements. However, before we do that, let us just briefly consider if the two constructs really are two different dimensions of IP practices. Figure 3 depicts how the two dimensions tend to relate to each other. The scatter plot clearly indicates that there is little relation between them. A high value on one dimension does not necessarily suggest either a high or low value on the other. There is a low correlation between the two constructs suggesting they are separable and mutu-

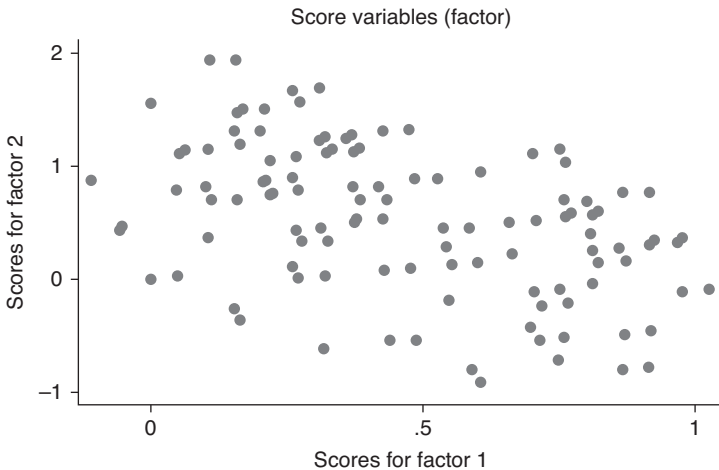


Figure 3 Scatter plot between the two dimensions of IP management

ally independent practices that the firms consider to be distinct one from the other.

The size of the construct indicated the degree to which the firm considered and implemented each dimension of the IP management practices. We sought to identify the IP archetype by splitting the constructs in two at the mean value. We grouped firms below the mean of the construct into a different group from firms above the mean. This indicated that the firm considered the specific construct of IP management to a low degree (below mean) or to a high degree (above the mean).

The applied method identified four archetypes of IP strategy, since we identified two latent constructs of IP management and each was been split into above and below the mean values. A large number of the observations group into the low degree definitions of both constructs. The reason for this is the rather large number of respondents that indicated they had no IP related considerations (1,892). Even if these firms shared dimensionalities with firms with little IP rights activities, we nevertheless decided to consider them differently and extracted them from the overall sample and created a group of their own, termed *IP Inactive*, which left us with five groups in total.

Table 2 portrays the number of observations in each of the four archetypes of IP strategies, only taking into account those firms who have some kind of IP activity in their business model. It reveals that there is an even distribution across the four archetypes. About 25 percent of respondents group into the cell representing firms that exhibit both a low degree of integrated IP management and a low degree of IP exchange orientation. We call this archetype *IP Rookies*. The archetype in which a firm exhibits a high degree of integrated IP management is called *IP Strategists* since IP is considered part of the

Table 2 Distribution of firms across archetypes

		IP Exchange Oriented	
		Low Degree	High Degree
Integrated IP Management	Low Degree	416 (25.1%) IP Rookie	346 (20.9%) IP Dealer
	High Degree	433 (26.2%) IP Strategist	460 (27.8%) IP Strategic Dealer

overall business strategy. Firms that score high on IP exchange orientation are classified as *IP Dealers*. Almost 28 percent of the respondent firms can be categorized as exhibiting a high degree in both integrated IP management and IP exchange orientation and are grouped in the archetype titled *IP Strategic Dealers*.

Supplementary analysis

It is possible that the identified archetypes are persistent across time. That is not to say that firms are locked into a strategic archetype. Indeed, firms may be mobile, positioning themselves differently from year to year either on purpose or by chance. However, we should be able to identify the same archetypes among the population of firms across the years, which justifies this analysis and its purpose since the archetypes could be used more broadly across different datasets sampled across different years. For this reason we conducted the analysis using the 2008 and 2009 data to see if the same archetypes reappeared in these datasets.

Using the same questions and the same method for identifying the latent construct of IP management delivered the same two factors when using 2008 and 2009 data as when using 2010 data. What is more, the questions tended to load similarly thereby grouping into the same constructs. The tetrachoric correlations therefore may be said to be consistent across time, which indicates that the constructs and classifications may be used consistently across time.

Describing the archetypes

Each of the four cells represents an IP archetype and categorizes the firms by conduct and strategic vision of IP. Where the IP Rookie and IP Dealer is expected to do their IP work in a more ad hoc fashion, the IP Strategists and IP Strategic Dealers are expected to have more formalized processes in place. Table 3 gives a description of each archetype.

These four archetypes ideally represent how different firms are working with and thinking about IP and are the four archetypes this book will focus on. The fifth type, the IP inactive firm, has not considered IP at all and are therefore left out of the book. We expect that most firms in this category if initiating work with IP could benefit from viewing the details of the IP rookie as the firms might share many characteristics. While there are many similarities between these firms, such as the lack of a strategic focus with

Table 3 Archetype characteristics

<p>The IP Rookie A firm that only considers IP marginally, and that does not consider IP activities as core to its general conduct</p>	<p>The IP Dealer A firm that consciously makes choices with regard to exchanging and trading IP without a formal strategic integration of IP in its business model</p>
<p>The IP Strategist A firm with an IP strategy formally integrated into its business model but that has chosen not to involve itself in exchanging and dealing in IP</p>	<p>The IP Strategic Dealer A firm that consciously chooses to exchange and trade in IP as an integrated part of its formally stated IP strategy and business model</p>

both Rookies and Dealers, each archetype carries specific traits that decide how the firm works with IP. In this taxonomy the IP Rookie forms a baseline, they work at a very basic level, some fall into this category through having a single trademark and nothing more. Rookies tend to get a lot of mileage out of simple improvements, but even simple solutions can be difficult to implement if they are highly focused on their current operations and not interested in changing their daily business. Dealers are similar to Rookies, with the addition of being experienced in dealing with IP in one form or another. This ranges from firms who actively engage in IP trades to the firm who serendipitously sold or licensed a single patent or trademark. The IP Strategist works at a much more advanced level. Having formulated and implemented an IP strategy, the Strategist is conscious of the challenges they face when working with IP and actively works to meet them. Strategists often work with multiple types of IP instrument to ensure optimal protection through IP. The firms most adept at working with IP are characterized as Strategic Dealers. These advanced firms carry all the benefits of the Strategist, with the addition of trading in IP to build and fortify their position. These firms may be market leaders who, when it can benefit them, do not shy away from buying technology from their competition, or selling unused technologies, working to cement their position as a market leader. There is a lot more detail to how these four archetypes work with IP, the challenges they meet and their future goals, which is covered in Chapters 3–6.

Through quantitative methods we have thereby identified two key dimensions in determining archetypes of IP strategy: *Integrated IP Management*, the degree to which the firm actively considers IP as part of its strategy; *IP Exchange Oriented*, the degree to which the firm engages in licensing (both in- and out-licensing), exchange and trade of IP. These will be the dimensions that define the taxonomy of four archetypes, which is dealt with in the rest of the book.

Exercises

1. Why do firms engage in IP at all?
2. What are the four main mechanisms for bundling IP?
3. What characterizes the different IP archetypes?
4. Which IP archetype defines your firm and why?
5. Which IP archetype would you like your firm to be and why?

Notes

1. Copied from <http://www.ibm.com/ibm/licensing/> in July, 2013.
2. Ibid.
3. The word significant will be used extensively throughout the book. By significance we mean statistical significance. Specifically, we use the word to indicate that there is at least 95% chance that the stated association is true given the statistical properties of the data.

Bibliography

- Cassiman, B. and Veugelers, R. (2006) "In Search of Complementarity in Innovation Strategy: Internal R& D and External Knowledge Acquisition." *Management Science* 52(1): 68–82.
- Milgrom P. and Roberts J. (1990) "The Economics of Modern Manufacturing: Technology, Strategy, and Organization." *Amer. Econom. Rev* 80: 511–528.
- Milgrom P. and Roberts J. (1995) "Complementarities and Fit: Strategy, Structure and Organizational Change in Manufacturing." *J. Accounting Econom.* 19: 179–208.
- Woods, C. M. (2002). "Factor Analysis of Scales Composed of Binary Items: Illustration with the Maudsley Obsessional Compulsive Inventory." *Journal of Psychopathology and Behavioural Assessment* 24(2): 215–223.

3

The IP Rookie

Abstract: *In numbers alone the IP Rookie is the most common type of IP active firm. The IP Rookie is identified by a low degree of integrated IP management and a low degree of IP exchange orientation. These firms are commonly small or medium sized and they seldom consider IP as part of their business. Many IP Rookies are aware of the challenges and opportunities that lie in IP, but consider IP registration and enforcement as a complex and expensive process outside their scope. IP Rookies commonly operate as a manufacturing firm in an industry with little or no IP registration by competitors and are often market followers. Geographically, the IP Rookie tends to operate locally, producing and selling primarily in their home market. Operating as an IP Rookie may be appropriate for some firms, however they could derive a long-term benefit in developing their integrated IP management. Should the IP Rookie decide that IP ought to be part of their future business, the first step is to ensure that any IP activity is related to the firm's overall strategy by formulating an IP strategy. Further steps include: the development of internal capabilities within IP; formalization of processes; and setting aside dedicated resources to IP related issues. Another approach to develop the work with IP for the IP Rookie is to start considering exchange of IP as a potential leverage. Seeking licensing opportunities might open new ways the firm can benefit from its IP.*

Meet the Rookie

The IP Rookie is by far the most numerous type of IP active firm. Many of these firms are small or medium sized, and a majority of family owned businesses fall into this category. While the Rookie

seldom considers IP as part of their business, this is more often than not a case of an uninformed decision rather than a strategic choice. Rookies consider IP registration and enforcement as a complex, expensive process. Rookies, however, do not ignore IP completely. They are often aware of the challenges of IP, but do not implement IP into their strategy. Rookies do have IP registrations, commonly only a few trademarks and rarely a patent or design registration. The Rookie is often a firm competing on price rather than quality or branding and which acts on IP ad hoc. The Rookie mostly operates in manufacturing settings where little to no IP registrations are made by firms in their narrowly defined industry. This is either because the patents protecting the technology have expired without a superior technology emerging, or because none of the competitors in the market have opted to register IP as a means of maneuvering. Rookies are often market followers in the sense that they tend to adopt similar products and procedures as the leading firms. They therefore enter the market once the leader's IP protection expires. In markets with an infrequent use of IP, however, Rookies can be a first mover, relying on the speed and agility of a small firm to compete. Quick adaptation is the main strategy, rather than seeking to develop and protect a stable market. Geographically the Rookie operates locally, producing and selling exclusively or predominantly in their home market, so that IP registrations in other regions have little or no impact on their business.

While the Rookie does not necessarily benefit from making multiple IP registrations, a basic protection of firm and product names, and a knowledge of the potential benefits of working with IP, is a crucial first step to take. The firm needs to make an informed decision as to the degree IP should be a part of their strategy, and know the implications this decision has on the firm.

This chapter outlines how the Rookie typically works with IP. It touches upon the role of IP resources, the processes Rookies face, and the goals Rookies normally have with regard to their IP engagement. It will draw upon the experiences of IP Rookies in describing the archetype and its conduct and thought in the matter of IP. In addition to providing an insight into the hows and whys of Rookie behavior, the chapter highlights the next steps, allowing the Rookie to define their position and see how to build the basics of an IP strategy in the firm.

IP resources

Rarely do you see Rookies dedicating substantial resources to working with IP. Some Rookies can have a dedicated internal IP department or person responsible for handling IP. But rarely are these involved in the product development or strategy of the firm. In the case of a medium sized firm developing and manufacturing hygienic cleaning products, a management assistant was appointed to be responsible for handling IP. IP becomes a detached process under such circumstances where the individual responsible for IP has to dig up potential ideas and decide whether these are worth protection and can be explained as being highly ad hoc activities.

The reason given by Rookies for not having a specific IP resource is because there is no budget assigned for IP. This is in part due to the financial challenges these firms face and not necessarily because the firm lacks funds. Frequently, it may be because the outcome and steps of the IP registration process are considered too uncertain, and therefore the associated costs seen as difficult to predict. Most Rookies see the registration process as being an expensive endeavor, with frequent smaller payments giving the firm a feeling of costs spiraling out of control. Coupled with the lack of a specific budget for IP, this causes many firms to believe that working with IP is too expensive and uncertain for them to get involved. High perceived costs cause many Rookies to simply lose interest in working with IP, particularly when the firm experiences an infringement.¹ The legal costs of enforcing a right can be downright scary for a Rookie, causing them to abandon the registration and enforcement of rights, and focus on other business areas.

even when we patent something, it is still copied in other markets, we're not strong enough to enforce our rights globally, we're not a large multinational.
(Product Manager, Kenneth Helm, Nordic Air Filtration)

This perception of IP being overly complex and expensive is reinforced by the lack of internal IP capabilities in Rookie firms. The majority of tasks related to the IP portfolio often fall to external advisors, which Rookies use on an ad hoc basis, approaching them when they have decided to apply for an IP registration. This in turn leads to a scattered, small portfolio of registered rights, not aligned to the firm's

strategy or market activities. These random registrations often result from the efforts of an employee dedicated to patenting or otherwise protecting their idea, rather than a conscious decision in line with an overall strategy. To make matters worse, this is reinforced by ad hoc contact with external advisors, as neither the firm nor the advisor has a coherent image of the purpose of the IP portfolio, so the firm does not learn from its experience in a coherent manner. In some cases this lack of focus on and attention to IP management can lead to the abandonment of existing applications, as other issues become more pressing to those responsible for IP.

We have had a patent application going for five years which is not yet finalized. This is partially due to a lack of resources, but also because we might not be ready, and it's more of a management issue. We have also had some organizational changes, so focus has not been on [IP]. (CFO, Michael Balmer, Nordic Air Filtration)

In some cases Rookies see their IP portfolio as having value, and even discuss this with their accountants, but this is not always so, a point exemplified by the CFO and IP manager of a firm manufacturing construction materials:

we have not discussed the value of our patent portfolio and international trademark registrations, and whether we could activate these assets...It is probably a discussion we should have had. (CFO & IP responsible, SME in the building and construction industry)

The lack of a connection between their business and their IP activities is one of the key challenges for Rookies. They need to see IP as a valuable resource and to acknowledge that deriving value from IP requires a commitment of resources to build, manage and appropriate returns on the IP of the firm.

IP processes

As with the use of internal and external resources to handle IP registrations, the way in which ideas and products are identified for IP protection is equally random. Rarely do Rookies have a formalized process for identifying and managing their IP registrations, further enhancing the ad hoc approach to IP. The firm may have a structured

approach to product development and daily management, using the appropriate stage-gate methods to ensure a formalized process of development and production. However, IP may be as absent from these formalized models as it is from the firm's strategy. This is not necessarily due to a lack of focus on IP, but to a lack of experience. Rookies do not consider IP as something that can be formalized, structured and included in everyday decision making. Often it is the decision of the CEO whether an IP right should be registered and enforced, making for a top down approach to IP. This means decisions are made heuristically, based on the gut feeling of the people involved rather than on prior experiences in line with the overall strategy of the firm. Essentially, a Rookie can make decisions based on the frame of mind of the CEO, rather than on objective criteria.

Given the above Rookie characteristics the IP portfolios of such archetypical firms tend to be incoherent and unfocused. The Rookie may overemphasize or prioritize certain IP registrations, such as a patent, based on what they believe is a core technology for the firm but without considering whether it actually offers a competitive advantage. The firm does not consider the effectiveness or necessity of this protection, potentially wasting valuable resources in the form of time and money trying to register what are, essentially, worthless rights.

After we handed in our application, we haven't heard much [from our external advisor], other than paying the annual fees. We don't actually know if we still have this patent. (Production Director, Anders Vangsgaard, Vangsgaard A/S)

Competitors could either circumvent the technology protected by the patent at a low cost, or simply use a competing technology, essentially making the patent worthless. This scenario does depend on the context but the firm needs to consider it prior to filing a patent application. A similar consideration is relevant when selecting the geographical scope of an IP registration. Should the firm register the rights to the IP in every market it wishes to operate in, or only the ones it currently operates in? It may be rational to register the rights in only some of the markets in which the firm is operating. It may be tempting to register rights in as many places as possible. However, firms need to bear in mind the costs of registering and maintaining rights. If it is unlikely that the firm will enter a specific market, registering IP rights in that market may be a waste of resources, unless the market is the geographic location where an infringer produces or

sells. The same goes for markets in which there is little likelihood of current and future competitive pressures.

I have experienced that no one has paid attention to the costs of defending your patent afterwards...it was only a question of getting some idea patented. And of course it needed to be worldwide when patenting [this idea]... It was relatively expensive and now we're discovering that we are not getting any benefit from [the patent] (CFO, Michael Balmer, Nordic Air Filtration)

This highlights the need for including IP in the firm's strategy otherwise the person responsible for IP will be unable to make decisions based on the firm's direction, leaving them with no choice but to follow a gut feeling, which has the potential of being sub-optimal at best. This is reflected in the management of the Rookie's existing IP portfolio showing no formalized way in which the firm decides which rights to keep and which to abandon. The IP Rookie therefore often faces excessive costs of maintaining potentially unused or worthless registrations. Firms skilled in working with IP would try to sell or license unused and unwanted IP in order to cover costs. Unfortunately Rookies simply consider this a nuisance and an unwanted further complexity. A common reaction when Rookies are encouraged to pursue licensing deals is a protectionist one. They believe that they are better, cheaper or faster than others in generating what the business should be built upon. In literature this has been termed the Not Invented Here Syndrome (Katz and Allen, 1982), where firms are under the impression that they can learn little from external linkages. Such firms often consider themselves an isolated island with little to gain from their external environment other than through traditional sales. Another potential reaction is frustration, arguing that the complexity of negotiating licensing deals is too high a barrier. Some Rookies see their specific industry as unfit for trading IP, and simply ignore the opportunity.

When developing or launching a new product, the Rookie rarely conducts novelty and/or Freedom to Operate (FTO) searches (see Chapter 7) and even if an action is taken, it can often be summed up as a Google search to identify whether any obvious competition exists. While such a method can capture some potential trademark infringements, it is simply insufficient when dealing with more complex registrations such as patents or designs. When dealing

with trademarks Rookies can, in reality, only guess whether they will infringe on another firm, primarily due to a lack of legal experience. When Rookies, eventually, are involved in infringement, either through being infringed or infringing others, they often feel a sense of frustration and submission, which in turn leads to abandoning work on IP. Once the Rookie experiences a lost court case, or an infringement they don't have the resources to fight, they tend to steer away from actively working with IP, acknowledging that they don't have the required competencies. This results in the Rookie claiming that IP is not a game for them and then ignoring it as much as possible, rather than working to build these competencies ready for future challenges.

Experiences and narrative of IP

In the following section, we present key narratives from Rookie firms. These highlight some of the main Rookie issues and approaches. We discussed how Rookies lack formal procedures for searching the market and identifying whether their firm is actually allowed to sell a specific product. Most Rookies either do this superficially or not at all, leading to situations where whole product lines may have to be withdrawn, with heavy financial consequences.

We don't have a procedure [for infringement], because it's not something we're expecting. It has happened two or three times [that they infringed others IP], when we bought some products we liked. Then six months later, the products are in the stores, and I get a letter from a lawyer with pictures of our product compared to those of a competitor, claiming we've copied their design. And really we haven't, but of course someone in China has taken the design, changed it a little and manufactured it. Then we end up buying it. My response to the lawyer was that the competing product was more than a year old, and I can't possible know every design from every manufacturer in the past five years. It's impossible. But I can't do anything about it. I had to pay for infringing their design, withdraw the product and turn over our stock as part of [the settlement]. To me it's unfair and frustrating, but of course I don't know what else our competitor should do.
(CEO, SME jewelry company)

The CEO of this firm expresses the frustration of not knowing how or when they infringed the rights of another firm. Of course the CEO has a point; it is very difficult to know every product in the jewelry industry, which makes it difficult to conduct an FTO and to ensure

that the firm does not infringe any third party rights. However, since the consequences of infringement are costly, both in time and money, a Rookie who experiences to act as an infringer regularly should take steps to ensure that it does not happen in the future. Such steps include a formalized process for conducting a novelty search when looking to buy a new product from a third party as well as implementing contractual regulations with suppliers. Conducting an FTO and implementing necessary terms in suppliers contract might involve engaging external advisors, which is also costly and potentially not necessary for every product. Instead, for the most obvious cases the CEO could delegate the screening task to one or more employees with experience in different product lines, and then contact external advisors in borderline cases.

Another Rookie, in the industrial machines industry, experienced frustration when a competitor patented a simple but very useful method of handling a security measure in an industrial kitchen appliance. Their frustration was not linked to infringement or search issues, since they were well aware of the competitor's patenting activities, but it came from operating in an industry where other firms successfully use IP as a tool for generating a competitive advantage.

We have a French competitor who submitted a patent application, really annoying, because they had a good idea with lowering the chain and raising the security guard at the same time. There's this security guard that has to be down when the machine is running, and when you open the guard, the chain lowers automatically. It's very simple, but now they have patented this method. That way we're affected by our competition even in this industry. It's just a really good idea [the competitor] got before us. (Technical manager, SME Industrial Machine Manufacturer)

This highlights the frustration of having a weak approach to working with IP. This Rookie firm wants to use IP actively, having seen the benefits reaped by competitors, which is not simply a case of the firm starting to make IP registrations, but it does require a build up of internal competencies and processes. In the case of the manufacturer of industrial machines mentioned earlier, developing a process to identify potential ideas, and evaluating them for patenting would be an ideal first step. The patent mentioned is a relatively simple process, and it was likely that engineers in the other firm would have had the idea independently. However, without a formal process to

identify ideas and evaluate their potential, the firm is unlikely to be the first to patent them. As an aside, should a Rookie firm identify such an idea, but not wish to pursue the patent due to cost issues, they can simply choose to disclose the idea publicly, for example by publishing it in a news outlet or journal. Competitors would essentially be barred from patenting the idea, as public disclosure would constitute prior art.

The following example highlights an experience common to many Rookies, that resources are consumed in registering and maintaining rights without yielding any benefit to the firm. The frustration caused is not linked to the registered rights, but to the process of enforcement and associated costs.

We have discussed how well you're actually protected. We spend a lot of money defining what we want to patent unless it's a totally unique product [then IP is applied for without discussions]. Afterwards we spend a lot to keep the patents for a number of years. Then if anything goes wrong, and someone wants to copy this, they're going to copy it. We have to discover this in the market ourselves, and when we've discovered it, we have to spend time and money on lawyers and lawsuits. In the end we're afraid of taking action, because if you lose the lawsuit, all the money is wasted. I think the system is too dense, and we've discussed whether [working with IP] even pays off. We had a few lawsuits, and the outcome, well... (CFO & IP responsible, SME in the building and construction industry)

This experience makes the Rookie question whether IP is valuable to their business case, and whether spending the same resources developing new products would be a better trade-off. In particular, the lost lawsuits incur high costs and are considered a waste of resources. However, rather than entirely opting out of enforcing their rights, this firm would benefit from a method of assessing both which rights to register and how to pursue cases of infringement. As presented in Chapter 7, multiple methods of enforcement exist and working proactively with these methods can reduce or eliminate the need for expensive lawsuits. Of course, this carries a higher up front cost to the firm, but can reduce the costs and increase the success rate of enforcing rights.

Taking steps to protect the IP in the form of, for instance, lawsuits may also have more benefits than just financial compensation and the continued exclusive right to operate in the sub-market. Even if the firm is unsuccessful in its lawsuits, it may build a reputation as a

firm aware of its IP, that scans for potential infringements, and that acts as if others are taking steps to infringe on them. Such a reputation can have preventive effects on those considering launching products that may infringe on the firm's IP. It may even make competitors think twice before launching products that are only borderline IP infringements. Firms often forget that benefits of the IP may necessarily appear directly in the bottom line of their accounts, since it is difficult to know what would have happened if the firm had not secured their IP or had not acted upon potential infringement cases.

Aims and goals

Most Rookies know that IP can prove to be a valuable addition to their business, if they aspire to create a strong brand from their trademark portfolio or build their business around a patented technology. However, the Rookie's focus is on organizational growth, steadily improving and building the existing business, with little ambition to attract external funding or investment. Rookies are often content with their current position and are not willing to fund growth, preferring to focus on conducting business as usual. The Rookie often competes on price rather than innovative performance, an approach where a lack of IP is not necessarily detrimental to the business. In fact, some Rookies manufacture products for an established brand, negating the motivation to build their own IP portfolio.

It is debatable whether the Rookie benefits from moving to a different archetype, and depends on both the industry and the type of product, as well as their business plan for the future. Some industries and products benefit less from IP, such as Original Equipment Manufacturers (OEM) or firms operating in an industry where competition is based on pricing, when price differentiating effects such as brand, novelty or quality are not present. However, Rookies who have experienced frustrations related to IP, such as the cases presented previously in this chapter, are likely to benefit from building competencies in IP. Ultimately, it depends on an evaluation of the individual firm, though the assessment is relevant to all firms, making opting out of working with IP a strategic choice rather than one of omission.

Table 4 Overview of the Rookie

IP RESOURCES:	IP PROCESSES:
<ul style="list-style-type: none"> • Limited internal IP capabilities • No to limited systematic IP learning – learning ad hoc from external IP experts • Little innovative capabilities – focus on follower capabilities • Limited capabilities to enforce IP • Difficulties with identifying IP road map • Small IP portfolio 	<ul style="list-style-type: none"> • No systematic approach to identifying or administrating IP • No formal budget for IP • Ad hoc decision making concerning IP expressed as agility • Pursues non strategic IP registrations → assesses value of IP as low • No strategic response to piracy • Occasional heuristic behavior • Surprised by scope and timing of IP expenses (patent registrations and enforcement) • No or little awareness of FTO, except for followers
EXPERIENCES AND NARRATIVE OF IP:	AIMS AND GOALS:
<ul style="list-style-type: none"> • Frustration due to complexity • Lack of transparency • Frequently loses IP challenges, when met • IP is a potential waiting to be unlocked • IP has no apparent value for their business model • Mentions “weak” as main word when describing firm’s approach to IP 	<ul style="list-style-type: none"> • Organizational growth • Develop local markets – mainly local market driven • No or little intention of building an innovative mindset/capability • Competition on price • Aims to move away from being IP Rookie (infrequent) • Focus on setting up transparent system for expenses

Next steps for the Rookie

IP Rookies can be at very different levels in terms of IP conduct and their IP considerations. The interviews showed that, even though they all belonged to the IP Rookie archetype, there were considerable differences in their experiences and considerations with regard to IP. Some Rookies will not benefit from engaging further in entering the market for technologies (becoming IP Dealers, see Chapter 4) while others will benefit by developing an IP strategy (becoming IP Strategists, see Chapter 5). While, in the long run, Rookies could

benefit greatly from developing both dimensions of IP management, it is advisable to choose one rather than developing both sets of activities at the same time. Unless the firm is operating in an industry where licensing and the market for technology is highly developed, it is recommended that they begin by developing an IP strategy rather than pursuing the market for IP. It may be a risky choice to start by engaging in the market for IP before the firm has given some strategic consideration to the benefits of which assets can be licensed out or sold and which assets could be considered for licensing in or buying. The development of an IP strategy will assist the firm in identifying the most obvious opportunities with respect to the market for IP and avoid them making choices that may prove unwise.

Should a Rookie decide that IP ought to be part of its future business, the first obvious step would therefore be to develop a basic IP strategy. This will ensure that any IP activities are related to the firm's overall strategy and goals. An IP strategy in its most basic form would dictate which parts of the business should be protected and which types of rights should be utilized (read more about this in Chapter 7). Further steps would involve the development of internal capabilities within IP. This does not necessarily mean that the firm will have no need for external advisors afterwards. It does, however, allow the firm to make basic decisions about their IP portfolio and IP strategy, as well as building a base for the development of a more advanced IP strategy. It will also allow the firm to communicate more efficiently with external advisors and reap the maximum benefits from engaging with such experts. Finally, it helps the firm choose the most suitable external advisors for the IP activity they want to engage in and the degree of complexity of the task at hand.

In response to cost issues, a simple method of reducing this uncertainty is through insurance. Multiple types of insurance are offered on the market, such as insurance for IP enforcement. This would cover many of the costs associated with enforcing IP rights, removing or at least reducing this uncertainty.

Below we outline steps both a “staying” and a “moving” IP Rookie should consider.

Next steps for the “staying” IP Rookie

- Ensure that the assessment of potential from IP dealing and IP strategizing are conducted
- Keep IP options in mind if business changes

Next steps for the “moving” IP Rookie

- Assess whether an IP strategy or entering the market for IP could benefit the business
- If IP rights is part of future business then develop a basic IP strategy for which elements should be protected and how (see how to in Chapter 7)
- If considering IP dealing as beneficial then see how to in Chapter 8
- Strengthen in-house IP competences; for example, consider systematic development of one or more employees as an internal IP capability
- Assign the responsibility to an internal person interested in the area
- Consider insurance for IP enforcement so that obtained IP rights can be enforced
- If dependent on aim for business and competitive environmental changes then develop innovative mindset vs. stay tight

Exercises

1. What characterizes the IP Rookie?
2. What mechanisms do you think an IP Rookie should change in order to develop into a different IP archetype?
3. Which type of firms would you expect to place in the Rookie archetype?

Note

1. Infringement refers to when a third party utilizes a firm’s IP rights for the purpose of commercial gain without consent.

Recommended reading and bibliography

Katz, R. and Allen, T. J. (1982). *Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R & D Project Groups*. *R&D Management*, 12: 7–20.

4

The IP Dealer

Abstract: *The IP Dealer and the IP Rookie are quite similar, both archetypes are defined by a low level of integrated IP management and lack personnel and resources dedicated to IP. However, unlike the IP Rookie, the IP Dealer has had a limited experience of dealing with IP, for example in licensing or trading in IP. IP Dealers can be firms who generate value from selling or out-licensing technological inventions to third parties, or firms who buy or in-license well-known, popular brands to further the sales of their existing products. Like the IP Rookie, many IP Dealers find that working with IP is a complex and expensive endeavor. The IP dealers express their own approach to IP as a sign of agility and nimbleness, but also recognize that their approach (being non-strategic) is ad hoc and a highly serendipitous approach to achieving success working with IP. Some firms become IP Dealers through choice, having identified a business opportunity in licensing IP rights. However, it may also occur by circumstance, where the IP Dealer is approached by a third party wanting to license one or more of their IP rights or when the firm has infringed a third party right unintentionally and is therefore forced to in-license the IP to keep the firm's products on the market. No matter why they engage in licensing or trading IP, IP Dealers are more inquisitive than IP Rookies, and may have taken the first steps towards a more organized way of handling IP.*

Meet the Dealer

The Dealer is quite similar to the Rookie. Both share an ad hoc approach to IP and a low level of internal capabilities within IP. The primary distinction between these two archetypes is whether they exchange

or trade IP rights. Unlike Rookies, Dealers by definition, have engaged in dealing IP, most often through licensing at least once or, more commonly, multiple times. The Dealer tends to focus more on out-licensing, selling their inventions to other firms, and to be more opposed to in-licensing, sharing the belief with many other firms that their own firm is the most adept at developing this particular technology. Crudely put, the Dealer is a Rookie exposed to licensing activities, either through their own initiative or by sheer coincidence. Engaging in licensing does, however, offer the Dealer unique possibilities, which Rookies cannot access. On a basic level, being part of a licensing deal provides the firm with experience in working with an external partner and forces the firm to assess the value of their own assets. While it may sound like a simple exercise, assessing the value of an asset, such as a specific technology protected by one or more patents, is a complicated exercise as both the market potential of the competitor and the impact on one's own business needs to be assessed.

Traditionally, out-licensing has been considered an activity firms partake in for the sake of generating revenue through upfront payments or royalties. Similarly, in-licensing tends to be considered a means by which firms can avoid legal complications given that their product utilizes IP that is infringing the rights of another firm. It is also argued that in-licensing allows a firm to be at the forefront of technological development, even when it does not have the internal resources to compete in the IP race. IP licensing is simply a means by which an IP holder grants the right of the IP to another firm or agent conditional on pecuniary compensation. Yet, as we will see in Chapter 8, the reasons for engaging in the IP market are broader and more versatile than firms may first think. For now, we will simply think of markets for IP as an activity, which involves licensing of IP from one party to another.

Some Dealers essentially build their business on licensing a technology from an external source, such as a vital component for their product or a trademarked product name to spur increased sales. The latter is a relatively straightforward process. Common examples are branding of children's clothing with characters from a well-known cartoon or applying popular brands to a different type of product, such as clothing manufacturer *H&M* selling shirts with *Angry Birds* characters or logos, or camera manufacturer *Hasselblad* releasing *Ferrari* editions of their best selling cameras. While acquiring the right to use a well-known product name can involve a tough negotiation

process and steep licensing fees, the right to use a well-known trademark on your product is often worth the effort. In the case of licensing a specific technology, licensing contracts can become increasingly complex. One case encountered in the research for this book was a firm making components for home and office printers. A large part of their business revolved around manufacturing industrial printers compatible with the cartridges of a major manufacturer. In order to make these printers compatible with the cartridges, the firm needed not only to license the right to make compatible printers, but also have the major manufacturer supply a vital component. This was not cheap, but it allowed the firm to tap into the customer base of a large multinational and rely on their printer ink distribution network so they could focus on manufacturing and selling printers.

We collaborate with [a major cartridge manufacturer]...If you open up your office printer there's almost guaranteed [to be one of their] cartridges in it, which you can exchange yourself. In principle it's the same system we use... Of course [they] supply these cartridges, but also a small print that you mount the cartridge on. You can't make a printer with the components [they] supply; you have to make the rest of the printer. But they supply this component, we integrate it into our product and make a printer out of it. (Assistant Manager (& IP responsible), SME printing manufacturer)

IP resources

Dealers can be quite innovative firms with a high level of skills and competencies within product development and design. In many cases, these skills and competencies are managed through a formal process to ensure the efficiency of product development. This is, however, rarely the case for the process of managing IP within the firm. Many Dealers find working with IP exceedingly difficult and, rather than facing these difficulties, the IP Dealer chooses to focus on their small size and lack of a formalized process as potential competitive advantages of an agile firm that can be quick in reacting to competition. In reality though, this agility is a serendipitous approach to working with IP, where innovative products may be protected inadequately, or not at all.

And it goes to show that, well...that it's difficult [working with IP]. Therefore we choose to maintain a certain level of agility instead. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

While Dealers have some experience in dealing with IP rights it is fairly limited, as it seems to be purely circumstantial. The distinction between the Rookie and the Dealer boils down to serendipity, with the Dealer having participated in one or more circumstantial licensing deals. However, Dealers are often more inquisitive than Rookies, they try to understand how to work with IP and learn from their encounters. Regardless of whether this happens as part of the firm's strategy or simply because a single individual seeks to learn about it, the Dealer may benefit. This may indeed be a first step towards a more organized way of handling IP. A common example is when the firm learns from working with external advisors in IP matters. This is particularly true when the firm decides to take an active part in drafting and negotiating contracts, as is evident from the following quote from the interviews:

If we feel it is necessary, then we will most certainly [have lawyers draft contracts]. But we see it as important when we can understand the contract by being part of and where possible, handle the negotiations ourselves. By understanding even the most complex parts of the contract: takeovers, partial takeovers, reimbursement, misconduct etc. then I believe that we, in our daily operations, pay more attention to do the right thing and in the best way. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

However, in spite of some Dealers showing a desire to learn how to work with IP, most of these firms face severe resource constraints related to IP, both internally and externally. Therefore these firms often see their own IP protection as fairly weak, as challenges and issues with IP are difficult to overcome. Even minor challenges can become insurmountable obstacles due to a lack of specialized IP knowledge. Even when challenges are met, it is rare that the firm will learn from the process, instead they stick to the unstructured and heuristic approach to working with IP, seeing it as a sign of agility rather than a lack of resources.

I see our strategy as being very, very simple, because we don't have one. Our portfolio is very limited, as it is mainly focused on our firm's name...I'm sure that if you had the resources to sit down and really look through [our products], there would be some things we could patent. And there could be sense in patenting them. So overall [our protection] is weak. It is simply a question of lacking resources. (Assistant Manager (& IP responsible), SME printing manufacturer)

IP processes

Much like the Rookie, the Dealer has no structured or formal approach to handling IP issues. Dealers focus their strategic efforts on product development, manufacturing and marketing of their products, putting IP issues and challenges aside, only occasionally dedicating resources to IP activities and not doing much in a planned and well-organized manner. The Dealer is not oblivious to the challenges of IP and the potential issues they could face, but does not treat IP as a focal area. This is reflected in the lack of a dedicated IP budget and an overall view of IP as too expensive to work with, both in fees and legal costs.

We are not strong enough in that aspect. The organization can today not carry an IP strategy implemented in our business strategy. You could say that our organization is narrow and very focused on the strategic focus areas, and neither IP rights nor IP strategy is a focus area today. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

These firms have no internal processes (formal or informal) for identifying potential IP registrations within the firm, and do not conduct novelty or freedom to operate (FTO) searches prior to initiating development or committing to a product launch. The decision on whether to register IP rights for a product typically rests with marketing or sales or, as is the case in many smaller firms, with the CEO. This decision process is circumstantial and can even depend on the frame of mind of an individual employee, leading to a fragmented IP portfolio, as we observe in in Rookies.

No the [decision whether to apply for protection] probably rests with the sales department or our CEO. (R&D manager, SME chemical producer)

It is not very formal. There is not a strategy for it. I believe its something that happens during the work process. For example if we develop an amazing formulation, someone could ask why it is so good, and following that whether we should patent it. (R&D manager, SME chemical producer)

When a challenge within IP pops up it is dealt with in an ad hoc manner. Since this is happening without a structure, the decisions made can vary from day to day, depending on the current frame of mind of the decision maker. IP rights in the firm are identified in a similar way. For this reason, Dealer IP processes tend to concern

the firm's most important products and ideas, which are the obvious candidates for IP protection and the assets mostly on the minds of the managers. Many ideas and added layers of protection are, however, ignored. Not necessarily as an active choice, but simply because the firm has never considered the option. As conditions for business change over time, and identifying future market potential can be challenging and uncertain, without a structure to assess their technology the Dealer is less likely to have identified the right needle in the haystack at the time IP decisions needed to be made. Patents demand global novelty and decisions concerning patent registrations should be taken before the technology is presented to the public and the market has had the chance to respond to the new product.

IP challenges are sometimes dealt with in unusual ways when the person responsible for IP finds their own solution to a specific challenge. One example is a small software firm who were faced with piracy issues when one of their customers was acquired by another firm. Commonly when this happens the software is copied within the acquiring firm, which leads to many illegal copies. The software firm tried to fight the piracy through conventional means, but the court cases were often prolonged, leading to heavy costs in both time and resources. The CEO, frustrated by expensive court cases, decided that if the infringing firm were made aware of the copyright issue immediately it would reduce the risk of piracy. The CEO began visiting the acquiring firms personally, calling attention to the piracy issue and trying to convince the acquiring firm to purchase the software legally. This was somewhat successful and led to a reduced risk of piracy, though at a high cost in the CEO's time and resources.

It is frustrating, especially since [an enforcement case] took three years or so. It is simply too long, and we spent a lot of resources and money on it. I decided that I didn't want to get in that situation again. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

This Dealer initiated investigations into strategizing on IP. The process mentioned above is an example of a Dealer leaning towards the strategy process and who has started the process of how to deal with IP in the firm.

Dealers are not only limited in their efforts to provide a structure to their internal IP processes but they also exhibit limitations in their conduct when dealing with competitors and other firms. Some Dealers,

though far from all, are aware of what ensuring FTO means, but have little experience or desire in actually conducting an FTO. This could be a relatively simple process, setting up search engines to identify whether a new product would be infringing a competitor, but even this simple task can seem complicated and unnecessary. The result of this decision is that Dealers can infringe competitors unknowingly, with potential expensive lawsuits and settlements as an outcome. The following quotes show the limited awareness of FTOs among Dealers:

No [FTO] is not on the agenda anywhere. If we have [performed FTO] then it is out of pure coincidence. There is no strategy to it. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

I discovered that there's more than just trademarks and patents. There are copyright, trade secrets, ensuring Freedom to Operate and the marketing act. I had no idea about this. (R&D manager, SME chemical producer)

Experiences and narrative of IP

Dealers are not particularly focused on IP as a part of their business. In fact many Dealers quite simply feel that IP is more of an obstacle to overcome than a strategic tool to build on. The complexity and costs of working with IP can often get the best of Dealers, causing them to more or less abandon IP completely. Others shy away from actively working with IP in an effort to fly under the radar and remain unnoticed by large players in their industry. These firms have a sense of safety from being a small firm, believing that they are less likely to be noticed by incumbents if they stay away from growth and do not start to register IP rights. In reality, just being in a market as a competitor means the firm can be noticed, whereby actually registering IP rights would help the firm rather than harm it. As with Rookies, Dealers would benefit greatly from establishing a formal decision-making process for choosing which IP rights to register, and establishing a formal IP strategy to ensure a minimal level of protection.

It could be because we're not that large, so we are not a threat, but I am a little nervous that all of a sudden we'll receive a dispute because we have reached a size where we are a threat to someone. Then it would be nice to have some protection of our own. I just hope it doesn't happen. (R&D manager, SME chemical producer)

Dealers often come to the conclusion that IP is simply not important for their business. For this reason, they tend to focus on developing their internal competencies and new products, choosing to ignore potential protection. This approach is reflected in the way the firm handles collaboration with external partners, both with direct competitors and other firms. The contracts employed are often constructed in a simple manner, merely scratching the surface of potential issues in collaboration arrangements between firms. However, should the collaboration partner bring in an external advisor, such as a lawyer, Dealers tend to mimic this behavior and reluctantly hire an external advisor of their own to level the playing field. However, there is also an upside to choosing a simplistic approach in contractual issues. The Dealer can refrain from spending resources on external advisors. The Dealer is then likely to have employees who are capable of handling the contractual issues involved. These individuals need to understand the specific contractual facets in detail. Such an approach builds a sense of trust between employees and the firm. The downside is that the firm can expose itself to opportunistic behavior from its collaborator.

We don't think about IP in our day-to-day business. I know that our people focus on our unique competencies and unique products. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

It is rare, but when we go to a contract negotiation with a customer and he's hired a lawyer, then we'll bring one as well. (CEO, Ernst Lykke Nielsen, Bording Data A/S)

These quotes also reveal that the Dealers' decision-making process with regard to IP tends not to be thorough and justifiable through rational argumentation. There is little collection of information and data and even less contemplation of the potential outcomes of the activities or the different ways of engaging in the activity. Instead, the decisions are characterized as being based on heuristics and a biased approach in which managers make choices and decisions that rely heavily on how they handled the issue in prior cases. Indeed, such behaviors tend to be dominant among entrepreneurs who do not mind making speedy decisions based on only a few prior observations on matters that may be highly complex and demanding.

Aims and goals

The primary goal of a Dealer is, as with many other firms, to stay in business. However, this goal is not achieved through a strategy for growth but of stagnation. Many Dealers can be described as being content with their current size and operations, and are simply not interested in expanding. These firms are content with the existing structure of the market they operate in, and are worried that aggressive expansion on their part will trigger their competitors to do the same. Of course, if a competitor decides to pursue a growth strategy, the Dealer will often follow in order to keep up. They will rarely be the one initiating a growth strategy. Should an industry be dominated by Dealers, it would not be surprising if all firms in the industry simply continued as they always had, essentially forming a stagnant industry where a new entrant is required to spur growth and change. Essentially, the mantra of the Dealer is that growth is expensive, and they're not willing to spend the money.

Next steps for the Dealer

There are differences between individual IP Dealers, some are content in their current situation, others have a strong wish to grow and prosper. The distinction between these two types is important for identifying the next step. A basic next step for both would be to ensure FTO for their own products, which would help lower the risk of being in business and initiate a capability building process for IP as well as gathering knowledge of how competitors behave with regard to IP. This alone might spur further interest in IP within the firm, as FTO might enlighten the Dealer by indicating whether their inventions have a potential for other firms. Besides this, the Dealer "stayer" is not that different from the stayer presented in the Chapter 3 describing the Rookie, which readers can refer to.

A further step for the Dealer wishing to "move" could be initiating an understanding of the importance and value of the ideas, products, services or concepts that the Dealer has at their disposal. In most cases this would imply engaging a resource with strong analytical skills and a broad IP understanding to work with/in the firm. The involvement of such a resource/skillset can help envision the potential of the firm and outline a plan for the next steps. An initial analysis would most

Table 5 Overview of the Dealer

IP RESOURCES:	IP PROCESSES:
<ul style="list-style-type: none"> • Firm might have strong innovative capabilities • Limited IP dealing capabilities, deals circumstantially • Assesses own IP as weak – often due to lack of resources 	<ul style="list-style-type: none"> • No structured nor formal approach, IP is dealt with circumstantially • No FTO searches or processes for identifying IP • Ad hoc identification of IP opportunities and threats • Ad hoc dealing with IP challenges
EXPERIENCES AND NARRATIVE OF IP:	AIMS AND GOALS:
<ul style="list-style-type: none"> • Does not feel IP is important for business, considered as an obstacle which needs to be overcome • Frustrated with IP and the complexity related to IP • IP is expensive • Accidentally being the pirating firm • Engages primarily in simplified contracts 	<ul style="list-style-type: none"> • Stay in business • Less growth focused (“growth costs” and “if growth competition will set in”)

commonly include an analysis of the IP status of the firm, what types of IP rights have been applied for/developed, and how they fit with the current reality of the firm, given the firm’s position with regard to the competition, partners, the product portfolio, and the firm’s business strategy. With this analysis at hand an IP strategy for the future can be outlined, IP worth dealing in can be identified, as can IP from others which could speed up the firm’s innovation process, or IP which could be out-licensed within or outside the industry. Including these considerations in the firm’s activities would be helpful in structuring innovation and business processes and in ensuring optimal output from the processes.

A common issue for the IP Dealer is getting the IP basics right, to ensure that key stakeholders in the firm are aware of and understand the potentials and challenges in dealing with IP. In this respect having an internal IP seminar might be an important step in developing the firm’s knowledgebase on IP. Ensuring that managers are capable in basic IP talk will increase the awareness of IP internally, and help them communicate with employees in the right positions, as well as

help them implement the IP plan. In the table below we outline steps for a “moving” IP Dealer to consider.

Next steps for the “moving” IP dealer

- Assign IP resource to conduct analysis of firm’s current IP position. Include analysis of firm’s own assets (products, services, marketing, etc.) in comparison to competition and firm’s business strategy. On this basis an IP strategy can be developed (see how to in Chapter 7)
- Map IP dealing potentials (see how to in Chapter 8)
- Ensure common IP language
- Ensure appropriate IP education for key stakeholders in the firm, discuss the challenges and potentials with IP
- Conduct IP awareness campaigns internally, highlight the importance of IP for future business. Include top management in campaign to show firm’s dedication to IP issues

Exercises

1. What characterizes the IP Dealer?
2. What mechanisms do you think an IP Dealer should change in order to develop into a different IP archetype?
3. Which type of firms would you expect to place in the Dealer archetype?

Recommended reading and bibliography

Busenitz, L. and Barney, J. (1997) “Differences Between Entrepreneurs and Managers in Large Organizations: Biases and Heuristics in Decision Making”, *Journal of Business Venturing*, 12: 9–30.

5

The IP Strategist

Abstract: *The IP Strategist is typically an innovative firm, which often experiences substantial costs in developing new products. The IP Strategist is well aware of the importance of IP to their business for protecting their investment in product development. To many IP Strategists, the continued survival of the firm depends on the successful use of IP. The IP Strategist employs a formal process when working with IP, a process that is well structured and articulated. Commonly, the IP Strategist will have resources dedicated to working with IP, including a dedicated IP person, though that person may not necessarily be formally trained. The IP Strategist is often internationally oriented due to a saturated home market or to selling niche products with a limited customer base in the home market. This pushes the IP Strategist to work with IP internationally and requires substantial knowledge of IP regulation and conduct in export, transit and production countries. The IP Strategist is reluctant to engage in trading or licensing IP, which is a key point in distinguishing the IP Strategist from the IP Dealer and IP Strategic Dealer. This can be due to a lack of knowledge of the potential benefits, but in many cases it is a deliberate strategic decision due to the firm's competitive situation.*

Meet the strategist

The IP Strategist is actively engaged in working with IP, registering multiple rights based on experience and an established internal process. Strategists are well aware of the value of working with IP and how it is an integral part of their business. IP Strategists often operate in industries in which an innovative capability is one of the

main drivers of the firm's performance. IP Strategists often experience substantial development costs which, to a great extent, also represent sunk costs. They compete by developing novel, innovative solutions, while price is less of a factor than for IP Rookies. As a result, the survival of the firm is more reliant on the use of IP to protect these investments and, most importantly, Strategists are aware of the connection between IP and generating value (Scotchmer, 2004).

[Working with IP] is extremely important due to the high costs of product development and relatively high costs of building a brand. It's no use that you do all the development and then everyone else has the same three weeks later. It's important that you protect your concept. (IP responsible, MNC in Equipment manufacturing for farming)

The Strategist will often be internationally oriented, due either to the home market being saturated or to the firm developing a niche product with little or no initial competition as the only or one out of few suppliers. The Strategist differs from Rookies and Dealers by having an established process for working with IP, dedicated resources and greater experience in selecting, registering and enforcing IP rights.

IP resources

In contrast to Rookies and Dealers, the Strategist has an organized and sometimes formalized IP process with resources dedicated to working defensively and offensively with IP in an international setting, including: identifiable IP personnel; processes for identification and registration of rights; and formalized training. Strategists assign IP duties internally, though not always to a single individual. Commonly, a technical director or product manager will be appointed, although they rarely receive the training required to handle the task. In one case, where a firm evolved from Rookie to Strategist, the same person was responsible for the IP for more than 15 years, which allowed them to build up experience and learn from working with IP and external IP specialists without formal training. As a result this firm does some things differently from established practice, demonstrating that this self-taught approach can work and provide the required results. The downside in this case was that the firm's IP hinged upon a single individual, so the firm would be faced with substantial uncertainty should that individual leave. For firms without a dedicated IP person, there is a desire to identify or recruit an individual for the task. However, due

to resource constraints, hiring is not always an option and firms in this situation don't have enough experience with IP to single out an individual with the necessary competencies.

I don't have any training in this, but I have worked with it for 15–17 years, and through courses, experience and advisors I have learned. And of course I have talked to, even though you don't want to admit this, people who know more [about IP] than me, and you learn a lot from that and that is always a pleasure. But I have gained a broad insight into [IP], but would really like a dedicated education in [IP] (Quality & IPR manager, Mogens Fahlgren Andersen, Dansk Mink Papir A/S)

IP processes

The processes used among IP Strategists are well structured and articulated and many firms include IP as a key part of the stage-gate models used in the development process. As a result of this, IP decisions are commonly taken in close proximity to the relevant product area. Thereby no “desk decisions” are made, eliminating IP activities unrelated to existing development and ensuring that the rights registered are relevant and appropriate to the product in development. This is a key factor in building the competitive advantage of the Strategist and this approach ensures that resources spent on IP are minimized, with no irrelevant registrations and activities, and protection of the products the firm depends on is maximized.

We have a product committee for each product group... Above these committees is a product council taking larger decisions [for the product group]. These councils are typically the ones starting a patent application process. (IP responsible, MNC in Equipment manufacturing for farming)

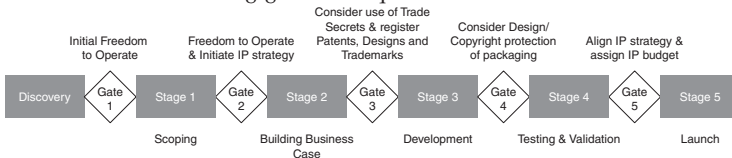
This method also allows for continuous interaction between IP personnel and product development. In some cases you even see alterations in the product during the development process based on input from the IP department. The objective of the input is generally to increase the protection of the developed asset, commonly by making the product more distinct or obscuring technicalities that are difficult to patent. There is hence a more integrated process between IP and R&D, which is characterized by feedback loops and redevelopment processes thought to produce a better and more advantageous novel asset.

Box 5.1 Stage-gate considerations for the IP Strategist

An IP Strategist might decide to ensure that employees remember the issues to be taken care of by using a stage-gate model, as introduced in this example of a firm that uses multiple types of IP related activities (patent, design and trademark). The stage-gate model, first developed by Cooper (1988) (see figure below), depicts the different stages a firm passes through in a development process. Each gate represents a point in time when the process team should stop and ensure that the issues raised at that particular gate have been considered. The project should not progress to the next stage before these issues have been resolved. The figure below represents a typical Stage Gate model. The model needs to be adjusted for each organizational context, since needs and structures differs across firms.

Prior to Gate 1 is the discovery process during which the idea is generated and is when the firm does initial research into the following main areas: market, technical, financial and business assessment, and IP assessments. Gate 1 is then the initial screening of the idea, when the firm should be able to answer questions related to each of the main areas.

GATE 1: The following general IP questions could be inserted into the



Adapted from Cooper (1988)

stage-gate model to ensure that the team considers the most important IP issues during the initial phase:

- For all new technologies an initial, but not in-depth, freedom to operate (FTO) search should be performed to identify and assess the crowdedness in terms of third party patent rights to components of the technology.
- Consider patentability (but not in-depth) of own new technology, while conducting initial FTO search.

GATE 2: During Stage 1 leading to Gate 2 the firm will conduct further preliminary investigations. This means that by the end of Stage 1 the firm will have: a clear, distinctive definition of the product; defined a value proposition of the product; done extensive analysis of competing products; done a more detailed financial investigation. At Gate 2 consider the following:

- For all new technologies an in-depth FTO search should be performed to identify and assess the crowdedness in terms of third party patent rights to components of the technology. While conducting the FTO analysis consider the patentability of own new technology.
- For any new shapes search in design rights databases and 3D trademark databases to identify any competing shapes which the new shape might infringe.

- Create brand for product (in series or stand-alone), conduct trademark search in trademark databases in main markets following the trademark strategy (see Chapter 7).
- From a design right and/or a copyright perspective consider whether the new product is likely to be protected in the main markets. If not, and protection is needed to secure a positive business case, challenge the creative team to re-design the product so that design and/or copyright registration can be obtained in the most important markets.
- Initiate initial product IP strategy, check how the product IP strategy fits with the firm's overall IP strategy (refer to Chapter 7 for further information). In the product IP strategy estimate expected life cycle of product, budget and human resources for IP work.

GATE 3: Stage 2 is the product development stage in which actual programming and modeling is done, initial product prototypes are made, and initial plans for manufacturing and product launch are prepared. At Gate 3 the following IP assignments could be planned:

- Most importantly, ensure all novelty demanding IP registrations are done for patents and designs.
- Consider whether technological innovation should be kept secret, patented or be published publically. If the decision is that it should be protected by the use of trade secrets outline the plan for how the information will be kept secret. If for patent, then submit patent application on technologies embedded in the product and ensure patent strategy is in place (refer to Chapter 7 for dimensions and scope to consider).
- Apply for design rights.
- Consider whether additional technologies should be included in firms' trade secret program (refer to Chapter 7 on trade secret strategy). Define new technologies in manufacturing site, and consider trade secrets in this respect.
- Apply for brand name(s) identified.

GATE 4: Stage 3 is the testing and validation stage in which the product is tested in-house. Often the product is shown to selected consumers for feedback to be used in product launch planning. Also, the packaging or the product can be designed and agreed upon. At this stage the product may no longer be kept secret in-house. IP assignments to be done before passing through Gate 4 are:

- Consider whether packaging shape needs design registration. Assess the need for such packaging, if high, then challenge creative team to develop novel packaging.
- Consider packaging from a copyright perspective. For example, do the pictures used on the packaging contain copyrighted material (refer to Chapter 7 on copyright strategy.)

GATE 5: In Stage 4 the launch is organized, production is started and initial sales begun and closely monitored. The following IP related issues should be considered:

- Align IP strategy with expected life cycle of product.
- Plan IP enforcement.
- Assign budget to administrate and keep IP registrations alive.
- Identify internal and external stakeholders who will be in charge of biannual or annual reassessments of IP.
- Communicate to the sales force to look out for infringements and guide them on how to report back if instances are observed in the market.

While these procedures are vital to Strategists, they are not always codified within the firm. In some cases these processes are simply implicit in the minds of the engineers and those responsible for IP. Of course, this tacit knowledge ensures that everyone knows how to work with IP. However, it also: makes it difficult to introduce the process to new employees; makes the firm vulnerable to key employees leaving; and makes it difficult for the management to integrate IP fully into the firm's strategy.

we are not yet where [we formalize our IP strategy], or rather, I'm not there yet as I'm pretty much the only one in the firm working with patents. So we're not at a point where we can make a strategy based on this. (Quality & IPR manager, Mogens Fahlgren Andersen, Dansk Mink Papir A/S)

While to some firms it can seem like a redundant task, the benefits of simply writing it down can be vital in retaining and communicating the IP strategy. This relates to the systematic training of employees in Strategist firms as, if a formalized strategy is common knowledge, it makes training easier and gives employees the opportunity to provide feedback on the process based on their individual leaning experiences, hopefully improving the established process along the way. This systematic approach to IP is commonly focused on one or more types of IP registration seen as vital to the firm, such as patents and trademarks. In many cases other types of rights (for example design rights, trade secrets and copyrights) are either omitted or ignored, usually without considering whether these types of IP rights could also benefit the firm.

Experiences and narratives of IP

The Strategist is well aware of the importance of IP to their business, past, present and future. In cases where the firm grew out of a single technological development, the history of the firm can essentially

be told by the trail left by their IP registrations. As in the following example, where a start-up firm in the fur industry evolved over 20 years from a single idea to being a dominant player in the industry.

the work we did [when we started working with IP] has tremendous impact on where we are today, if I may say so. And the interesting part is, that if you look at our patents, you can see how our business developed. Our first patent covers the first stage of the production process, and the most recent one covers the last stage. So we solved a problem in the first stage, and then solved the next problem from there. And now we're in the process of doing the same thing again. (Quality & IPR manager, Mogens Fahlgren Andersen, Dansk Mink Papir A/S)

What separates Strategist from Dealer and Strategic Dealer is the reluctance to engage in in-licensing or out-licensing of IP. In some cases this can be due to a lack of knowledge of the potential benefits this can bring to the firm; either by licensing out unused IP, or licensing in new solutions at a cost lower than in-house development. In some cases though, this is an entirely conscious decision, following the strategy of the firm. One example is a firm deeply entrenched in its industry, existing in a near monopoly due to a strong thicket of patents. While out-licensing could bring in substantial royalties, the firm prefers a role as developer and solitary manufacturer, rather than a role as technology supplier.

We are not going to license this patent, we want them to buy our machines. Overall we're not really interested in licensing [our patents]. Maybe we will do it once the product is no longer relevant to us, but the industry is so narrow that we prefer to be the only player. It would present us with other issues as well, because if another firm enters the market, they will start patenting as well... But it is difficult to license, as it would give others the opportunity to start development based on our products. Of course you can [use contractual clauses] to prevent this, but it is not something we really have thought about in the firm, and it will not happen in the coming years. (Quality & IPR manager, Mogens Fahlgren Andersen, Dansk Mink Papir A/S)

This decision is taken not only to protect their monopoly-like market conditions, but also due to a fear of other firms leaping ahead of them by using the license to further develop their machines. It is interesting that the firm is well aware of the contractual possibilities in a licensing deal, such as using a grant-back clause to reward the licensor the IP rights to any further development made on the licensed technology, or simply blocking the licensee from developing the licensed technology. Yet, the firm chooses to play what they consider to be the safe card and not make IP licensing a part of their business model.

Strategists often operate in an international setting, which also means they are more likely to be exposed to specific IP challenges. A common challenge is how to handle IP registration and enforcement in other countries, whether the firm operates as a producer or a seller of products internationally. The following example highlights the need to understand the differences in the registration and coverage of rights in each market where you wish to register. Regional differences are plentiful and potentially game changing, so it can prove invaluable to use external advisors with particular expertise in the specific market. The case below regards trademark law in China.

We have established [production] in China last year, and we applied for protection on a number of names there. And it's difficult to apply in China. They're a little more structured and skilled than we are, because there's a [high number] of product areas or areas of interest where you have to protect your name or patent. We haven't been doing that much ... It's a jungle once you start working with it ... And if you register the wrong product area, then you can't do anything to prevent anyone else from using [our trademark]. (IP responsible, MNC in Equipment manufacturing for farming)

Aims and goals

Due to the focus on formulating an IP strategy and building up internal competencies and processes relevant to IP, the Strategist has a well-rounded approach to working with IP. These firms are commonly focused on expanding their business through a growth strategy, investing in building the business while under the protection of a developed IP strategy. This is supported by an innovative mindset and product development. However, the Strategist does not confront business opportunities concerning in- or out-licensing. Some firms have attempted to engage in a licensing deal, but these cases have been abandoned either through a disagreement between the parties or because the licensed product simply did not live up to expectation.

Next step for the Strategist

There are two main considerations before deciding on the next step. First, exchanging IP is shown to have a positive influence on the firm's performance, for example on innovation speed (Leone and Reichstein, 2012). Strategist might therefore not be utilizing IP in the most optimal way, as they have still to engage in IP dealing.

An analysis of whether to engage in IP dealing should therefore be initiated. In Chapter 8 we present different opportunities to consider, and the Strategist can refer to this chapter to identify the possible types of IP dealings. As an initial step implement guidelines in the firm to ensure that employees consider the optimal approach when engaging with the value chain, containing considerations of whether to develop internally or assign the project to an external partner (also named the make or buy decision). Examples of this are in the chapter on Strategic Dealers, as they often conduct such considerations.

Table 6 Overview of the Strategist

IP RESOURCES:	IP PROCESSES:
<ul style="list-style-type: none"> • IP is assigned internally, however, not necessarily to a trained IP person • Continuous relationship to external IP agent • International experience • Innovative capabilities 	<ul style="list-style-type: none"> • Structured approach, may be structured by use of stage-gate model • Decision making in teams close to product area in question • Has procedures for FTO and patenting, not always written down • Systematic training, learning and processes • Processes sometimes related to a few IP rights, other types of IP might need attention
EXPERIENCES & NARRATIVE ON IP:	AIMS AND GOALS:
<ul style="list-style-type: none"> • Experienced that IP was important for their business • IP partly the reason for the company being where the firm is today • IP used for reputation and brand building • Experienced competition with IP influences own product development • May have limited experience with trading IP – but not part of IP strategy • Started as a small niche market, which has grown; due to IP original manufacturer could reap the fruits and grow 	<ul style="list-style-type: none"> • Growth oriented • Strengthen innovative mindsets

Second, it is important to consider whether to formalize the IP strategy, assigning it a dedicated budget and building a beneficial awareness of the firm's IP strategy amongst the right stakeholders. Assigning a person internally, with dedicated time to overview the IP process and to communicate with and keep track of work by external IP experts can enhance a firm's knowledge base on the topic and ensure reliance and connection to the firm's business strategy.

Next steps for the IP Strategist

- Consider whether dealing with IP could enhance the business situation, by, for instance, increasing the speed of getting new products to the market through access to third party technology or niche technologies
- Ensure that the firm's operations are aware of opportunities, preventing NIH-syndrome, to increase awareness of IP dealing
- Formalize IP strategy (or not) – ensure top management attention and approval
- Build awareness of IP strategy internally – to ensure integration with firm business
- Consider dedicated budget
- Consider pros and cons of dedicated internal IP person

Exercises

1. What characterizes the IP Strategist?
2. What mechanisms do you think an IP Strategist should change in order to develop into a different IP archetype (the IP Strategic Dealer)?
3. What are the main IP considerations to have in a stage-gate model for the IP Strategist?
4. Which types of firms would you expect to find as an IP Strategist?

Recommended readings and bibliography

- Cooper, R. G. (1988) *Winning at New Products*. London: Kogan Page.
- Leone, M. I. and T. Reichstein (2012) "Licensing-in Fosters Rapid Invention! The Effect of the Grant-Back Clause and Technological Unfamiliarity." *Strategic Management Journal* 33(8): 965–985.
- Scotchmer, S. (2004). *Innovation and Incentives*. Cambridge, MA: The MIT Press.

6

The IP Strategic Dealer

Abstract: *Firms defined as IP Strategic Dealers are the most adept at working with IP, using best practice or being at an advanced stage approaching best practice. These are internationally oriented, innovative firms that are continuously challenged both by other IP Strategic Dealers encroaching on their market position and by infringement of their IP rights. The IP Strategic Dealer has a formalized IP strategy as an integrated part of the firm's strategy, and commonly employs a dedicated IP manager. IP Strategic Dealers tend to have formalized their IP processes, many to the point where IP is integrated into the stage-gate models the firms use in product development. As a part of the formalized process, the IP Strategic Dealer has a systematic learning process, where experiences are retained and invoked into new routines. The IP Strategic Dealer employs multiple layers of protection, using several patents, trade secrets, trademarks, design rights and/or copyrights to protect firm assets. This provides the IP Strategic Dealer with a synergetic effect that increases the levels of protection. Not all Strategic Dealers are at the most advanced level, however all are strongly committed to using IP as a central part of their firm's strategy and continuously learn and develop their competencies in working with IP.*

Meet the Strategic Dealer

Strategic Dealers are firms conducting best practice, or that are at an advanced stage moving towards current best practice. These are typically innovative firms with an international market, building their competitive advantage on leading technological development, strong well-known brands and/or novel designs. While these firms are the

most advanced and experienced in working with IP, they still may not find it an easy or simple task. These firms are continuously challenged, both by other Strategic Dealers encroaching on their position and by numerous cases of infringement. Strategic Dealers are continuously assessing and improving their strategy and portfolio in an effort to remain at the head of the pack with IP as an integral part of their business strategy. However, they might feel frustration over IP or even consider it a necessary evil.

Strategic Dealers tend to work at a more advanced level with IP than other firms, combining different types of rights to increase the protection of their products, engaging in collaborations such as patent pools and entering into licensing agreements. The combination of IP rights can strengthen product protection significantly, providing different layers of protection beneficial at different times depending on the type of challenge. Patenting a product's core technology protects its technical aspects from infringement, but this protection can be extended, for instance by adding a trademark, branding the technology among customers. This achieves a synergistic effect, conveying the advanced technology covered by the patent through the trademark as a sign of quality to the customer. An added benefit comes from the different lengths of protection conferred by different IP rights; in this case the trademark covers the product after the patent has expired.

Licensing activities among Strategic Dealers may involve in-licensing, out-licensing and cross-licensing, with the latter being the rarest. In addition, Strategic Dealers often consider the full palate of IP exchange options, centered on buying and selling core IP and engaging in patent pools and patent auctions to optimize business situations. We discuss the circumstances and reasons for engaging in dealing and exchanging IP in Chapter 8. Strategic Dealers often describe licensing deals as achievements, with a positive impact on business, or as below the technology in question.

We have a European partner with whom we have entered a licensing agreement. The agreement covers a product pending approval and not yet marketed. Our partner had in-house patent people conducting due diligence on the patents covered by the license, and the positive outcome was sort of a validation [of our patent portfolio] (Vice President IP, Pharmaceutical company)

IP resources

The Strategic Dealer will have identified the obligations and assignments related to IP. It is often equipped with an internal IP manager and dedicated IP personnel, if the size of the firm allows. Having a dedicated internal IP manager allows for a closer integration of IP activities both in management and in development activities, in turn streamlining and improving the internal processes for managing IP. These firms all have an IP strategy as part of the firm's overall strategy. However it is not always formalized or written down. In many firms it is simply part of the mindset of the manager and staff involved in working with IP. The inclusion of dedicated staff with skills and capabilities in IP provides a method of cost control, both in relation to reducing the number of external advisors, and by having staff who are aware of both IP implications and their associated costs when deciding which rights to register and enforce.

even though costs are unpredictable, we try to have a budget. We have kept this relatively stable if we don't do too many new patents. Just the maintenance costs are quite high. [This] is almost impossible, as [R&D] can present three new inventions. (Founder & Chief Technical Officer, Bjoern Andersen, Noliac)

An important part of establishing and maintaining an advanced process of IP management is to ensure a level of systematic learning within the firm. This is relevant for both managers, product developers, researchers and IP staff in identifying and retaining important experiences to allow the firm to learn from its past. If the firm has a formalized IP process, it would alter based on experience, allowing the firm to improve continually. This is not solely a task relevant to the IP manager. It should also involve managers, product developers and researchers, as their insight and experience can help to streamline the IP process, and inform the IP manager of potential shortcomings, misunderstandings or mistakes in the way IP is handled within the firm. Putting in place routines for handling daily activities is therefore core. If they are not properly communicated within the firm, the IP manager can be denied important experiences. This is particularly so if the IP manager is a recent addition to the firm and many important experiences predate their arrival. Identifying these experiences and communicating what, how and why it went wrong are vital in ensuring that the firm continues to develop its process of IP management.

IP processes

Internal IP processes are commonly well developed, with a continuous assessment of the existing portfolio and whether new inventions or products should be registered. Not all Strategic Dealers do this actively though. Firms that do not develop technology tend to have a more passive approach. In these cases the internal IP process still ensures that all new ideas and concepts are assessed by those responsible for IP. However, most IP Strategic Dealers have an overview of where valuable assets are created within the firm, and have a strategy for what they wish to protect and how (explained in detail in Chapter 7). One important part of an IP strategy is identifying new inventions in due time.

People come to [the IP department], that is a sort of identification of an opportunity, or a business opportunity, or perhaps a marketing opportunity. (Management Assistant, Henrik Qvist, Kvadrat A/S)

This process covers not only the identification of internal ideas and opportunity, but also the task of identifying potential useful external technologies or opportunities that could be licensed or acquired by the firm. The decision on whether to license or acquire IP from external sources depends on more than an assessment by the IP department; however, it is commonly up to the IP department to identify these opportunities, costs and benefits and convey them to the firm. There are at least three different transaction costs to participating in exchanging IP: (1) the search and information costs, incurred when firms investigate whether the asset searched for is available on the market and for the right price; (2) the bargaining cost, which is the cost of agreeing terms and conditions with the exchange partner for obtaining the right to the asset, as well as drafting the contract; and (3) the costs for monitoring and enforcing, to ensure that the other party keeps their part of the deal.

When we, for instance, want to make these temperature-regulated cells, we decide whether we want to buy them or make them ourselves, and in this case IP is central... In one project we had to license a patent in order to complete the project, paying a lump sum and a percentage of the overall contract of the project. (Management Assistant, Henrik Qvist, Kvadrat A/S)

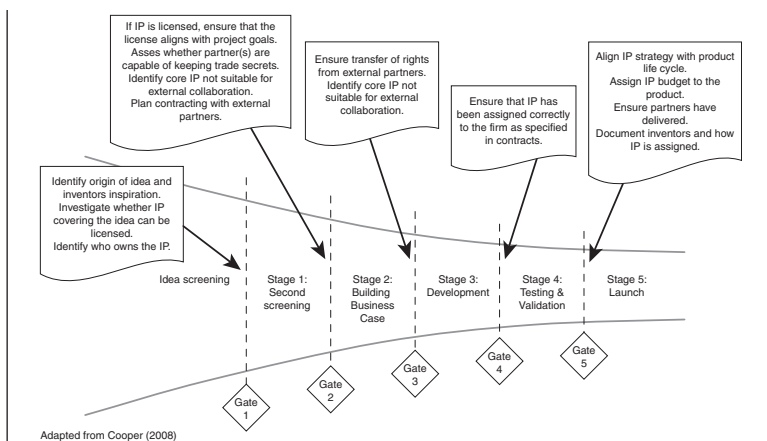
As part of this process a formalized stage-gate model is common. While similar in appearance to the stage-gate model used by IP Strategists,

it differs in the inclusion of in- and out-licensing of buying or selling rights. The inclusion of licensing in the stage-gate model, even if licensing is not core to the firm's strategy, lays down a plan of action if the firm is approached with a licensing offer or needs to license from an external source. It will involve a formal assessment for the relevance and implications of the license, and the costs associated with the licensing agreement. By monitoring the rights of competitors, Strategic Dealers have the opportunity to adapt their product development based on their competitors' actions, thereby avoiding situations where FTO cannot be achieved and product development is stopped. Of course, this is only possible in some cases, and if discovery is not made until late in the development process, the firm needs to decide whether to terminate development, continue at the risk of an infringement suit, or to contact the competitor in order to negotiate a licensing deal. While this method does not ensure FTO from the early stages of product development, it increases the likelihood that Strategic Dealers will not infringe other firms, and give them the option to cut costs by ceasing development in cases where infringement is likely.

The use of a stage-gate model helps the IP Strategic Dealer to execute IP conduct in an optimal manner, where the issues most important to the individual firm are considered in due time. Below we outline the considerations that an IP Strategic Dealer would apply on top of the considerations for their own developed IP, as already described in Chapter 5 on IP Strategists.

Box 6.1 Stage-gate considerations for IP Strategic Dealers

The IP Strategic Dealer considers external sources of knowledge in the new product development process. They consider IP strategy and licensing to be an integral part of their activities to sustain and develop a competitive advantage, and they consider them throughout the stage-gate process. The gates represent points in time at which the team behind the process should stop and ensure that the questions raised at that particular stage have been taken into consideration. The project only moves on to the next stage of the process if these questions have been considered. Below we outline what the Strategic Dealer should consider with regard to each process in terms of IP. We focus purely on the IP considerations additional to those for assessing and administering in-house developed IP as referred to in Chapter 5. The full model for the Strategic Dealer is therefore a combination of the two stage-gate models (the one below and the one presented in Chapter 5).



Prior to Gate 1 is the discovery process, during which the idea is generated. The IP Strategic Dealer will be working with many external stakeholders in this process. Instead of developing their own ideas internally, Strategic Dealers might actually be heavily engaged in identifying and selecting the best ideas from a range of external sources, such as other firms, consumers, universities, entrepreneurs, cooperation partners, contests and so on. Dealing with multiple sources of knowledge complicates the way of dealing with these sources. The Strategic Dealers IP assignment at Gate 1 is therefore changed to secure the rights to work with an idea, and ensure that there is space (in terms of market and technology) to operate with the idea in the future.

GATE 1: At Gate 1 the following general IP questions should supplement those presented in the IP Strategist chapter to ensure that the most important IP issues have been considered in the initial phase:

- Ensure data from external source of novel idea as well as the origin of idea/technology/concept/etc., including who is the inventor, when was it created, has the idea been kept away from the public, and what inspired the inventor in the process of creating the novel outcome?
- Investigate whether IP can be licensed and the terms, for example, exclusively or non-exclusively, geographical boundaries, grant back clauses or other contractual specifications in terms of own development based on the technology.
- Examine who is the rightful owner of the IP.
- If scarce resources are needed to further the process, or if already invented elements need to be paired up with to enable the idea, the elements and their availability should be identified. For example, university scientists have access to programs, substances, assays, compounds, measuring instruments, or medical tools that the university has a right to use for non-commercial purposes, such as university research, but which cannot be transferred to a commercial setting. This needs to

be identified up front, as the terms for availability of complementary assets can have a big influence on the business case.

GATE 2: During Stage 1 leading to Gate 2 the firm will, maybe in cooperation with one or more partners, participate in further preliminary investigation. By the end of Stage 1 a thorough definition of the product or service to be provided should have been done. In this process the Strategic Dealer might have identified external sources of capabilities needed to perform different aspects of the further development of the product. Therefore, supplementary to the IP tasks at Gate 2 in Chapter 5, the following IP tasks should also be considered:

- If external partner keeps IP and IP is only licensed, ensure that partner will live up to IP strategic goals set out for the project.
- Assess whether partner(s) are capable of keeping provisions in regard to trade secrets.
- If external industrial design bureau or PR bureau will be assigned to the project, carefully identify which type of assignments they will be handling, and whether IP might come out of the process.
- Identify the core IP of the product that should not be shown publicly.
- Identify the core IP that can be transferred and dealt with by external partners during the following stages, prepare strict non-disclosure and non-competition clauses.
- Plan how to contract with external partners, decide whether external partners participating in next step will be the owners if unforeseen or foreseen new inventions occur, or whether such IP should be assigned to you.

GATE 3: Stage 2 is the product development stage during which actual programming and modeling is done. The IP Strategic Dealer will most often have parts of the process conducted externally. At Gate 3 the following IP assignments should be considered on top of those already presented in the previous chapter:

- If external parties are behind any invention, ensure that IP rights are transferred, and that in the future the firm has access to the inventor. This is important if, for example, the IP ends up in litigation/enforcement.
- Identify core IP that should not, or should only very carefully, be done by external partners during the next stage (the validation and testing process).

GATE 4: At Stage 3, the testing and validation stage, the product is tested, this can often be dealt with by external parties who are specialized within this area. During this stage the work with specialists within packaging and designing is further intensified. Changes can be made to the final product in respect of its visual appearance and packaging, after having shown the product to potential buyers. IP assignments to be carried out before passing through Gate 4, in addition to those mentioned in the previous chapter are:

- Re-ensure that IP has been assigned back to firm as agreed in contracts.

- Monitor process closely, inform stakeholders and keep up awareness of IP.

GATE 5: In Stage 4 the launch is organized, production is started and initial sales begun and monitored closely. The following IP related issues should be considered:

- Align IP strategy with expected life cycle of product, assign budget needed to administrate and keep IP registrations alive.
- Re-ensure partners have delivered as promised.
- Collect and document inventors and how IP is assigned to the firm.

Building on the formalized approach to IP management, Strategic Dealers continuously assess and prune their existing IP portfolio. This is done at regular intervals to identify which registrations could be terminated or licensed, commonly due to covering obsolete products or products where development was unsuccessful. Streamlining or pruning the IP portfolio not only trims away excess costs of unused or redundant rights, but also allows the firm to assess the overall protection of each product and whether the level of protection is aligned with the market strategy. This can, in turn, lead to new registrations to enhance the protection of products or names, keeping in mind the IP strategy of the firm when deciding upon the scope of these rights. Starting this process can be a daunting task, especially for firms with a large unfocused portfolio. But an overview of and insight into the portfolio can prove invaluable. It is not uncommon that firms discover rights they were unaware of when initiating the pruning process, forgotten due to the lack of direction and control within the registration of IP rights.

Right now we are looking at the old portfolio, identifying what we need ... A lot is thrown out but we are also adding new things, and we also need to add some of the new [product] names. And we have identified the markets we are active in, or want to be active in, or are close to being active in. In some cases there's a risk if we make a registration, as we have to be ready to defend against an infringement. So we cannot make registrations everywhere, if we are not ready to enter.
(Marketing Coordinator, Laila Soendergaard, Metso Denmark A/S)

These firms focus not only on ensuring that they obtain the correct IP registrations, but also on defending the position and competitive advantage of the firm through using IP both offensively and defensively. These efforts cover enforcement of rights, using rights to block competition and formalization of external relations and

collaboration. A strategy for blocking the competition requires that the firm is capable of a certain level of prediction of their competitors' strategy, partly due to experience and partly to monitoring competitors new registrations. As discussed previously, many firms survey their competition and, where possible, take out registrations that can act as a roadblock on one or more competitors. The impact from roadblocks might be that the competitor spends substantial funds in modifying an invention to bypass patents.

Most Strategic Dealers make use of contracts to control external collaborations. In addition to the terms of the relationship, these contracts commonly outline who owns the intellectual property covered by the contract. This can range from dictating how a customer is allowed to use the strategic partner's trademarks in marketing material, to the rights to the patents in research collaboration. The level of control and complexity varies by firm and industry. In general, however, firms who rely on a higher level of R&D have more formalized contracts, whereas firms who rely on trademarks and/or designs to compete are more relaxed, as highlighted by a medium size design firm:

To all our contracts we specify that we own all rights to trademarks covering [our firm name], and any infringement will be perceived as a breach of contract. Other than that we are not that formalized in our collaboration with suppliers... We try to make [our contracts] as short as possible, only a couple of pages rather than these 10–20 page contracts. If you have to rely on a 20 page contract just to collaborate, well then you're better off without. (Management Assistant, Henrik Qvist, Kvadrat A/S)

It is necessary to have the right enforcement strategy to defend the firm's position and ensure the retention of competitive advantage. While this can be a troublesome and expensive process, Strategic Dealers know their business can depend on enforcing their rights against any infringement to send a strong signal to would be violators, deterring all but the most determined. The experience of most firms is that enforcing a right always ends up being more costly than expected. Letting an infringement go unnoticed, however, usually comes at a higher cost. Some firms choose to have a very detailed IP budget, highlighting how much is spent on registration of new rights, maintenance of existing rights (for example, paying fees) and costs connected with enforcement. This provides more visibility of the actual costs, allowing the firm to better gauge how they spend their funds.

Experiences and narratives of IP

Strategic Dealers who dedicate substantial resources to working with IP are well aware of the benefits to the firm. Many firms in this category are so relies on their core IP rights that they wouldn't exist today if not for these registrations, or at the very least they would be a shadow of their current size. One of the firms interviewed for this book, an SME in the pharmaceutical industry, reliant on their patent portfolio to remain competitive in their industry. The firm used their patent portfolio as a signal to potential investors, highlighting both the promise of the product pipeline, and the level of protection of future products. While potential investors who knew the firm beforehand did not need this information, the patent portfolio was a useful tool to signal potential investors who lacked in-depth knowledge of the firm and the technology behind the patents. The firm was highly active in patenting early on, building the base of their patent portfolio. This resulted in a slightly bloated patent portfolio, at least compared to some competitors, which was subsequently pruned. While this strategy did commit substantial resources to submit these patent applications, it had the upside of allowing the firm to choose the most promising projects.

IP forms an important part of drafting a prospectus aimed at public financing. It is essential to divulge the IP position, activity and strategy. In recent years we have re-focused our development projects, also IP wise: a number of development projects were closed down and the IP portfolio was pruned. (Vice President IP, Pharmaceutical company)

The firm experienced four rounds of public financing through its early life. As required by European law, the firm issued a prospectus (offering circular) in each round, detailing the potential of the firm to investors. A statement on the IP of the firm was included as part of the prospectus; however, the firm was careful in not providing any assessment of the value of either the complete portfolio or the individual patents. Estimating an exact value of IP is most often a difficult endeavor, whereby the firm left it to potential investors to do their own assessment of the value and importance of the IP.

While using patents as a means of attracting financing remains relevant for firms who rely heavily on technological development, those who rely on other types of rights often find themselves with

different issues. A firm relying on trademarks builds a strong portfolio of brands by trademarking firm and product names and their variations. But what happens when a firm tries to build a business on more generic names that might not be sufficiently distinct to trademark? One case is the Danish jewelry firm Pandora, building a strong international brand and IP portfolio. The firm chose early on to use generic names or descriptions for their products to avoid conflict, the costs of extensive FTO and subsequent infringement suits. The firm focused on trademarking and marketing the name of the firm, the logo and a few major product groups, and decided to use generic names and descriptions for the majority of the individual products, to avoid screening all product names and descriptions, to reduce costs of registrations and to avoid potential lawsuits. The risk lies in the difficulty of marketing a generic name, and the very real possibility that a competitor will use the same generic name on a similar product. However, to reduce the impact of this, the firm keeps its main selected trademarks and uses them broadly in the product line. The strategic IP choices made in Pandora A/S is constantly updated to keep the IP strategy aligned with firm business strategies.

We constantly update our IP strategy. Every time we see a need to be fulfilled we act and deal with it, for example the list of countries in which we have applied our IP is constantly broadened. When the markets, which will be commercial interesting for us in the coming 4–5 years, have been identified, we prepare the IP for these markets. We need to look ahead so others don't come before us. (Head of Global IP, Louise Unmack, Pandora A/S)

Enforcement plays a key role in realizing the value of IP registrations. Something Strategic Dealers are well aware of. While multiple enforcement strategies exist, a key component is a formalized, structured process to ensure that the response to infringement is as uniform and efficient as possible. In the case of a firm designing and producing lighting fixtures, infringement was commonplace in many markets and the future survival of the firm depended on their ability to respond to these challenges. To ensure that enforcement was as efficient as possible, a formal strategy was drawn up, highlighting the steps to be taken in the case of infringement. At its most basic level it was a combination of a flowchart and a checklist, asking the central questions needed to form a response to an infringement. This included questions

such as whether the firm had any IP rights in the specific region, whether they were registered and how risky it was to conduct lawsuits in that country. However, in spite of these formal steps for fighting infringements, the result was not always a lawsuit. Essentially, lawsuits are expensive and associated with a high degree of uncertainty, and a firm may choose to pursue other means of fighting infringements. One firm discovered a design very similar to one of their products during a search procedure; however, in spite of a visual similarity, the owner was located in an entirely different industry and was not a direct competitor. While the firm could have chosen to file a lawsuit to uphold their right, they went with a more careful approach and simply contacted the owner of the infringing design, discussed which rights were owned by whom, and ended with a fair settlement between the parties. While this did not prevent the manufacture of a visually similar product, the settlement ensured that both parties were allowed to continue production, provided they did not enter into each other's industry. A simple low cost solution made possible because the two firms operated in different industries, and not as competitors.

We contacted them, told them of our ideas with the product and figured out which rights were in play. This ended peacefully, with a settlement. (Corporate IPR manager, Electronics manufacturer)

Aims and goals

The Strategic Dealer uses IP as an integral part of the firm's overall strategy, relying on innovative capabilities, breakthrough ideas and novel designs to sustain a competitive advantage. This is key to a firm's continued survival and growth, which is the aim for Strategic Dealers. Also, most Strategic Dealers exist in their current form due to this focus, and rely upon it to build future success. However, these firms are constantly working to improve the way these core capabilities are protected, whether through extensive patenting or trademarks. Varying levels of IP management exist within Strategic Dealers and few firms consistently follow or develop best practice. Many of these already advanced firms see benefits in further developing their IP strategy and the internal processes used. Unlike IP Rookies, the IP Strategic Dealer is well aware of this challenge, and is actively working to improve their position.

The new technology we are developing, in [...], there's no competing products to day, except for the known [technology]. So we are first in a completely new technology. It is obvious that if we introduce this change in power supplies, a number of large multinationals will enter the market quickly, so it would be nice if we had some sort of protection, in spite of it being difficult to enforce. (Founder & Chief Technical Officer, Bjørn Andersen, Noliac)

Some firms have developed their IP capabilities to the level where they are not only working with it externally through advisors and in collaboration with other firms, but also working to influence policy makers in an effort to effect legislative developments. The firms involved in this have a well-established experience in working with IP, they know exactly which legislative challenges they face, and how to alter them. This is a difficult process, and not something covered within this volume. It can, however, be beneficial to be aware that some firms are engaging in these activities, and that they can affect your current position.

Next step for the Strategic Dealer

A main distinction between IP Strategic Dealers are those who have a formalized IP strategy and those that do not. For those that have yet to formalize strategy considerations, a first step is to consider whether it would be beneficial and therefore whether resources should be put into developing one. Having a formalized strategy, even though it might only be one page, enables the IP manager to outline the dimensions and scope of the strategy (see Chapter 7 to review potential content of an IP strategy), and therefore also, very importantly, outline the limitations to active decisions and of what not to include. Such a document therefore spells out the aims and goals of the strategy and how it supports and develops in coexistence with the firm's business strategy.

IP Strategic Dealers have the basics in place, at least at management level and with the person in charge of implementing the IP plan. What can be challenging for the Strategic Dealer is convincing the organization of and keeping it aware of IP, and thereby ensuring continued input from stakeholders, for example that R&D, sales and marketing all report back on agreed issues. Formulating a strategy to keep stakeholders engaged might be a beneficial next step. Such a document could include considerations on how new employees are introduced to IP, how R&D staff are kept informed about competitor's

Table 7 Overview of the Strategic Dealer

IP RESOURCES:	IP PROCESSES:
<ul style="list-style-type: none"> • The obligations and assignments related to IP are identified • Often an internally trained IP person is in charge of IP • Systematic learning of IP in the firm • Focus on IP from management as well as researchers/creative persons in the organization • Uses combinations of IP rights to ensure best IP position • IP budget assigned • Collaborates in many other situations: cross-licensing, patent pools, etc. 	<ul style="list-style-type: none"> • Active decisions concerning how, when and what to keep track of internally – focuses actively on make or buy decision • Formalized utilization of stage-gate models • In- and out-licensing a frequent activity to ensure IP position and to meet IP strategy laid out • In contact with international IP experts • Assesses IP position continuously • Focuses not only on obtaining IP rights but also on defending firm's IP position through an enforcement strategy
EXPERIENCES AND NARRATIVE OF IP:	AIMS AND GOALS:
<ul style="list-style-type: none"> • IP is important and a core element in a business strategy • IP position is strong (for business areas where it is wished for) • If it hadn't been for IP (or the person who started focusing on IP in the firm) the firm could not have been in current position • Resources for IP may be constrained, decision concerns optimization • Has an overview of what IP the firm has and hasn't • Challenge is the expenses related to IP – need to be controlled and assessed • Feels that external IP advisors are important players to ensure strategy • Enforcement is a challenge – costs and uncertainty/risk 	<ul style="list-style-type: none"> • IP is part of the overall business strategy • Firm has innovative capabilities and has strategies to retain and develop them • Firms may be market and innovation leaders, and may experience followers constantly challenging firm's position in regard to both technologies and branding • Growth

IP activities, how sales should report if they see copied products, and so on. In some organizations it can be very influential to assign IP ambassadors in different departments across continents who, besides their regular duties, are also the IP department's extended arm and

eye. It is valuable to have a group of dedicated ambassadors, well trained in regard to the complex world of IP and who can conduct initial guidance of other employees, be the local sparring partner and help ensure identification of potential IP issues. In this respect feedback from the ambassadors on how to communicate and translate IP into something valuable and mattering for the specific team and department is also possible.

- Formalize IP strategy (or not)
- Consider change/optimization concerning which IP activities should be internal or external
- Dedicated budget assessment
- Ensure awareness and support for IP strategy in organization
- Assign persons in the organization as ‘IP ambassadors’

Exercises

1. What characterizes the IP Strategic Dealer?
2. What mechanisms do you think an IP Strategic Dealer should change in order to develop into a different IP archetype?
3. What are the main IP considerations to have in a stage-gate model for the IP Strategic Dealer?
4. Which types of firm would you expect to find as an IP Strategic Dealer

Recommended readings and bibliography

Cooper, R. G. (2008), “The Stage-Gate Idea-to-Launch Process – Update, What’s New and Nexgen Systems”, *Journal of Product Innovation Management* 25(3): 213–232.

7

IP Strategy

Abstract: *In this chapter we present the scope, direction and dimension of an IP strategy. Developing an IP strategy is vital to ensuring that any IP related activities are aligned with the overall goals and objectives of the firm. An IP Strategy should consist of the objectives, principles and tactics related to using IP within the firm. Three types of IP Strategy are presented: a proprietary strategy, which uses IP to shield the firm's competitive advantage; the defensive strategy, which focuses on ensuring the firm has the freedom to operate in the future; and the leveraging strategy, which uses IP as a bargaining chip. We present a taxonomy of an IP strategy, consisting of a patent strategy, a trademark strategy, a design right strategy, a copyright strategy, a trade secrets strategy and an enforcement strategy. Each of these parts of the overall IP strategy covers the scope of timing and geography, setting up criteria for when and where to apply for IP rights. The patent strategy is further expanded to cover technology, to help the firm decide which technologies to patent. As a part of the enforcement strategy, we present a model for an enforcement hierarchy, highlighting the different levels and methods available to enforce IP rights. In addition, the chapter introduces the basics of the different types of IP rights, providing an overview for the reader not familiar with IP rights.*

Overview

In the previous chapters we introduced different IP archetypes based on two dimensions. In this chapter we discuss one of the dimensions in more detail, namely IP strategizing. We focus on how IP Rookies or

IP Dealers can start working with IP strategically in order to become IP Strategists or IP Strategic Dealers. The chapter also outlines IP strategy considerations, which IP Strategists and IP Strategic Dealers may find inspiring for their continuing work with IP strategizing. The chapter therefore focuses on the mechanisms that play a role when developing an IP strategy, and distinguishes between their characteristics. This approach may help managers identify their situation by enabling them to compare their characteristics with the value creation and value capture approach to IP strategy presented.

Scope, direction and dimensions of an IP strategy

The word strategy originates from the Greek word *stratēgia* and refers to having a higher level plan to achieve identified goals. Chandler (1962) defines strategy as:

the determination of the long-run goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals.

Firms often strive to achieve multiple objectives. The most common being to produce a profit. In addition to creating and maintaining a profitable business, goals can be multifaceted and of a less financial nature. Novo Nordisk, a global insulin provider, states that their goal is “to defeat diabetes by finding better methods of diabetes prevention, detection and treatment.” Similarly, the LEGO Group, one of world’s best known toy manufacturers, publicly states that the firm aims to “inspire and develop children to think creatively.” Below is an outline of how an IP strategy is part of achieving a firm’s goals.

The role of IP

Corporate business strategy literature will identify a number of strategies, including common concepts for strategies in marketing, R&D, sourcing, and innovation. Each of these underlying strategies are sub-elements in developing and implementing the firm’s overall business strategy and an IP strategy is a subset of this pool. IP may play a role in the strategic planning at several levels. IP can play a major part at a corporate level, but might also be incorporated within different

business units or even at project level. In principle, IP can be influential at any part of a firm's value chain and organizational level.

In sum, an IP strategy is a plan that consists of objectives, principles and tactics relating to the use of IP within a particular organization. Sullivan and Raley (2010, p. 10) define an IP strategy as:

the collective set of decisions an organization makes regarding the actions, the positioning, and capabilities it seeks to achieve with its intellectual property in order to support its long-term business objectives.

This emphasizes IP as a valuable asset with commercial potential instead of as a set of defensive or passive legal rights. Sullivan and Raley (2010) suggest that firms strategizing their IP can benefit from outlining the business strategy step by step, and then considering whether the IP position can be developed to complement each step. This is exemplified by the step-by-step approach to business strategy suggested by Hembrick and Fredrickson (2005) that contains five main questions to be answered to build a business strategy:

1. Arenas: Where will we be active?
2. Vehicles: How will we get there?
3. Differentiators: How will we win in the market place?
4. Staging: How quickly will we move, and in what sequence?
5. Economic logic: How will we obtain our returns?

In the process in which the firm decides on the firm strategy, these questions should also be rephrased, including IP-specific considerations, such as:

1. Arenas: What role will IP play to support the business? What will IP support and not support?
2. Vehicles: Which IP instruments should be used, and what capabilities are needed in order to obtain, remain and enforce the IP?
3. Differentiators: What type of IP firm will the firm pursue, for example, aggressive or passive with regard to competitors and infringers?
4. Staging: What are the IP activities to be pursued to complement the business, for example educational programs and awareness

campaigns (in-house or in the market), at what speed and in what sequence?

5. Economic logic: How will IP be used to measure the results, using what success measures, and how often should the assessments take place?

In this way the step-by-step approach may be instrumental in guiding the development of an IP strategy. Complementary to the normative literature on strategy mentioned above, a number of academic studies have described distinctive types of IP strategy, in which patent strategies particularly have been studied in depth. Three main patent strategies are *proprietary*, *defensive* and *leveraging* (Somaya, 2012).

The most often mentioned aim of a patent strategy is to secure a *proprietary* market advantage (Rivette and Kline, 2000). A proprietary patent strategy is based on a basic resource-based logic, meaning that the patents are used to shield firm's competitive advantages, often in the form of keeping technological products from competitive imitation (Lippman and Rumelt, 2003). Firms using a proprietary patent strategy can choose to benefit from the proprietary right either by placing the products on the market themselves (Teece, 1986) or by licensing the technology to a partner with specialized core competencies and market access (Arora and Ceccagnoli, 2006). In recent decades the proprietary licensing strategy has been used by many smaller biotech firms. Certain types of innovation are more prone to be part of a proprietary patent strategy: if it is difficult to produce a licensing contract to retain the exclusive right to use the technology (Hill, 1992); If the technology to be protected is core to the firm (Teece et al., 1997); Or if it creates significant market opportunities or has few substitutes (Polidoro and Toh, 2011).

Another type of patent strategy dealt with in patent literature is the *defensive* patent strategy, which is characterized by stopping others from occupying a technological space the firm wants to occupy in the future. This strategy is often related to heavy patenting, with firms using, for example, patent thickets, defensive blocking and strategic patenting in order to dominate the landscape. Defensive patent strategies often take place in high-tech industries where substantial investments in business opportunities are carried out ex ante identification of the rightful owners of the technological inventions. Fast moving, technology intensive industries also exhibit a tendency for defensive

patent strategizing since products in these markets are based on a multi-invention context so that several technologies are embedded in one final product (Hall and Ziedonis, 2001, Somaya et al., 2011).

A third strategic patent approach described in literature is that of *leveraging*. These firms consider patents as bargaining chips, from which future direct or indirect profits can be realized. Patent trolls and patent sharks belong to this category. An example of a direct leveraging strategy is when firms apply for patents to engage in patent licensing of technologies that are not core to the firm. Firms in this category apply for patents with the main objective of holding up firms, and negotiating valuable settlements (Reitzig et al., 2007, 2010). A leveraging patent strategy can also be utilized later in a R&D process, for example, when a firm sees that a certain patent portfolio does not fit the needs of the firm any longer. They then try and sell the portfolio to other firms in the market, to the patent trolls or any third party who could benefit from the portfolio. These three patent strategies, proprietary, defensive and leveraging are not mutually exclusive and a combination is commonly used to secure a firm's objectives.

The above types of patent strategies can be hard to disentangle and implement for many firms. A thorough understanding of the patenting process and patenting details are needed to use any of them. Furthermore, patenting might only be useful for some firms. In response, the IP strategy taken from Sullivan and Raley (2010) can be beneficial for firms. They may, however, also be difficult to implement unless the firm has a deep understanding of each of the tools available in the IP toolbox. In this book we therefore take a different approach and outline the considerations behind a full *IP strategy*, not merely focusing on patenting and serving large high-tech firms who understand patenting. We also try and consider the situation of non-technical and smaller firms who need an introduction to IP strategizing at an operational level.

An IP strategy can be implied from the organization's behavior towards IP decisions, and may or may not be written down in a document. However, an IP strategy should be expressed in such a way that it explains how IP should be utilized as part of an organization's overall corporate strategy and how it is linked to the firm's business and/or product strategies. It should outline the specific role that the IP strategy can play to support and develop the firm's business. One way

of outlining an IP strategy is to determine the dimensions and scope of each element in the IP strategy. This is the approach we have developed to serve as a toolbox for firms initiating or further developing an IP strategy.

Dimensions of an IP strategy: a taxonomy

Dimensions of an IP strategy refer to the elements a firm targets in its IP strategy and therefore its IP conduct. A firm can be very narrow in its approach and only use trademark protection as means of protecting its goods. Alternatively, it can apply all dimensions to create a solid ground to operate from. An example could be a lighting manufacturer using patents to protect the technology, design rights to protect the shape of the lamp and trademarks to protect the logo of both firm and the individual product.

The dimensions to consider in an IP strategy are dependent on the objective of the firm's IP strategy, as well as the external environment in which the firm operates. In this chapter we outline a taxonomy of the dimensions in a corporate IP strategy, which can consist of six related strategic elements: patents, design, trademark, copyright, trade secrets, and enforcement. In prior literature IP strategy has been closely linked to only one of these sub-elements, the patent strategy. This, however, is incomplete, and does not benefit from the other types of dimensions available. Neither does it reflect how firms engage in crafting and executing IP strategies.

Several of the strategy dimensions presented in Figure 4 are inter-linked. We will begin by explaining each strategy separately and then highlight where they overlap. The strategies presented below will refer to the scope of decisions to be made concerning the individual elements; in this way these decisions will together frame a chosen IP strategy.

One of the main reasons for implementing a strategic approach is the cost associated with utilizing IP in creating a solid business. Roughly speaking, the costs of applying for a patent in 11 countries (US, JP, UK, CN, DE, BR, IN, RU, IT, ES, FR) amount to about \$115,000 when using the PCT (patent cooperation treaty) filing system. This estimate includes the drafting of the patent application, novelty and patentability search, validation and translation of patent, and the fees to local patent offices. Applying for a trademark in the same geographic locations would roughly be one tenth of a

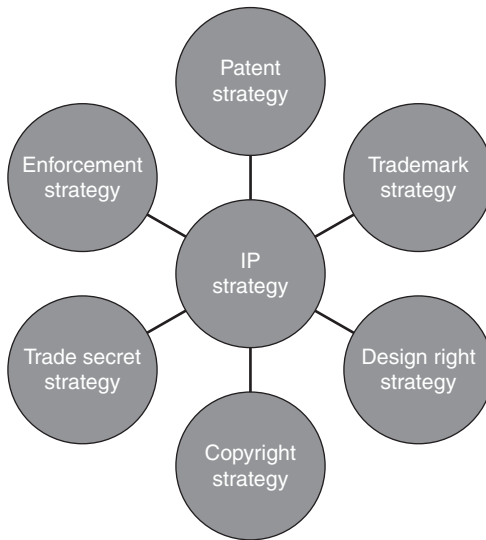


Figure 4 Elements of an IP strategy

patent application (approx. \$10,000). Design registration in the same geographic regions would add up to about \$8,000.¹

These estimates show that IP strategizing is heavy on resources. Managers need to make decisions concerning the scope of each dimension at each level because of the costs and resources needed when implementing subsequent IP strategies.

An IP strategy can be beneficial as both a corporate and a product IP strategy. The corporate IP strategy outlines the dimensions and scope at an overall level. The product level IP strategy enriches the link between the corporate IP strategy and its implementation at the level of individual products. Before we discuss each element, we will outline the objectives firms identify as the main reasons for utilizing the different elements.

Objectives: why do firms utilize IP?

The literature on appropriation mechanisms has identified a number of reasons why firms utilize and combine IP rights. The research shows that firms typically protect their inventions with a range of

mechanisms, such as patents, secrecy, lead time advantages and the use of complementary marketing and manufacturing capabilities. However, the research also shows that patenting is the least favored by the firms investigated (Levin et al., 1987; Cohen et al., 2000). Comparing Cohen et al. (2000) with earlier empirical evidence provided by Levin et al. (1987) also shows that patenting activities have shifted towards larger firms and that the reasons for patenting are different between industries. Firms patent to keep competitors from developing substitutes in the discrete product industries (for example, pharmaceuticals). In complex product industries (for example, semiconductors) firms apply for patents to force competitors to participate in negotiations.

The sample of firms considered as part of the research conducted for this book (>3,000 firms) consists of two sub-samples of equal size – a random sample of firms and a sample drawn from the population of IP active firms (see Chapter 2 for an in-depth description). Accordingly, the utilized sample cannot be considered random with an overrepresentation of IP active firms. The descriptive statistics below therefore show a bias towards the more active IP firms, and should be read with this in mind.

Initially, we investigated which types of IP the sample of firms applied for. We find that 32 percent of sampled firms applied for trademarks, 10 percent for patents and 3.5 percent for design rights. A majority (more than 60 percent) did not apply for any IP rights in the period between 2000 and 2010. This is in spite of the sample bias towards IP active firms. These figures also indicate that a number of firms combined several types of IP during the time period. In Figure 5, we show in detail how firms combined IP rights. Twenty-four percent of the firms strictly applied for trademark whereas five percent combined it with patent applications and one percent with design right applications. Finally only one percent combined all three types of IP. The combination of designs and patents are rare and only accounts for less than one percent.

Figure 6 and Figure 7 illustrate how IP activity covaries with the size of the firms and their industry affiliation respectively. We find a significant difference in number of employees when comparing IP active and IP inactive firms; 75 percent of micro firms are inactive where as this percentage shrinks as the size of the firms increases. Indeed, 57 percent of SMEs and 35 percent of large firms prove inactive (see Figure 6).

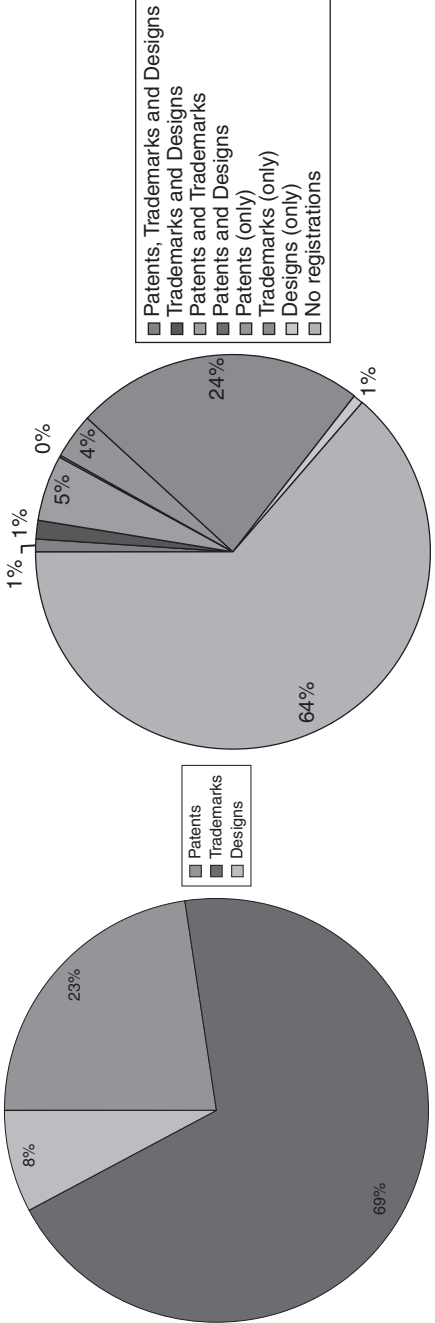


Figure 5 How firms use and combine IP rights

Figure 7 shows five industry categories and the average percentage of active firms within each. Manufacturing, mining and quarrying, and public utilities are most active with around 55 percent of the firms being IP active. This is closely followed by the information and

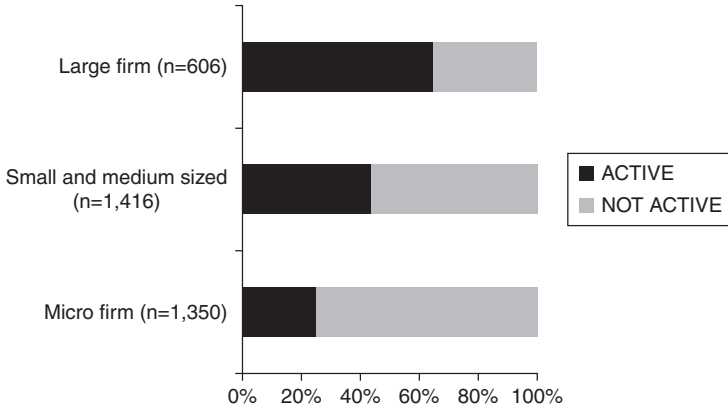


Figure 6 Percentage of firms (in)active in any IP registration (2000–2010) divided by firm size

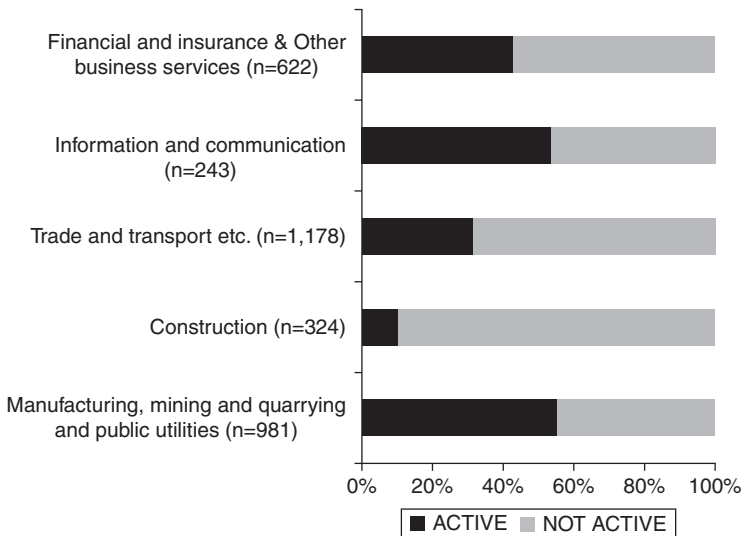


Figure 7 Percentage of firms active in any IP registration (2000–2010) divided by industry

communication industries in which 54 percent of firms are active in registering IP rights. The category scoring lowest is the construction industry where only 10 percent of firms are IP active.

Patent strategy

The patent basics

Box 7.1 contains introductory details about patents, which the reader unacquainted with patents should read first.

Who patents?

In total 194,400 PCT patent applications were filed in 2012, an increase of 6.6 percent on the year before. Applicants from the US filed 26.3 percent of all PCT applications, followed by Japan (22.5 percent) and Germany (9.6 percent). Over the last decade there has been a lot of activity handing in patent applications within China. More recently, however, the Chinese are becoming more active in handing in patent applications through the PCT system. With current growth rates, China is expected to take over Germany's position as the third most PCT patenting active applicant country within just a few years. However, there is an annual increase in the number of applications from most OECD countries.

Large multinational firms that file numerous national and international patent applications drive the majority of global patenting activity. However, the level of patenting activity depends on the industry, and whether a few or several thousand patents cover the products within it. The most PCT patenting active firm in the world also happens to be Chinese. As Table 8 shows no Chinese firms were among the top ten PCT patent applicants in 2006. In 2012, however, the picture had changed. Two Chinese firms were in the top ten, ZTE Corporation and Huawei Technologies were #1 and #4, respectively. In contrast the US had three firms (3M, Intel and Motorola) in the top ten in 2006, whereas only Qualcomm made it onto the list in 2012.

Our sample of firms also shows that the level of patenting activity differs both between industries and across firm sizes; In Figure 8, we show that 31 percent of firms belonging to manufacturing, mining and quarrying, and public utilities have applied for one or more patents within a ten-year period (2000–2010), all other industries are below 10 percent. Interestingly, we find that 9 percent of firms

Table 8 Top 10 international patent applicants in 2012 and 2006

Applicant's Name	Country Of Origin		Applicant's Name	Country Of Origin	
	2012 PCT Applications	2006 PCT Applications		2012 PCT Applications	2006 PCT Applications
ZTE Corporation	CN	3,906	Koninklijke Philips Electronics N.V.	NL	2,494
Panasonic Corporation	JP	2,951	Panasonic Corporation	JP	2,345
Sharp Kabushiki Kaisha	JP	2,001	Siemens Aktiengesellschaft	DE	1,481
Huawei Technologies Co. Ltd.	CN	1,801	Nokia Corporation	FI	1,040
Robert Bosch Corporation	DE	1,775	Robert Bosch Corporation	DE	966
Toyota Jidosha Kabushiki Kaisha	JP	1,652	3M Innovative Properties Company	US	728
Qualcomm Incorporated	US	1,305	BASF Se	DE	716
Siemens Aktiengesellschaft	DE	1,272	Toyota Jidosha Kabushiki Kaisha	JP	704
Koninklijke Philips Electronics N.V.	NL	1,230	Intel Corporation	US	691
Telefonaktiebolaget Lm Ericsson	SE	1,197	Motorola, Inc.	US	637

Source: <http://www.wipo.int/ipstats/en/>

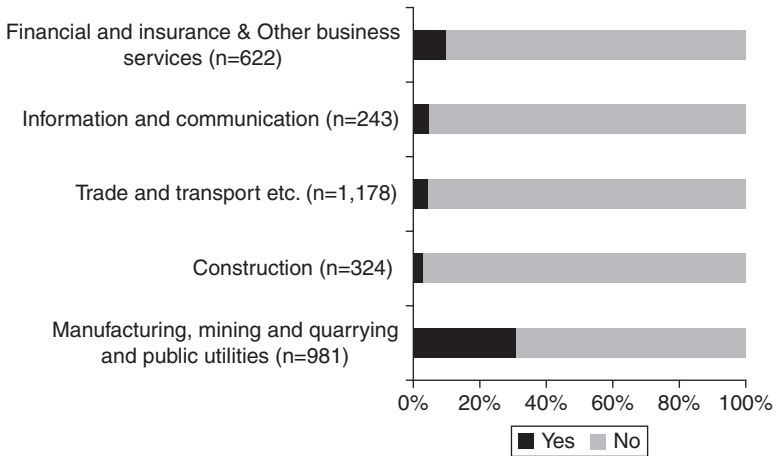


Figure 8 Percentage of firms active in patenting (2000–2010) divided by industry

in financial and insurance, and other business services are active in patenting. Among large firms, defined by having 250 employees or more, 22 percent patented. A little more than 13 percent of the medium sized firms (between 50 and 250 employees) had used patenting between 2000 and 2010, whereas only 8 percent of micro firms patented in the same period (see Figure 9).

There are other factors which correlate with patenting. Diagrams in Figure 10 contain scatter plots for four different factors: turnover, productivity, firm size, and international sales. They show that there is a positive correlation between: (a) turnover (log) and number of patents applied for per year; (b) productivity and the number of patents applied for in the year; (c) firm size and number of patents applied for; and (d) exports and the number of patents applied for. The relationships are presented with the patenting activity on the X-axis and the four indicators on the Y-axis.

Larger firms are obviously more active in patenting due to greater funds and a larger development budget. However, the firms most active in patenting are, in general, also more productive when taking firm size into account. The data reveal that turnover and exports also positively correlate with patenting activity after controlling for firm size (see Figure 11)

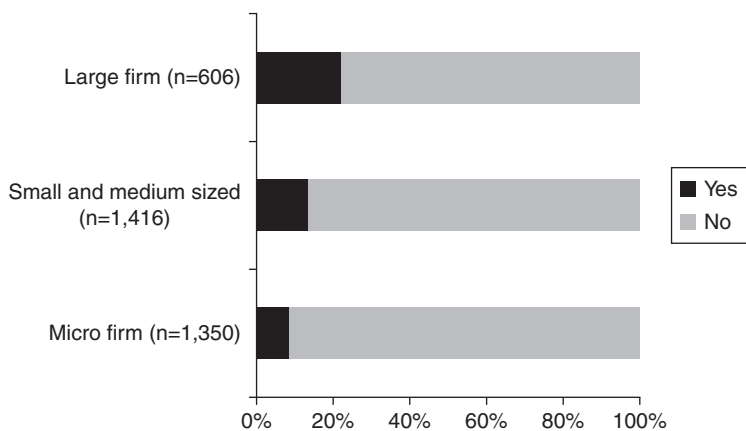


Figure 9 Percentage of firms active in patenting (2000–2010) divided by firm size

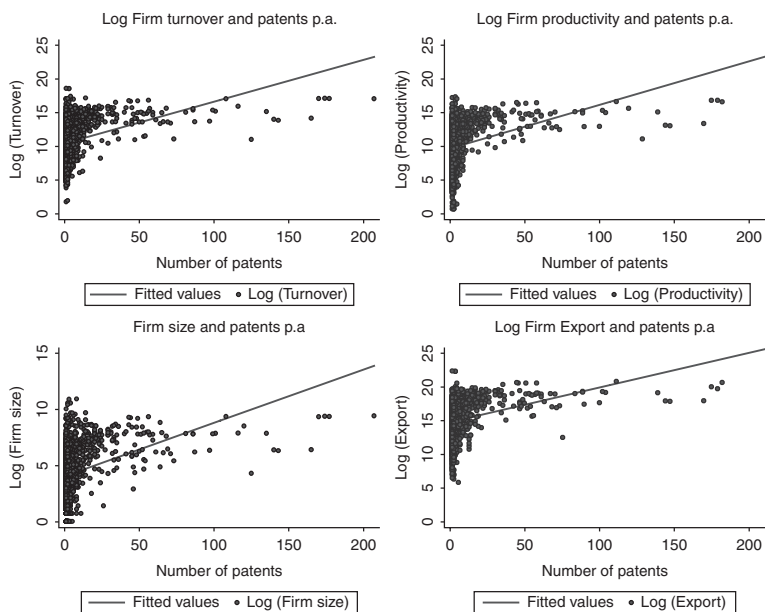


Figure 10 Turnover, productivity, firm size, and exports, compared to annual patent applications

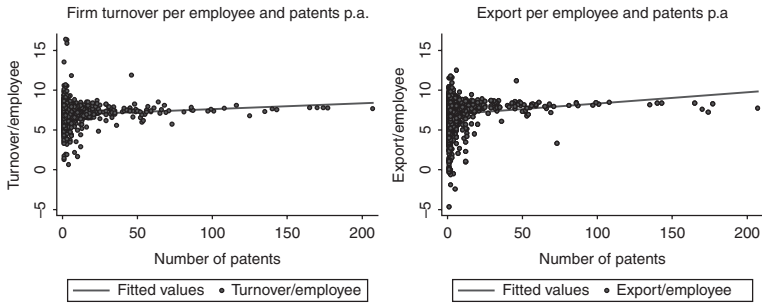


Figure 11 Turnover and exports per employee and patents

Box 7.1 Patent basics

The word patent stems from the Latin words *litterae patentes*, referring to an “open letter”. The “open letter” was used by city states and monarchs to confer an early form of intellectual property right. These letters were typically verified by a royal seal, placed so that the letter could be read without breaking the seal. While evidence exists that the concept of a patent was used as early as 500 BC in ancient Greece, it is generally acknowledged that the first patent system was established in 1474 in the Republic of Venice. As craftsmen and citizens of Venice migrated, they continued to seek patent protection in their new homes, spreading the idea of the Venetian patent system across Europe.

The patent in its basic form is a legal tool granting an exclusive right to the owner to keep others from using, manufacturing, selling, marketing, and developing a technical invention, software or business method protected by that right. In return for a period of exclusivity granted by the patent, the inventor discloses important information about the technology as part of their patent application. The patent application must describe how the technology works, how it can be applied and contain sufficient information to allow a person skilled within the field to reproduce the technology. These requirements ensure that society as a whole will benefit from the patented technology when the period of exclusivity granted to the inventor expires.

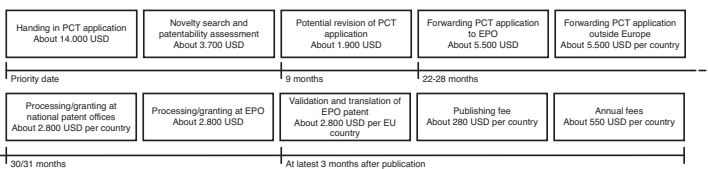
The patent is granted based on three distinct criteria of patentability: *novelty*, *non-obviousness* and *industrial applicability*. Novelty requires, as the name implies, that an invention is new and not previously disclosed or published. The second requirement of non-obviousness (also referred to as inventive step), exists to prevent patents from being granted to technologies following normal product development, and ensure that only inventions that go beyond the current state of the art can be patented. The final requirement of industrial applicability, concerns whether the invention

can be utilized in an industry. While the concept of industry is broad, this requirement exists to ensure that inventions patented have a potential for use in the development or manufacturing of products, or in products themselves.

While patentability of an invention does show the level of industrial applicability and novelty of the invention, it does not necessarily equal usefulness (innovation). Many patents are never utilized to generate value for the firm and, while some patents may act as deterrents to potential infringement, the majority are never utilized and hold no actual value (please refer to the discussion below on the value of patents). Therefore, the act of patenting should be treated as a method for keeping other parties from utilizing the technical inventions of the firm, rather than being the objective itself.

Once a patent is granted, it works as a legal tool for a limited period. Patent protection is granted for 20 years from the date the patent application was handed in to the patent office, though national patent offices can vary in the extent of protection granted (See Box 7.2 for a more detailed look at the application process). During this protection period the owner of the patent is effectively granted a means to defend the invention from infringement and has a foundation to initiate litigation should infringement take place. Once protection ends the patent reverts to a public good and the owner is stripped of the right of exclusivity. Note that patenting is not free; in addition to the costs of developing the patent application, application fees and renewal fees must be paid. Fees are paid per country the patent is applied for in. Patent costs can vary a lot depending on the number of countries that the applicant decides to pursue the individual patent in. While these costs may seem small from the perspective of a multinational firm, SMEs often find the cost of patenting hard to overcome. For multinationals it is evidently the large patent portfolio that can incur quite high costs from these fees alone. An overview of the costs associated with a patent application is presented in this example where the application is being filed in 11 countries using the PCT filing system, five EU and six non-EU countries. The total cost of applications in this example is about \$115,000, with annual renewal fees of about \$6,100.

The estimated costs here are calculated based on a relatively simple application within mechanical engineering, covering 15 pages with 10 claims. Actual costs will vary based on country list, technology area, translation costs and costs of a qualified patent attorney.



Estimated total cost (excluding annual fees): About 115,000 USD

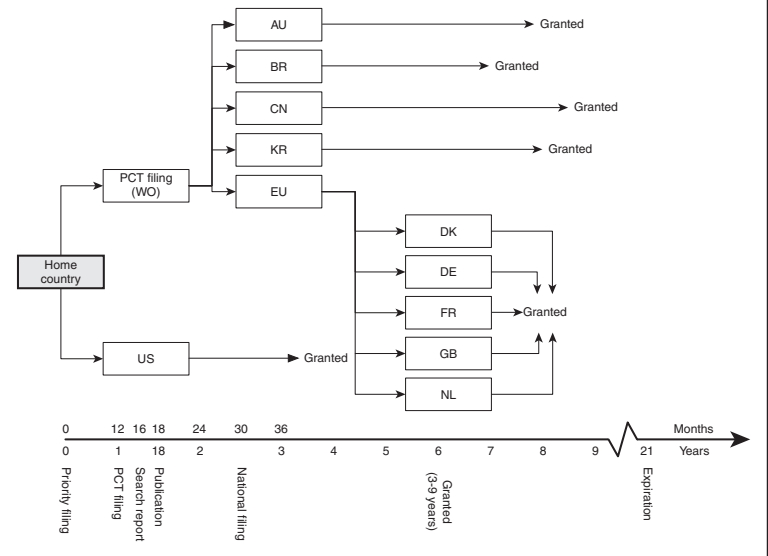
Annual fees: About 6,100 USD

Calculations from <http://www.ipccostbenefitguide.dk>

Related to patents are utility models, also referred to as a ‘poor man’s patent’. The requirements for obtaining a utility model, while similar to that of a patent, are less restrictive. Due to this utility models are most commonly used to protect inventions that are more incremental, such as cases where little or no inventive step is present. In addition to being less restrictive, utility models have a shorter duration, typically seven to ten years, and the costs of applying and maintaining utility models are considerably lower than for patents.

Box. 7.2 The patent application process

The filing of a patent is commonly started by filing an application at the patent office in the home country of the assignee. Within the first 12 months after application, the assignee can choose to apply for a patent in additional countries. In the above figure, the assignee chooses to apply for a patent in the US within this period. These countries are typically important markets to the assignee, so an application is sent to those patent offices soon after the initial application. However, in our example the assignee wishes to have their patent filed in further countries, though the assignee does not know exactly which countries to apply to due to an uncertain market situation. In addition, each additional country increases the cost of application and renewal of the patent, and our assignee wishes to choose only relevant countries to keep costs down. In a situation where the assignee wishes to apply in a number of countries, but needs more



time to choose these, a PCT filing to the WIPO is of particular use. A PCT filing has to be done within the first 12 months of the initial application; however, the assignee can specify a broad country list in the initial publication, including all potential markets. This country list can be altered up to 30 months after the initial application, providing the assignee with a longer period of time to gauge potential markets, production and transit countries where the patent needs to be in effect. Keep in mind that altering the country list is a process of elimination, countries can only be removed and not added after the initial PCT filing. As part of the PCT filing, the assignee chooses to send their application to the EPO and specifies a further list of countries within the EU where the patent application is sent. Note that neither the PCT or EPO filings are compulsory, but are an easy way to apply for the same patent in multiple countries. The assignee can choose to send individual applications to each country as well.

The search report is published after 16 months. This report from the patent office specifies which prior art exist and, based on this, whether the invention covered by the application is indeed patentable, then 18 months after filing the application, the patent application is made public. In the case of a PCT filing, the application process enters a new phase 30 months after the filing date. At this point the international phase ends, where the patent is processed primarily by the WIPO, and the application enters the national phase. At this point the application is filed to each of the national patent offices specified in the PCT application. The national patent office is responsible for deciding whether protection can be granted in their country. The patent is typically granted three to nine years after the filing date, depending largely on the speed of each patent office and the complexity of the invention disclosed. The granted patent expires 21 years after the filing date, though some local variations exist.

The process originally dated back to the European Patent Convention of 1973, which covers 38 countries (28 EU countries and 10 others: Albania, Iceland, Lichtenstein, Monaco, Republic of Macedonia, Republic of Serbia, Switzerland, Norway, Turkey and San Marino). While this process is simpler than applying for a patent in each country individually, a patent granted by the EPO still needs to be verified by each participating country. This validation process varies by country and ranges from a simple acceptance of the EPO patent to requiring a complete translation of the patent text and compliance with national regulations.

The EPO application process described above changed in 2014 as legislators sought to simplify the process with the implementation of the Unitary Patent and the Unified Patent Court. The Unitary Patent is granted in all participating countries when the patent is granted by the EPO, omitting the need for selecting countries, national validation and translation. The Unitary Patent should, in many cases, reduce costs to the assignee and the overall complexity of the process. At the time of writing, the Unitary Patent convention has been signed by 25 EU member states (excluding Italy and Spain); however, some countries may withdraw from the agreement prior

to its implementation. It is worth noting that the Unitary Patent and the current European Patent Convention are not mutually exclusive and will continue to co-exist, allowing the assignee to choose which route to pursue when handing in a patent application to the EPO.

IP archetype and patents

In previous chapters we presented the different IP archetypes, in terms of their IP behavior. Specifically we addressed their differences in organization, process, aims, experience and narrative. From the qualitative descriptions one also expects that each archetype would show a variance in terms of the scope of the actual IP instruments implemented. Below we investigate the connection between the individual IP archetypes and the extent to which they use patenting.

First we investigate the distribution of patenting active firms across IP archetypes (see Figure 12). The IP archetypes are significantly different although certain types do resemble each other. Unsurprisingly Inactive firms are the least active, with only 3 percent of firms in this category applying for a patent between 2000 and 2010. Rookies (12 percent) and Dealers (11 percent) are more or less at the same level, while both Strategists (33 percent) and Strategic Dealers (37 percent) stand out as patenting active firms.

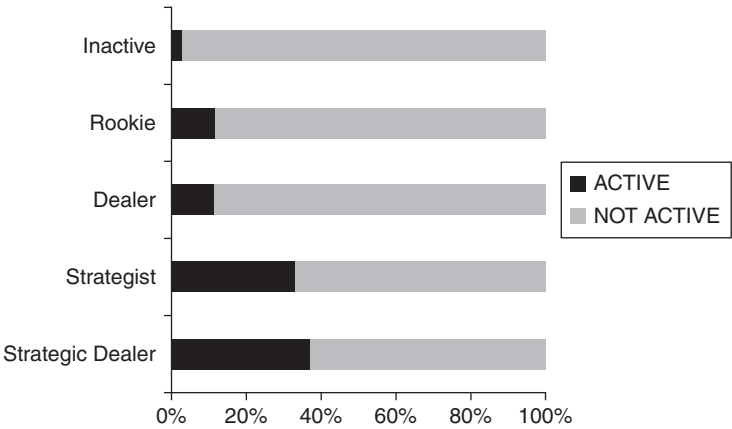


Figure 12 Percentage of firms active in patenting (2000–2010) divided by IP archetypes

Also, the scope of the patenting activities differs across IP archetypes. The IP Inactive firm, on average, will have applied for 0.07 patents over 10 years, which is significantly less than all other IP archetypes (see Table 9). The IP Rookie and IP Dealer apply for 0.23 and 0.44, respectively, which is significantly less than both IP Strategists and IP Strategic Dealers. While the IP Strategists and IP Strategic Dealers showed only a small difference in terms of percentages of patenting active firms in Figure 12, the report on average number of patent applications shows a very different picture. The IP Strategic Dealers are by far the most patenting active firms, with an average of 13.96 patents over a ten-year period. The IP Strategist only applied for 3.26 patents in comparison. The difference is therefore approximately one patent per year on average. Therefore, while the two groups looked similar on percentage of active firms, the IP Strategic Dealers nevertheless outperform all other groups.

Why patents?

There are a number of reasons why firms engage in patenting. In the introduction to this chapter we introduced patent strategies for proprietary, defensive or leveraging reasons. This includes: block competitors; enhance reputations; prevent others from copying and thereby

Table 9 IP archetype and average number of patent applications

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.07	0.23	0.16***
IP Inactive	IP Dealer	0.07	0.44	3.19***
IP Inactive	IP Strategist	0.07	3.26	3.19***
IP Inactive	IP Strategic Dealer	0.07	13.96	13.89***
IP Rookie	IP Dealer	0.23	0.44	0.21
IP Rookie	IP Strategist	0.23	3.26	3.03***
IP Rookie	IP Strategic Dealer	0.23	13.96	13.73***
IP Dealer	IP Strategist	0.44	3.26	2.82***
IP Dealer	IP Strategic Dealer	0.44	13.96	13.52***
IP Strategist	IP Strategic Dealer	3.26	13.96	10.70***

Note: *, p<0.1, **, p>0.05, ***, p>0.01

to secure returns on investment; prevent lawsuits; have strength in a negotiation; and generate revenue streams by out-licensing (Levin, 1988; Cohen et al., 2000; Gonzalez-Alvarez and Nieto-Antolin, 2007; Heeley et al., 2007; Dechenaux et al., 2008). There are also a number of other benefits that firms can achieve with access to public patents. They can be used as sources of knowledge, to identify competitors, to survey competitors, and as inputs to FTO analyses of own technological products.

The first step in the creation of a patent strategy is to identify which purpose or purposes it should fulfill. The following question is how to fulfill this objective. Making informed decisions concerning a firm's patent strategy as one of the sub-elements in the overall IP strategy concerns making decisions in relation to three main factors: technology, timing, and geography. It is these decisions that sum up the patent strategy.

Technology

An first consideration is often whether a new technological innovation should be patented at all, thereby making knowledge of the innovation publicly available in the patent application. Alternatively, the invention could be kept as a trade secret, and therefore not available to the public. The decision to patent versus keeping it secret can be set out in a standardized business decision common to all such assets, as well as decided upon for individual inventions. The enforceability of a patent can be essential to making this decision. A firm might choose to keep an invention a trade secret if, for instance, it is a manufacturing process which cannot be identified in the end product, in which case competitors could not reverse engineer it or gain access to it without having access to the manufacturing site. Also, since the manufacturing process may not be identifiable in the end product, it can be hard to enforce since proving infringement requires access to an infringer's manufacturing site. It can also be kept as a trade secret if the firm decides that the patent that they could apply for wouldn't be a patent that they would enforce in court if infringing technologies occurred.

Several separate technological inventions might occur in an invention process, creating the need to make a decision concerning which technologies the firm wants to patent. In the pharmaceutical industry for instance, the decision between patenting and trade secrets is

common. Patenting is most likely to occur in this industry when it concerns the composition of matter, the formulation, the platform, the delivery method and the utility, whereas the manufacturing processes are more likely to be kept as trade secrets.

Individual inventions can also be protected by utilizing different patenting approaches. A well-known approach is that of patent fencing, which means building clusters of patents as described by Cohen et al. 2000 (p. 25):

One broader use of patents observed particularly in chemical (apart from drugs) and other discrete product industries is their combination to build patent fences around some patented core invention. Such fence building involves the patenting, though not licensing (nor necessarily even commercializing), of variants and other inventions that might substitute for the core innovation in order to preempt rivals from introducing competing innovations.

In this way a firm can choose to broaden the technological scope not only by the individual patent handed in, but by handing in related patents.

Another factor influencing the scope of the technology is the scope of the actual claims inserted in the patent application. The applicant drafts claims in words describing the technology of the invention. Such drafting can be done narrowly or broadly. The logic behind describing the technological invention in broader terms is that the broader the patent, the higher the number of other technological inventions will infringe it, and the higher the value of the patent (Gilbert and Shapiro, 1990; Merges and Nelson, 1990). Furthermore, when writing the claim, firms are often in the early stages of an invention process and will find it difficult to assess the actual outcome of the R&D process and what will end up in stores. Scoping the patent more broadly during the patent application can therefore give further opportunities later in the invention process, as a broader scope of technology gives a larger technological area to maneuver.

Timing

Timing of patents can be of tremendous importance. Applying early means that the technological invention might be premature. After

handing in the priority patent application the applicant has one year to hand in additional and supportive data. If the initial priority application has been handed in too early, when data generation is too far into the future, firms may run the risk of missing the deadline for handing in additional details. Scoping the patent this early might also be complicated. At a later stage more information is available making it easier to draft the application in a thorough and comprehensive manner.

Waiting means running the risk of not being first. Recent court cases have proven the date of priority (the date of handing in the patent priority application) is of major importance. Firms should therefore decide on the timing issue while considering the potential competition. A firm's strategic choice can therefore be to hand in patent applications as early as possible given their assessment of the competition's stage of development on similar technologies. However, a firm may be convinced that the competition are not aware of the technological path. In this case it may be rational to postpone the patent priority filing and thereby secure a more precise patent application by handing it in as close as possible to the date when the product is introduced into the market. This also gives the firm a longer period in which the competition is unable to utilize the protected technology.

Geography

By definition a patent is only valid in the jurisdictions in which it has been granted. Deciding on coverage in terms of geographical scope is often closely related to a firm's business decisions. A helpful list could include those countries: in which the firm has its production sites; in which the firm conducts R&D; currently main sales markets; potentially future sales markets; in which competitors have their headquarters and/or main markets; where infringers produce or sell; from which parts are sourced. Firms might also differentiate within the portfolio of patents and only apply for the core patents in the highest number of countries, whereas non-core patents might only be applied for in a few countries. Figure 13 shows the distribution of patents across industries for the population of 3,589 patent applications submitted to the EPO between 2000 and 2010 by the firms in our sample.

The main downside of applying for patents in more than one country is the expenditure required for translating and processing

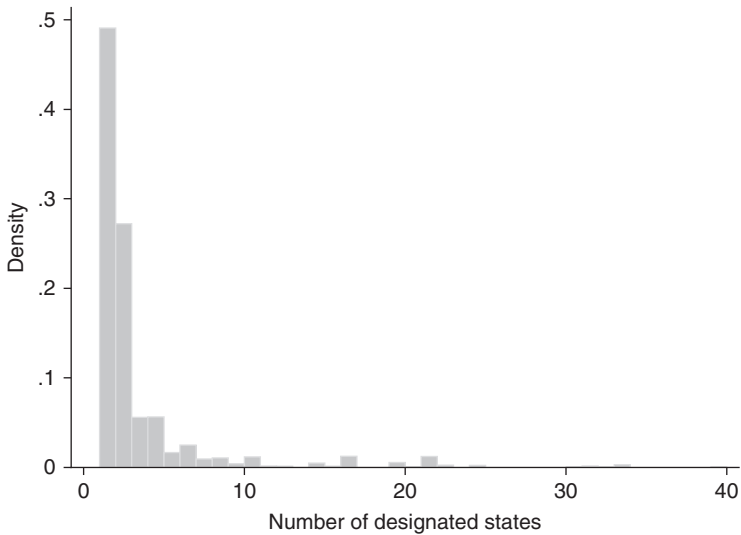


Figure 13 Distribution of patent applications by number of countries

the patent for each country, which can be expensive. For that reason, firms often only select a list of countries that suit the firm's business strategy. Certain options are available to push payment forward. If applying for patents utilizing the PCT system firms can delay paying the individual fees in each country to month 31 (which is when the patenting process gets very expensive). In this way there is a chance to reassess the scope decision at later point in the process. Please refer to Box 7.2 for in-depth example of a patent application process covering several countries.

The core motivation to apply for a patent is to generate value either through keeping others from utilizing ones invention or through strategic value to the owner. However, a large proportion of patents are never utilized, generating little or no value. In a survey where patent holders were asked to indicate a market value for their patents, the majority were valued below EUR 40,000, with only a few above EUR 100,000. This is not favorable considering the cost of applying for a patent. However, firms have imperfect information on patent value and promise at the time of handing in their applications, but filing the patent does secure it if it does turn out to be a cash cow,

since the patent can be used to fight leakages, imitation and spillovers. Researchers have counted the number of forward citations to identify a single patent’s value.² This measure is far from perfect but has been used to measure patent value in large-N dataset for the last decade. When looking at the distribution of patent value measured by patent citations, the pattern is that many patents are of little worth, and only a few are highly valuable. Figure 14 shows a histogram of the number of patent citations each patent in our sample received (37,717 EPO patents submitted between 2000 and 2010). The graph shows a highly right skewed distribution with the majority having very few forward citations.

This highlights the importance of being able to identify and apply for the right patents and abandoning unimportant patents before expending any resources. As part of establishing a patent strategy, the firm needs to develop internal procedures for identifying and evaluating patentable inventions, and with a stern eye on the strategy and objectives of the firm. It is a matter of deciding which inventions are worth pursuing, and which should be abandoned.

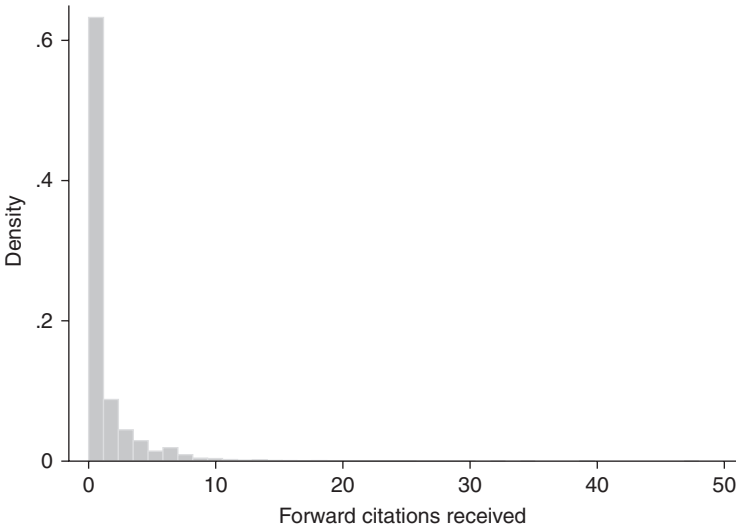


Figure 14 Skewness of patent value

Trademark strategy

Before engaging in trademark strategy one should learn the basics about trademarks, as presented in Box 7.3 for readers new to trademarks. Trademarks are important for most firms and, in some cases, can reach dizzying valuations. For example, in 2012 the Apple name was estimated to have a value of \$70,605 million. It is not uncommon to find examples of a firm's trademark-protected name exceeding the combined value of its physical assets and sales, showing how strong a signal of quality and customer loyalty the trademark is. This is highlighted by the list of the ten most valuable trademarks, all being the trademarked names of well-known companies.

As Table 10 shows, eight out of ten firms are in the US. This has been the situation for decades. Despite the number of patents from US firms becoming less prominent among the most patenting active firms, the US is still at the forefront when it comes to trademarks, taking up eight out of the ten most valuable brands in the world. They are indeed in a league of their own in creating and benefiting from trademark usage.

Firms moving into new product areas or markets often rely on trademarks to establish a brand. A common strategy is the use of an overarching trademark for a range of products, with a number of sub-brands each with their own trademark. Take, for example, the Coca-Cola company using *Coke* as the overarching trademark, and specific

Table 10 Most valuable trademarks, 2012

Brand name	Country	Estimated value (\$millions)
Apple	US	70,605
Google	US	47,463
Microsoft	US	45,812
IBM	US	39,135
Walmart	US	38,320
Samsung Group	S. Korea	38,197
GE	US	33,214
Coca-Cola	US	31,082
Vodafone	UK	30,044
Amazon.com	US	28,665

Source: http://brandirectory.com/league_tables/table/global-500-2012

products such as *Diet Coke* and *Cherry Coke* as sub-brands. Rather than attempting to create a new trademark, the firm relies on the quality of its existing trademarks to broaden their product range and establish new products as distinct trademarks.

Box 7.3 Trademark basics

Trademarks come in different shapes and sizes, from simple word marks covering the name of the firm or product, to more exotic types such as scent, sound or 3D marks. Unlike the patent, trademarks are not protecting a specific technology or invention, but a specific image or brand. A trademark essentially functions as a signal of quality to the customer, promising the consistency of a particular brand. This reduces the search costs of the customer, making it easier to choose between different products. Walk into a *Starbucks* anywhere in the world, and you know beforehand what kind of coffee you will get. In return for lower search costs the firm can charge a higher price compared to similar rival products, and gradually build a base of loyal customers who prefer a specific product brand over others. As with other types of IP protection, the trademark is intended to further motivate the firm to invest in product development, using the trademark as a method of protecting this investment from imitators.

What can be trademarked?

A trademark has to be distinctive; no common words or phrases can be used and it cannot be similar to existing trademarks. A trademark commonly refers to a firm name or brand in the form of a word mark, or a picture or logo as a figure mark. While these remain the most common trademarks, many other marks are available, such as: shapes, sounds, colors, 3D shapes, holograms and scents. Some well-known examples include: Intel's Leap Ahead music, the Pullman Brown color of the UPS truck, and the triangular shape of Toblerone chocolate bars. In contrast, 3D shapes, holograms and scents are less commonly used, mainly because they are difficult to register, not being sufficiently distinct in the public's perception.

The audio manufacturer Bang & Olufsen managed in the first round to achieve a 3D shape trademark on one of their loudspeaker model BeoLab 8000, due to the shape of the loudspeaker being strikingly dissimilar to the public perception of a loudspeaker, and being easily remembered by consumers. This was, however, later overturned and the trademark lost (refer to Case T-508/08 Bang & Olufsen A/S vs. Office for Harmonisation in the Internal Market (Trade Marks and Designs) (OHIM)).

Scent trademarks are much rarer, in part due to the difficulty in articulating and identifying scents among consumers, and because some trademark offices only accept trademarks that can be depicted graphically. One of the most well-known scent trademarks belongs to a Dutch firm with the catchy name *Vennootschap onder Firma Senta Aromatic*

Marketing. In 1996 the “smell of fresh cut grass” was trademarked for use in the production of tennis balls, providing a distinct and instantly recognizable scent. In contrast, the requirement of a distinct and instantly recognizable scent has proven to be exceedingly troublesome for perfume manufacturers.

Many perfume manufacturers have attempted to trademark their most iconic perfumes, and while women are reliably able to distinguish between perfumes a high number of men fail in this task. Due to only a section of customers being able to distinguish between different scents, perfumes are generally not thought to be sufficiently distinct from each other.

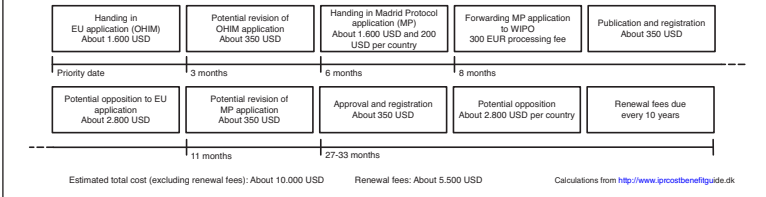
Unlike patents, a trademark does not necessarily entail an application process. Some countries employ a first to use regulation, whereby an unregistered trademark can be obtained simply through its use. In spite of unregistered trademarks being freely available, most firms choose to register their trademarks. Registering a trademark provides the owner with the exclusive right to prevent others from marketing similar or identical products using the same or a confusingly similar trademark. Other than application and maintenance fees, which are minuscule compared to patent fees, the costs of registering a trademark are low. In comparison to a patent application, very little information has to be disclosed about the trademark and firms often register trademarks while still developing the product.

Popularity does not come without a cost though. The most popular trademarks are at risk of trademark erosion and degeneration of the mark. When a previously registered trademark becomes a common name the firm can lose its trademark registration. *Zipper* (previously a trademark of B. F. Goodrich) and *escalator* (previously a trademark of Otis Elevator Company) are examples of such cases. Even though this level of popularity may seem desirable, competitors can utilize an eroded trademark freely. To avoid trademark erosion, the owner must inform the general public of the difference between the trademarked word and its common name. Such is the case for the Kleenex brand, being marketed as ‘Kleenex brand tissues’ or ‘Kleenex tissues’ to prevent the word Kleenex from becoming generic. While still trademarked, the owner of the trademark must continuously uphold this distinction to prevent erosion. Xerox, Hoover and BAND-AID are trademarks that have become common words, but where the owner has successfully managed to create a distinction through marketing and general information to the customer.

Maintaining a trademark can be done by utilizing it correctly, firms might develop a guide for marketing and sales persons to ensure the correct usage of the firm’s trademarks, to include how the trademark should always be written (for example, in capital letters or with a TM or ® afterwards), and that the trademark should never be put in a sentence as a noun or verb.

While trademark registrations are considerably less costly when compared to patent applications, the high number of trademarks possessed by some means the firm has to keep these costs in mind. An example of the costs

associated with a trademark registration is presented below. This example is of a trademark registration made in five EU countries and six non-EU countries. The total cost of registering a trademark in these 11 countries is about \$10,000, excluding renewal fees of about \$5,500 paid every ten years, and excluding any opposition fees.



Why trademark?

The use of trademarks to create value is not limited to business to consumer products, and can be found in a wide range of manufacturing, services, government and non-government organizations. Trademarks are widely used by firms with large consumer markets. The Table 11 shows consumer oriented firms such as Mattel, Inc. topping the list of US trademark registrants, which has been the case for several years. However, notice that while some US firms exhibit a high trademark activity, many EU and Asian firms appear high on the list, ranging from consumer electronics to pharmaceuticals.

The number of trademark registrations made by a firm correlates with the number of employees (firm size), the larger the firm the

Table 11 Top 10 trademark registrants in the US in 2012

Firm name	US trademarks registered 2012
Mattel, Inc.	358
Johnson & Johnson	246
LG Electronics, Inc.	191
Disney Enterprises, Inc.	163
Bally Gaming, Inc.	143
Da Lian Ya Tu Tou Zi Zi Xun You Xian Gon	143
The Proctor & Gamble Company	131
Summit Entertainment, LLC	123
IGT	112
Novartis AG	109

Source: <http://www.uspto.gov/about/stratplan/ar/USPTOFY2012PAR.pdf>, p. 204

more trademark registrations. In Figure 15 we present the percentage of firms in our sample that have registered one or more trademarks in the period 2000–2010. Among larger firms 61 percent utilize trademarks, whereas 39 percent of small and medium sized firms are active in trademarking and only 20 percent of micro firms operate with trademarks. These differences are significant.

The scatterplots in Figure 16 show, not surprisingly, that firm size and number of trademarks are positively correlated. We also see a positive correlation between firm turnover and number of trademarks. This is explained by the fact that larger firms have more

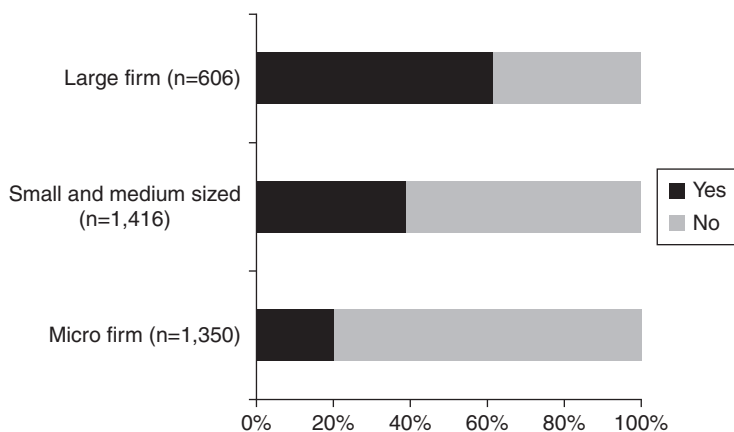


Figure 15 Percentage of firms active in trademark registration (2000–2010) divided by firm size

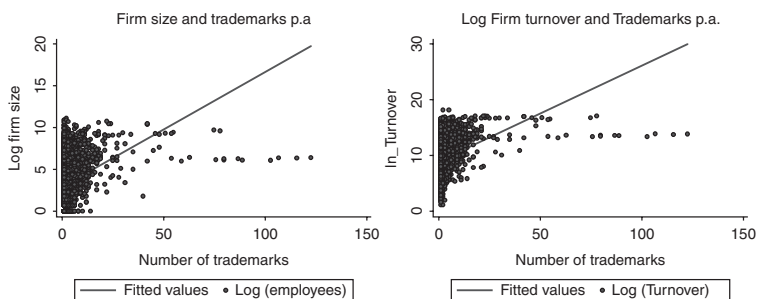


Figure 16 Trademark registrations and firm size (employees and turnover).

products to benefit from so they have a larger need to register trademarks. However, when eliminating the effect of the larger firms (see Figure 17), it is apparent that, in general, firms with a higher number of trademark registrations are associated with higher productivity, higher turnover, and higher exports per employee.

We also examined whether there are significant differences in the industries to which firms that are active in trademarking belong. Statistics are presented in Figure 18. Information and communication proved to be the most active industry type, with 52 percent of firms in this category applying for trademarks. The manufacturing, mining, quarrying and utility category is the second most active at 45 percent, while the financial, insurance and other business services category are third most active, with 41 percent (see Figure 18).

IP archetype and trademarks

But how do the different IP archetypical firms behave in terms of trademark registrations. From the overall statistics we can see that trademarks are more popular than patents if measured by percentage of firms engaging in registration. Below we analyze descriptively which IP archetypes are behind the many registrations. For trademark registrations, we see higher percentages for all IP archetype categories compared to patent registrations (see Figure 19). The pattern nevertheless follows that of patenting with Inactive firms significantly less active than all other categories. Among Inactive firms 21 percent have applied for a trademark in the period from 2000 to 2010. Among IP Rookies and IP Dealers the percentage is significantly higher (41 percent of both archetypes are active in trademarking). The IP Strategist and IP Strategic Dealers are again the most active when calculated as a percentage of the population of firms in the category at 58 percent and 65 percent respectively.

The number of trademarks registered per firm, however, indicates a slightly different story (see Table 12). Three categories each follow the same position when considering patenting: (1) the Inactive firm is significantly less active than all other IP archetypes (0.76 trademarks per firm in the period 2000–2010); (2) the IP Rookie registers second lowest with 1.74 trademarks per firm (2000–2010); and (3) the IP Strategic Dealer outnumbers all other IP archetype categories by having registered 14.07 trademarks per firm from 2000–2010. However, the IP Dealer and IP Strategist are not significantly different

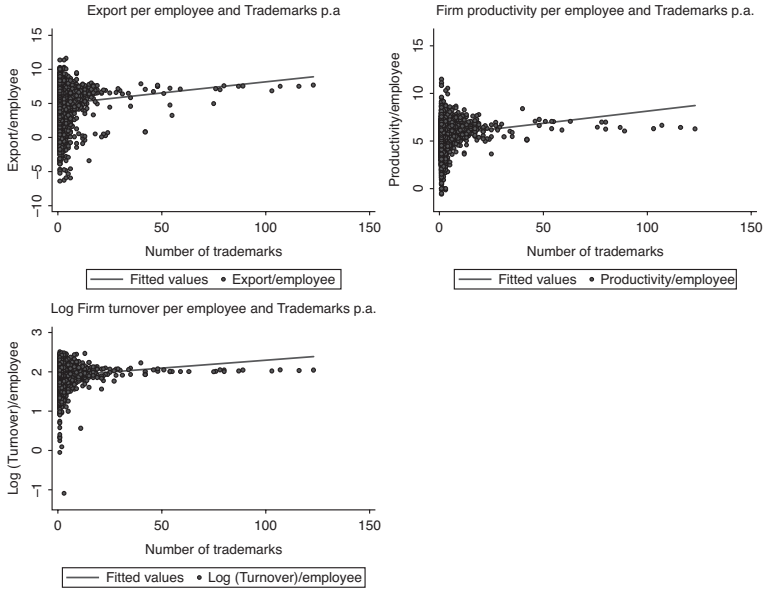


Figure 17 Trademark registrations and firm size, (a) exports, (b) productivity, and (c) turnover per employee

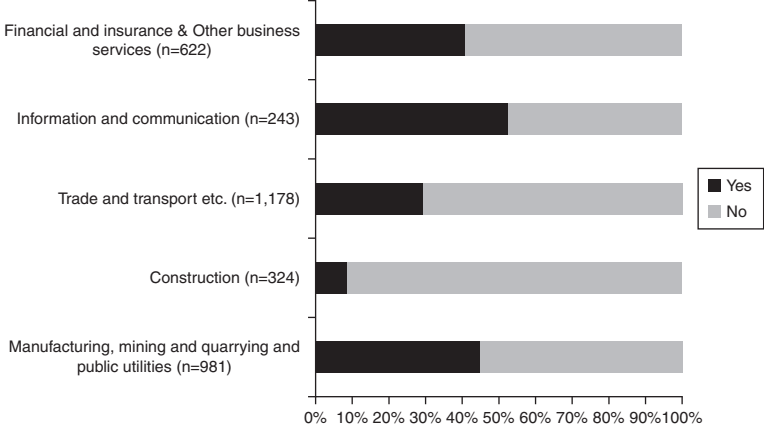


Figure 18 Percentage of firms active in trademark registration (2000–2010) divided by industry

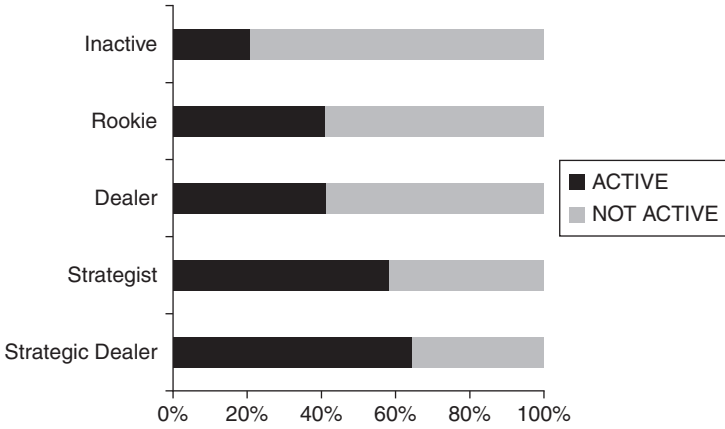


Figure 19 Percentage of firms active in trademarking (2000–2010) divided by IP archetype

Table 12 Number of trademark registrations across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.76	1.74	0.98***
IP Inactive	IP Dealer	0.76	3.8	3.04***
IP Inactive	IP Strategist	0.76	4.38	3.62***
IP Inactive	IP Strategic Dealer	0.76	14.07	13.31***
IP Rookie	IP Dealer	1.74	3.8	2.06*
IP Rookie	IP Strategist	1.74	4.38	2.64***
IP Rookie	IP Strategic Dealer	1.74	14.07	12.33***
IP Dealer	IP Strategist	3.8	4.38	0.58
IP Dealer	IP Strategic Dealer	3.8	14.07	10.27*
IP Strategist	IP Strategic Dealer	4.38	14.07	9.69*

Note: *, p<0.1, **, p>0.05, ***, p>0.01

when measured by the average number of trademarks registered per firm from 2000–2010 (at 3.80 and 4.38, respectively).

Strategizing with respect to trademarks is very different from that of patents, and can be handled by persons without a technological

background. Particularly, firms with a dedicated marketing department or person with available marketing related resources are appropriate for handling trademark registration and management. However, while the basic use of free to use, unregistered trademarks requires little company effort beyond existing marketing investments, a commitment to working actively with trademarks does require significant resources. In addition to trademark registrations and renewals, it is paramount that the firm approach selection and registration in a similar way to managing patents. Appropriate processes for identifying, evaluating, registering, and maintaining potential trademarks must be set up. And firms need to have a minimum level of market surveillance to identify potential infringements. All these activities will be likely to increase the value of a firm's trademarks.

The trademark strategy is tightly linked to the firm's visual appearance in the market. Three main elements should be considered when choosing the scope of a trademark strategy: type, coverage and geography.

Types

The initial decisions to be made before engaging in trademark registration concern why the firm should apply for trademarks and how it should be linked to the firm's business. The reasoning will have an impact on the scope of a trademark strategy, which can be initiated to protect the firm's visual appearance against exact copies or to protect the firm against competitors making money through confusion. A firm should therefore decide on the scope of the protection for the visual appearance of the firm's assets by linking it to its business assets. Deciding on the type of protection has an influence on the extent of protection for the visual appearance. A word mark registration gives a broader protection than that of the figure mark. Protection obtained by a word mark enables the firm to change writing style. The font type of a logo can, for instance, be altered while the protection will still be in force. Changing figure marks on the other hand will result in the need for a new trademark registration.

Firms can also choose to use a number of possible protection mechanisms by combining both word marks, figure marks, color marks, 3D shapes, sound marks, and so on. One brand – presented in one visual appearance – can thereby be protected by a number of trademarks to broaden the scope of protection. Think of the iconic Coca-Cola bottle

for the use of multiple trademarks on a single product. It is protected by word marks for the company and product names, figure marks for the Coca-Cola logo and a shape mark for the contours of the bottle. While each of these registrations are powerful tools by themselves, their combination makes the appearance of the Coca-Cola bottle impossible to imitate without infringing on the trademarks of the Coca-Cola company.

Coverage

Scope of coverage is related to the number of classes of goods a trademark is registered for.³ It therefore also relates to the number of classes that the firm are utilizing the trademark in. The classes in which a trademark is applied determine the scope of coverage of the individual trademark. In certain jurisdictions, such as the EU, three classes are offered when registering (however, it is currently being discussed whether applicants should pay per class). When handing in a trademark registration, the registrant decides which classes to apply for. This classification system is named Nice classifications and are described below. While it may seem ideal to have a trademark cover as many classes as possible to extend protection, keep in mind that even registered trademarks require continuous use if an objection is to be met. Furthermore, the classes selected are final. Trademark classes are not transferable and a new registration must be made if additional classes are desired. In addition, as cost is paid per class registered in most countries, adding a high number of classes is only advisable if needed. Well-known trademarks differ slightly from this practice. If a trademark reaches the status of well-known, think LEGO or Ford Motors, regulation dictates that these trademarks automatically cover all trademark classes to ensure that a well-known trademark is not abused by a third party.

A different strategy, in terms of coverage, is that firms might have only one main brand which it uses with generic words which cannot be registered.⁴ This approach might be utilized if the firm brings out many new products each year that only last for a short time in the market. However, what is generic should be carefully considered, both when using a word that is so generic that registration is not possible (and it can be used without having to think about infringing third party rights), and when aiming to register a trademark which can be protected and enforced worldwide. A generic word does not mean that the trademark cannot be a word that is in the dictionary. Apple,

for instance, is only generic with regard to apples you eat, but for computers, mobile phones, record labels and so on it is certainly not.

Geography

There are a number of factors that influence the geographical scope of trademark registrations. One factor is the firm's business strategy. The arguments mentioned above with respect to patents also apply to trademarks. However, there are certain legislative regulations that might influence the decision on the geographical scope of the trademark protection, such as the first to file and first to use approach. In countries regulated by the first to file system trademark registrations are necessary to uphold protection. In countries that are regulated by the first to use system firms might choose to neglect trademark registration as the protection is available without it, and simply requires the firm to actively use the trademark.

A distinction between main brand and sub brand is also a dimension to consider when choosing geographical coverage. While a main brand might be registered in a high number of countries to extend the brand's protection and potential value, less important brands might be registered only in the countries that are core to the firm's strategy. Many firms vary their products between regions, even if it is just the product name because they could not register that name in one country or that another name is more suitable. For example, the Volkswagen Automotive Group may sell the same hatchback in the EU and the US but use different sub-brands such as Volkswagen Golf in the EU and Volkswagen Rabbit in the US or Canada. In this case, the firm would register different trademarks in different regions for the same product.

Geographical coverage also implies other challenges. In selected countries there might be different registration opportunities due to local languages, so translations might be an opportunity that should be considered. For instance, when launching a product on the Chinese market a brand name could be translated into Chinese characters rather than using the Latin script common in western countries. In this respect both the sound and meaning of the words should be considered, as local dialect and pronunciation can drastically alter the meaning of a name or phrase. Famously Pepsi Co. translated the slogan "*Come alive, you're the Pepsi generation*" into Mandarin, resulting in large parts of China being presented with a slogan essentially saying "*Pepsi makes your ancestors come back from the dead.*" In Japan international brand names are often written in

Katakana, and in countries where Arabic is spoken, brand names are written in Naskh. In this respect, the scope of geographical protection is not only a matter of transferring the registration, but also of taking decisions related to local languages.

What is important to remember is that even if production has been outsourced, being in charge of one's own trademarks in a given region is extremely important. In China, for instance, firms have experienced that the Chinese partner has been "kind enough" to register the firm's trademark in their own name, thereby obtaining the legal right to the use of the name or logo in China. When the firm then wishes to transfer its production to another partner disputes occur and the firm's only option is to buy back the trademark, often at a much higher price than if the firm had paid for a registration themselves in the first place at the Chinese trademark office. In some cases, it can be more economical to move production out of the country and give up selling branded goods in the given region where the trademark has been registered by a third party.

Implementing a trademark strategy

Based on the scope of both type and geography, a firm can create a country list for core and non-core brands, guiding the implementation of the trademark strategy in the firm. This list essentially forms a road map that defines which trademarks are registered when and where, and how this relates to the product and marketing strategy of the firm. This list can furthermore aid the firm in ensuring that trademarks are implemented in accordance with local legislation, which avoids trademark erosion and dilution through improper or lack of use.

Each trademark is assigned to a number of NICE classifications, a system for classifying which goods and services the trademark covers. The system consists of 45 classes specifying whether the trademark covers goods (such as textiles or building materials) or services (such as medical services or transport). When looking at 9,692 international trademarks from 2000 to 2010 submitted to OHIM (see Figure 20 which on the x-axis shows the number of NICE classifications applied for and the y-axis the density of registrations). The data shows that most trademarks are assigned to two to four, whereas a few are assigned to a higher number of classes.

To aid in the application of a trademark in multiple countries the Madrid protocol was established. This regulation allows a trademark registrant to file one application at their national or regional

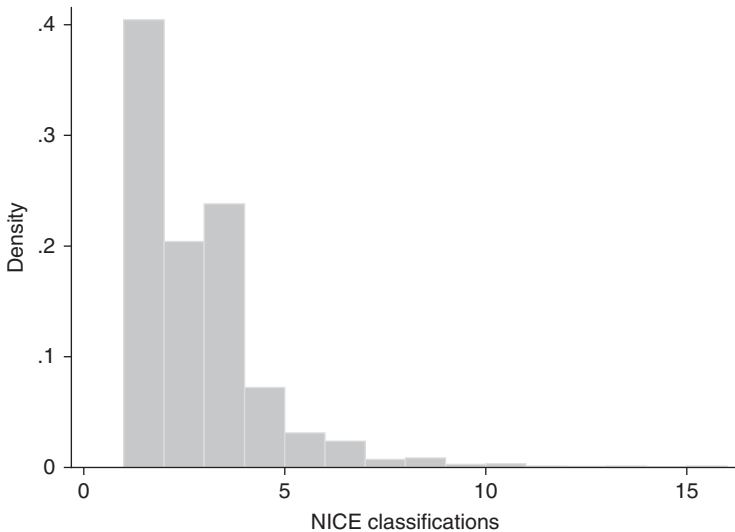


Figure 20 NICE classifications per trademark

trademark office that covers a number of countries worldwide. This drastically reduces the cost of applying for a trademark in multiple countries. The firm, however, still needs to keep in mind local legislation and language issues as the same trademark will be registered in each country irrespectively. While the Madrid protocol does not cover every country, the largest and most common markets are covered, including the EU, Russia, Japan, China and the US.⁵ Figure 21 shows that the majority of trademarks submitted through the Madrid protocol cover between one and six countries. Some trademarks do, however, cover up to 60 different countries, as found in a sample of all trademarks submitted through the Madrid protocol (4,825 OHIM trademarks) by the firms in our sample.

Design strategy

Why design rights?

Firms apply for design rights to protect the visual appearance of the product. To read more on the basics of design rights please refer to Box 7.4. Based on our sub-sample we investigated the factors related to utilizing design rights. In our sub-sample a design right was less

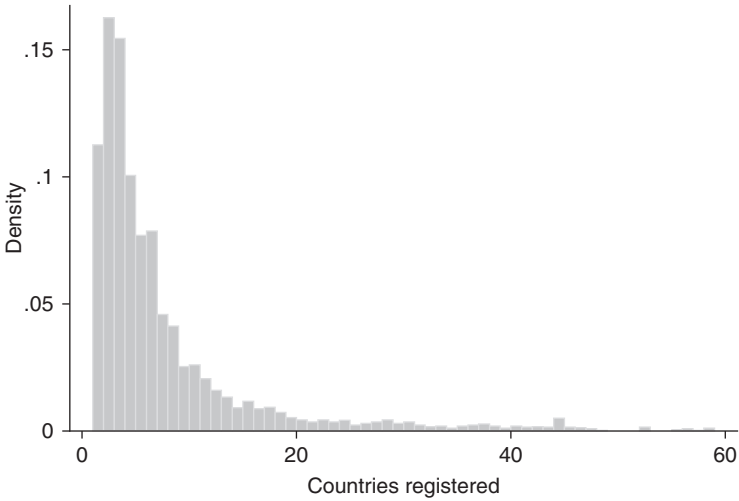


Figure 21 Number of countries per trademark

common than that of trademarks or patents. Firms apply for a patent three times more often than a design right, and apply for trademarks almost ten times more often. Not only are design rights a rarely-used mechanism of protection but statistics also indicate that even active firms register relatively few annually (see Figure 22).

Firms who rely more on visual appearance to sell their product commonly use design rights. Industries where design rights are used the most are textiles, furniture and ornamental products such as jewelry. The design right can be utilized as a precursor to 3D marks and as a way to launch a protected product and getting it known in the market, paving the way for a subsequent 3D mark. Remember that trademarks require products to be distinct and recognizable with the latter being difficult to achieve without the product being widely known by the public. The 20–25 years of protection the design right offers might be just the time required to achieve this, and extend the protection of the design right both in time and coverage, with the trademark potentially running indefinitely and covering the shape more generally.

Below we examine the descriptive data on both industries and size with respect to firms utilizing design registrations. There are significant

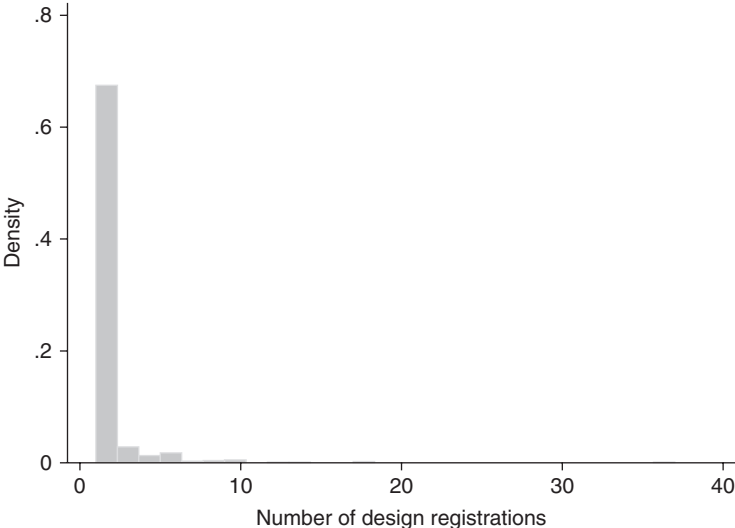


Figure 22 Number of annual design registrations

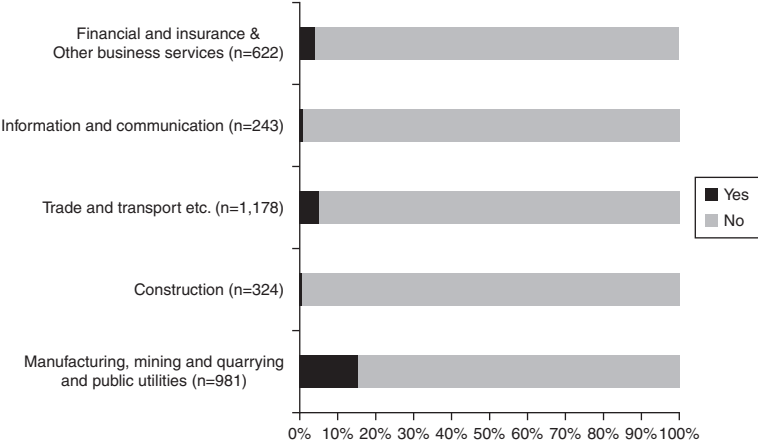


Figure 23 Percentage of firms active in design registration (2000–2010) divided by industry

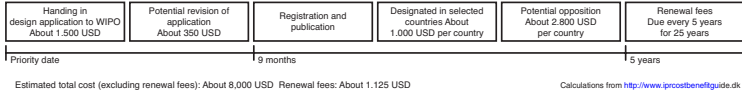
differences between which industries apply for design registrations with 15 percent of firms belonging to the manufacturing industry active in design registrations. While 5 percent are active in the trade and transport sector and 4 percent of firms in financial, insurance or other business industries have taken up design rights. In both construction and information and communication the figure is below one percent.

Box 7.4 Design rights basics

A design right is an exclusive right to the visual appearance of a product or part of a product, its the lines, shapes, contours or ornamentation. A design must be an original creation, sufficiently different from what is known in the current market. As with trademarks, designs can be both registered and unregistered. To obtain a registered design the creator must hand in drawings and/or photographs that illustrate the details of the product that is to be protected by the design registration. Designs are different from patents not only in that they cover visual rather than technical aspects, but also because it is possible to produce and market the product during the registration. There is a 12-month period where the creator can market the design without destroying the novelty demand, effectively allowing the firm to delay handing in and thereby publishing their design until the product is ready. The length of protection is different in different locations; in the EU the length of protection is a maximum of 25 years, whereas in the US it is limited to 20 years.

A design right is very narrow in its protection, meaning that only small differences in the visual appearance of a product may fall outside the scope of the original protection. In this respect a design right keeps competitors from directly copying a product, rather than from making a highly similar product. The design right has some resemblance to 3D shape trademark registrations; however, they differ in a number of key points. A design right is generally much easier and faster to obtain than a 3D mark, in part due to a focus on a specific design and for a shorter protection period.

The figure below shows an example of the process of registering a design and the estimated costs when applying in 11 countries, five EU countries and six non-EU countries. The total cost of application in this example amounts to about \$8,000, with about \$1,125 in renewal fees over the course of 25 years. Omitted from this calculation are the costs if a design application is opposed during the application process, which typically amount to about \$30,000, including fees to attorneys, advisors, the local patent office, OHIM, and WIPO.



As with trademarks and patents there is a difference in terms of the size of the firms and the average percentage of firms active in registering designs. Larger firms have a higher average compared to medium size and micro firms (see Figure 24).

Using scatterplots to investigate our sub-sample descriptively we found an association between larger firms and the number of design registrations applied for. Furthermore, a positive relationship between higher productivity and number of design rights was also identified. Lastly, we looked at firm turnover and the number of design registrations per year and found a positive association. These data suggest, as with other types of IP rights (trademarks and patents) that larger firms are more active (see Figure 25).

IP archetype and design registration

Design registration is the type of IP least utilized by the sample of firms analyzed. However, as can be seen in Table 13 and Figure 26, the distribution of usage reflects the IP archetype. In our sample we found that only three percent of Inactive firms had registered one or more design rights in the period from 2000–2010. For Rookies it was six percent, Dealers eight percent, Strategists 12 percent and Strategic Dealers 20 percent.

IP Strategic Dealers registered by volume (0.79) significantly more than any other IP archetype. IP Strategists and IP Dealers were not

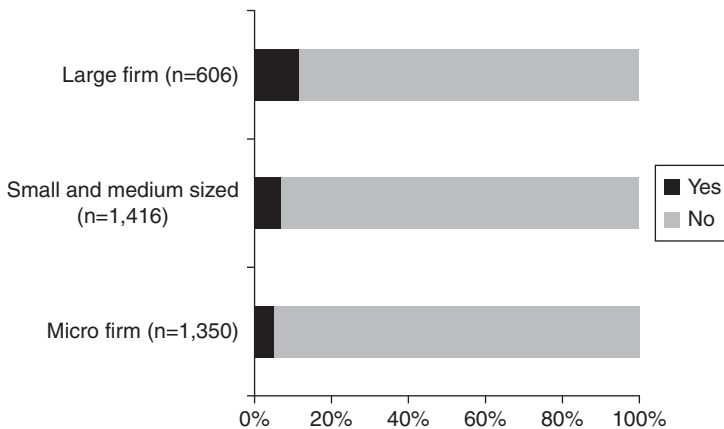


Figure 24 Percentage of firms active in design registration (2000–2010) divided by firm size

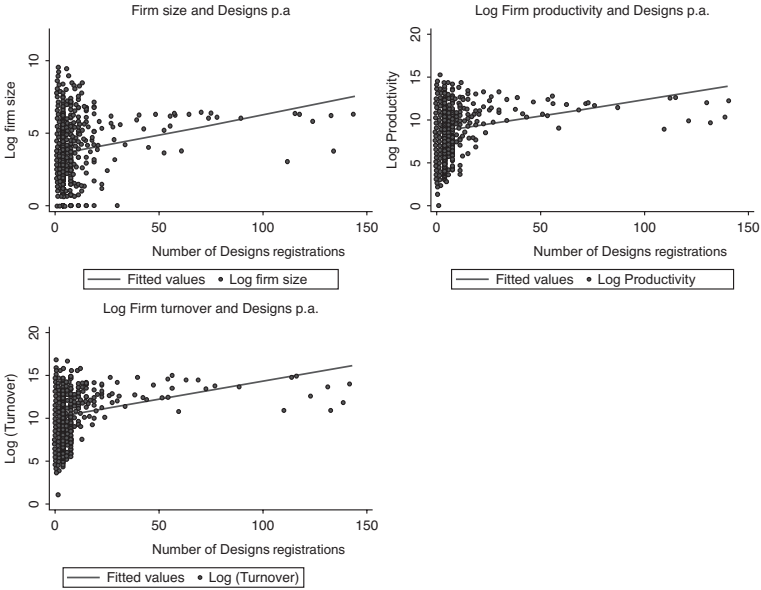


Figure 25 Firm size, productivity, and turnover correlated with design applications

Table 13 Number of design registrations across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.03	0.05	0.02
IP Inactive	IP Dealer	0.03	0.06	0.03*
IP Inactive	IP Strategist	0.03	0.12	0.09***
IP Inactive	IP Strategic Dealer	0.03	0.79	0.76***
IP Rookie	IP Dealer	0.05	0.06	0.02
IP Rookie	IP Strategist	0.05	0.12	0.07*
IP Rookie	IP Strategic Dealer	0.05	0.79	0.74***
IP Dealer	IP Strategist	0.06	0.12	0.06
IP Dealer	IP Strategic Dealer	0.06	0.79	0.73**
IP Strategist	IP Strategic Dealer	0.12	0.79	0.67**

Note: *, $p < 0.1$, **, $p > 0.05$, ***, $p > 0.01$

significantly different (0.06 and 0.12, respectively), and IP Rookies were not significantly different from IP Dealers, whereas they were only vaguely significantly different from IP Strategists. Inactive firms registered the lowest number of designs (0.03). This, however, was

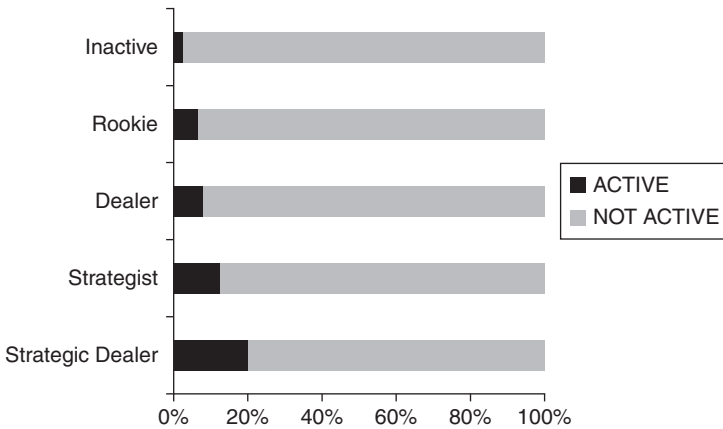


Figure 26 Percentage of firms active in design registration (2000–2010) divided by IP archetype

not significantly less than IP Rookies (0.5). Overall, we saw more or less the same pattern as with the other IP rights. IP Strategic Dealers were the most active when measured on average number of applications per firm over the period investigated (2000–2010), and other IP archetypes increased their utilization of IP as their sophistication with IP dealing and IP management increased.

Design rights

As design rights can be used both for products and packaging the application of design rights and the need for them to support the firm's strategy should be identified. This means that design rights can be applied very broadly (for example, all new products and packaging will be created to ensure design right protection) or in a more narrow sense (where only selected products, and maybe only the most generally applied packaging is protected by design registration). A first consideration for firms is therefore to what degree core versus non-core products should be protected, and whether, for example, the packaging of individual products should also be protected by design registration.

The choice depends heavily on the risk of counterfeit products the firm is exposed to. If the risk is low, design rights might be less of a priority compared to other registrations. As the risk increases, however, the design right should be extended to all new products,

as they are exactly the instrument needed to ensure that the owner generates income from the product and enables the enforcement of rights. As with trademarks, a separate classification system exists for design rights. The most widely used is Locarno, which is constructed with a number of main classes and subclasses, to which design registrations are allocated. These classes are defined during the application process, and unlike the classification of trademarks, the applicant cannot dictate exactly which classes are assigned.

Geography

Regions differ in their registration process for designs. Some countries employ a grace period in which the design can be used prior to registration, whereas other do not. These regional differences influence the decision process as to where and when the firm applies for design rights. In order to minimize costs and resources spent on registrations, it can be advantageous to apply only in the countries that explicitly require registration, and delay the registration process in countries that do not have this requirement. This spreads the cost over time and allows the firm to learn from the first design registrations, making it more likely that subsequent registrations can be obtained.

As with trademarks, the firm needs to select carefully which countries to apply in, by creating a country list. Due to regional differences in registering design rights, this list should furthermore be prioritized following the importance of each market and the local regulations. This provides the firm with a road map for design registration, which should be closely linked to the firm's strategy in each region. In order to minimize costs, registrations should be restricted to existing markets and be made in potential markets only if that is in the firm's expansion strategy.

Timing

The length of protection is also time limited with respect to design rights. The timing is essential if the product is expected to be available on the market for longer than the length of protection. In the case of short product life cycles, the timing of handing in the application matters little, especially if operating with life cycles that fall within the three-year protection period employed in some regions. However, when products have an expected life cycle beyond 20 years, firms should hand in the application just before launching the product on

the market. Due to the very narrow scope of a design registration, it is unlikely that a competitor will apply for exactly the same registration. By timing the application just right, the firm maximizes the length of product protection. Should protection beyond the length of the design right be necessary, the choice lies between pursuing a 3D shape trademark, as mentioned previously, or move into copyright as a strategy for extending the period of protection.

The majority of firms do not consider design rights an option because they are useless in their industry or because the firms do not understand their full potential. Firms tend to avoid design rights from an impression that this instrument is unsuitable for their particular product or industry, when in fact it can offer an additional layer of protection to most products. Heating and cooling component manufacturer Danfoss uses design rights actively, obtaining registrations on many industrial grade products, such as valves for radiators or control panels for wireless thermostats. By doing so the firm adds an additional layer of protection to a product mostly hidden from the eyes of the consumer. This is obviously not done to increase public awareness of the product design, but rather as a tool to combat infringement. A more consumer oriented example of design registration is the distinctive packaging used by electronics manufacturer Philips, where many of the packaging used is protected by design rights, making it increasingly difficult to replicate or imitate Philips products.

Copyright strategy

Basics of copyright

A copyright covers a range of intellectual, creative, literary and artistic “works”. The specifics of what exactly can be protected by copyright vary across jurisdictions. But copyrights can apply to works such as books, theses, poems, plays, films, sound recordings, broadcasts, paintings, music, dance performances, computer programs, software systems, and even industrial products such as lighting, furniture and toys. Copyright protection is in general not registered but obtained automatically when the creative work is articulated and presented in a tangible form (usually written down or drawn). Some author/inventor present a copyright statement as a claim. This, however, is not necessary. Copyright can be enforced without such a claim.

Some countries do, however, accept copyright registrations even if it is entirely voluntary. In some cases copyright registration is encouraged, due to some countries relying on official copyright registrations directly as evidence of the rights of the author in a court of law, or as a prerequisite for being able to collect statutory damages after a successful trial. In such cases, copyright registration is advised in order to be able to uphold and enforce the rights of the author.

The length of protection also varies across jurisdictions, types of product, and is dependent on the ownership of the right. The most common length the copyright protection is in force is 70 years after the death of the creator of the work. However, in some cases protection can run for only 25 years after the creation of the work.

In general, copyright protection is used mainly by firms in the music, movie or literary industries where copyright is the primary form of protection available. Copyright can be applied in other industries, such as protecting marketing material and photos used on websites and print. Outside the industries mentioned earlier, however, copyright has limited applications. What is important to keep in mind is that some firms combine copyright protection with other types of IP when pursuing counterfeit manufacturers. In this way copyright can be exceedingly useful, especially in China where many counterfeits are manufactured, and where obtaining a copyright registration is possible. Firms may benefit from utilizing copyright registrations during enforcement activities.

Types of protection

As copyright is a protection mechanism that has a broad potential application, firms have an array of possible options. Products related to the categories mentioned above, such as literary or artistic works, are generally protected by copyright. However, firms working in

Table 14 Countries in which the author/
inventor can benefit from copyright registration

Albania	Japan
Argentina	Kenya
Brazil	Mexico
Canada	Russia
China	Turkey
India	United States

technology intensive industries might also benefit from copyright protection with regard to photographs in marketing material or packaging. To increase the likelihood of obtaining protection for these types of product, it is therefore important that firms ensure they have an eye on whether, for example, the new marketing material has the level of originality needed.

Geography

As copyright protection arises automatically upon creation, the consideration with respect to geography is different from that of patenting, design and trademark registration. This means that copyright is decided in the court and not by registration. Local court rulings on copyright therefore indicate the degree to which a product can be expected to be protected by copyright, for example, in some countries copyright protection is possible for industrial products in others it is not. And while some countries might also define very simple products as being creative works and thereby protected by law in other countries the court might rule that simple designs are too simplistic to be protected as creative works. Simultaneously, the number of international copyright court rulings also indicate that copyright is used by a large number of firms, even though it can be difficult to trace as only copyrighted products that have been infringed are shown in the statistics. Firms that are very active in the use of copyright are therefore also very keen on keeping track of new copyright court rulings. This comes with great workload, as a court ruling in one country might be different to that of another in terms of copyright. This also means that the scope for decisions in terms of geography might change as new court rulings appear, and firms will need to adjust accordingly.

Trade secret strategy

Basics of trade secrets

A trade secret is a piece of information specific to the firm and covers information that is ascertainable, from which the firm can obtain an economic advantage over competitors or customers, and that is kept secret by the firm. The types of information that can be protected by trade secrets vary across jurisdictions. Common examples are: information that is of technical nature, such as key components of

manufacturing processes; non-technical information, such as recipes for food products, which can be protected by trade secrets if the firm chooses. A trade secret can be a powerful IP instrument. But a firm needs to exercise strong internal control and regulation to ensure that trade secrets are kept just that, secret.

Trade secrets can be enforced providing the firm has taken appropriate action to keep the vital information secret from outsiders. However, the practicalities of enforcing this right vary across countries. This is mainly done by implementing internal regulations within the firm on how to deal with trade secrets, building guidelines explaining the who, how and when for granting access to the specific trade secret, and securing that people or partners with access have signed the relevant confidentiality and non-disclosure agreements.

Why trade secrets?

There are a number of reasons why a firm chooses to employ trade secrets. Sometimes it is more favorable to keep an invention secret than make it public. One example being if the invention is impossible to protect through patenting or other IP rights, whereby keeping it secret is the only viable alternative. The reason can also be tied to financial resources. Applying for a patent is demanding, both on finances and internal resources, whereas seeking protection via a trade secret usually causes less financial strain. This is due to trade secrets being established by securing formalized internal structures and during contracting, and not through extensive registration processes at local patent and trademark offices. The processes a firm utilizes to keep inventions as trade secrets are also often the same processes that firms apply until the decision to patent has been made.

The primary issue with trade secrets is that other parties might develop the same approach to solving a problem. If the other developer also decides to keep it a trade secret, no harm is done to either party. However, if they apply for a patent then obstacles can occur. Certain legislative regulations safeguard the initial invention created and protected by the trade secret in order for the initial inventor to keep producing by utilizing the trade secreted invention.

Trade secrets are commonly used in many industries to cover products, production processes, recipes or internal work procedures, which all provide the firm with a competitive advantage. It is a challenge to measure how widespread trade secrets are since

they are not a registered right like patents, trademarks, and design rights. However, from research based on questionnaires, we see that trade secrets are used more as an appropriation mechanism than, for example, patents. Cohen et al. (2000) observed a mean of 51 percent of product innovations for which this mechanism was considered effective, whereas the respondents assessed patents at 34.8 percent suggesting that trade secrets are widespread for businesses.

Scope of trade secrets

The most common consideration with respect to trade secrets is whether a new technological invention should be protected by a patent or kept as a trade secret. Patenting means the information is publicly available and there is date when it becomes part of the public domain. As a trade secret it is kept out of the public domain. The best known such secret is the Coca-Cola recipe, which has been a secret since the Coca-Cola taste was first introduced.

Scope with regard to trade secrets refers to the extent to which firms utilize this approach to protection. Should the firm consider trade secrets for only non-core products? Or should the firm also consider this option for core products, which competitors cannot identify in the market and cannot reverse engineer due to the nature of the technical solutions? In general trade secrets might be an appropriate solution for such core technical inventions. Examples of trade secrets are many: a manufacturing process that can only be identified by being present at the manufacturing site; a core algorithm for the optimal mix for drugs which cannot be traced in the final product; and, most widespread, the recipes for food or drinks.

Enforcement strategy

The enforcement strategy, as the sixth part of the firm's IP strategy of the firm, is about enforcing the rights established in the other parts of the strategy. How and what to enforce is therefore closely linked to each type of IP right presented above. Here we will treat this as a separate strategy. Besides the actual enforcement, such as litigation when the infringement of products has been identified in the market, an enforcement strategy also needs to prepare a firm to make informed decisions with regards to enforcement.

IP infringements fall under the umbrella of illicit trading. There are four types of IP infringements: (1) patent violations, (2) counterfeiting, (3) digital piracy and (4) illicit parallel imports (Staake et al., 2009). In this chapter we only consider the first two.

An enforcement strategy can be needed against two very different groups: (1) a group of competitors who have infringed the firm's IP rights, often by violating patents, so dealing with competitors in patent litigations is one IP battle area, and (2) a different situation occurs when the original visual appearance in terms of a trademarked brand, copyrighted material or design registered shape has been illegally reproduced, this type of infringement is named product piracy or counterfeiting. The first group might infringe by coincidence and the product in question may be one out of many in the portfolio, while the second group often has a manufacturing plant purely to create illegal imitations, and these firms may also not pay tax or have any official firm identification numbers. Both groups need to be considered when applying for individual IP rights, however, with regard to enforcement there are two major areas to consider, both preventive measures (discussed in the next section) and reactive measures (discussed in the last part of this chapter).

How widespread are patent violations and counterfeits?

Due to their illegal nature it can be really hard to identify the extent to which infringing and counterfeit products are available on the market. It is often more difficult with counterfeits because their illegality mean they leave no trace in the shape of, for example, reports on turnover or profits. Two ways to overcome this measurement problem are by conducting surveys or analyzing seizures by customs. Both approaches have their limits. Berger et al. (2012) found through surveying that the percentage of firms reporting the unauthorized reproduction of technical elements were, on average, about 75 percent and 55 percent with regard to names and labels respectively. These numbers, however, varied by type of industry and firm size. For unauthorized imitation of technical elements, medium sized firms were most often targeted (85.45 percent) whereas the smallest firms were the least imitated (62.50 percent). Among large firms 77.53 percent reported having had their technical elements imitated at least once a year. For trademark imitation the same pattern was reported: that medium sized firms were the most imitated (65.45 percent); small firms the least (34.38 percent); and large firms in between (62.92 percent).

Distribution across industries also shows a high variance, with 96 percent of firms within metal processing experiencing most imitation of technical elements. Whereas both chemicals and pharmaceuticals and consumer goods experienced the highest reported trademark imitation at least once within the last year at 73.68 percent. While the statistics reported by Berger et al. (2012) give interesting insights, the numbers should be taken with caution. These data can contain severe selection biases as the response rate for the survey was only around 10 percent. Our source asked 1,370 selected firms whether they *have knowledge of the firm's products being pirated within the last five years*. 23.2 percent (n=318) replied "Yes" and 76.8 percent (n=1,052) replied "No" (with a response rate > 90 percent). The difference between the two set of results speaks for itself and clearly shows that even though the actual frequency of both patent violations and counterfeiting is difficult to access, the empirical report clearly indicates that it is a severe problem.

Furthermore, research from the US on patent violations shows that approximately 1.5 lawsuits are filed per 100 patents (Lanjouw and Lerner 1998, Somaya 2003); however, the number of patent lawsuits has tripled since the 1990s (Bessen and Meurer 2013). These numbers indicate that infringed products is an issue for a significant number of firms, even though the reported numbers are only of those who are aware of such products. Another indicator of the widespread piracy of products is the number of seizures by customs each year, which indicate a severe problem. In the US in 2011 customs made 24,792 of IP seizures (number of products not available), equaling a value of \$178.9 million. In the EU that same year more than 114 million products were seized at borders, equivalent to a value of Euro 1.2 billion.

Preparing enforcement: the enforcement hierarchy

An essential part of an enforcement strategy is to identify and analyze products in the market that potentially are infringing. Below four main mechanisms in creating a strong baseline for enabling the enforcement of IP rights is presented.

By empirically analyzing responses on preparatory activities with regard to handling illegal imitations in our sample of >3,000 firms we identified four areas of activities that firms engage in. The data indicated that the four areas are dealt with by firms as a hierarchy of assignments, meaning that firms at level two are also engaged in level one, whereas firms operating at level three are also active in levels

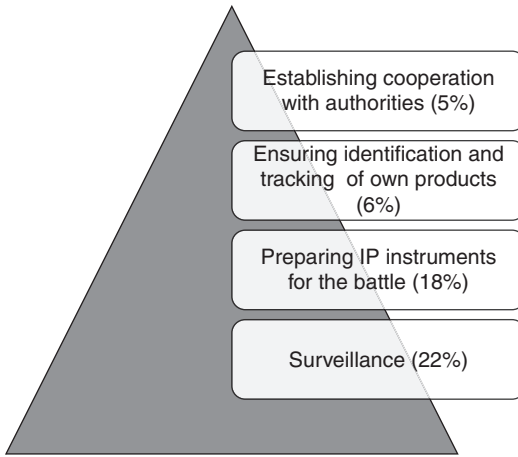


Figure 27 The enforcement preparation hierarchy

two and one. Below we describe each of the levels of engagement. The percentage inserted in each category is the percentage of firms applying such behavior.

Surveillance

Surveillance is about monitoring the behavior and activities of both competitors and infringers. Two approaches are common: (1) setting up IP search identifiers utilizing specialist agents, and (2) maintaining an overview of market developments both by utilizing specialized detectives and by making own organization aware of the need for obtaining information on potentially infringing products. In some cases a solution is to incentivize, for example, sales personnel and suppliers to pass on information on counterfeit or infringing products.

Preparing IP instruments for the battle

We have highlighted the need to consider registering IP rights in countries where infringers, competitors or counterfeit manufacturers are present or in transit. However, sometimes firms have not identified these countries, which is why additional registrations must be prepared by handing in registrations if possible (there is global novelty demand to both patent applications and design registrations why this type of registration might not be possible), and as most

enforcement activities are based on registered IP rights, not having IP registrations in place can be a major challenge.

Our data on trademark registrations also showed that a large number of trademarks are applied for in only a few countries, often the country of origin of the firm. Such registration practices do not support being able to conduct enforcement activities in other countries, and as the survey data indicated, only 18 percent of firms have considered international registrations to ensure wider enforceability.

Ensuring identification and tracking own products

Sometimes the standard and quality of pirated goods can be fairly easy to identify as the quality, colors or finish might be significantly different from that of the original. But at other times they can be very hard to identify, as the counterfeit product is very close to the visual appearance of the original. It therefore becomes an issue of whether it is possible to identify one from the other. Firms can choose to implement identifiers to which a third party does not have access and ensure that identification is possible, such as: marks from production moulds; small nuances in the colors or structure of the trademark which only can be seen under certain conditions (for example, special light, strong microscope); the way goods are packaged; identification numbers; and so on. Often firms will have a number of identifiers. Some may be available to consumers but most will only be available to the team whose job it is to fight the counterfeiters.

With regard to patent violations ensuring identification can be a different process. Firms having difficulties in identifying and proving that patented production facilities have been imitated may choose to incorporate identifiers into their manufacturing approach. Linking the infringer to the manufacturing process thereby becomes possible.

Establishing cooperation with authorities

Enforcement activities also include cooperation with authorities, for which there are two main reasons. First, to have an influence on legislative changes/development and second, to activate the authorities in the enforcement activities of the firm. Legislative changes and developments can be agreed upon when politicians become aware of issues that are non-preferential for society. Reporting the issues of counterfeiting and patent violations and the potential damage it can do to society is therefore important. Authorities can be made aware of the severe damage that counterfeits can inflict when dangerous products

are involved. Fake pharmaceuticals or food products can contain substances that are dangerous or not contain essential substances, for instance for a medical treatment. There are also examples of mobile chargers or batteries that explode and cause burns when used.

A second area of influence that is extremely important when preparing the IP battlefield is that of cooperation with customs, police and administrative authorities. As the number of seizures above indicates customs are very active in seizing counterfeit goods at borders.

All in all the four items mentioned above are the backbone of an enforcement strategy but, as can be seen by the numbers, few firms are prepared for the battle and, from an empirical investigation of the responses, we observed that the preparations are mainly done by large firms as opposed to SMEs.

Reactions against product piracy

Taking action against product piracy can be a complex strategic maneuver. A number of options are available depending on the local legislation in the country of the pirated product. Initially a firm may initiate an enforcement process by sending a cease and desist letter, asking the infringer to: (1) stop infringing operations; (2) destroy the infringing goods; (3) provide proof of destruction; (4) give information on which sales channels and in what amount the illegal goods have been distributed; and (5) ensure that no future illegal production will occur. A cease and desist letter should also state that further counteractions will be taken if the infringer cannot accomplish the tasks. These options include customs actions and civil and criminal litigation.

Customs actions

Customs authorities may seize goods entering a country that they identify as potential pirated goods. Firms have benefitted from this in most developed countries. Customs can be viewed as a cooperative partner in ensuring that pirated goods do not cross borders, giving firms an opportunity to stop pirated goods entering their markets. From 2003 to 2012, US customs increased their seizures from a little over 5,500 to over 20,000. EU customs followed the same trend. Of the goods stopped at the US border, 72 percent came from China and 14 percent from Hong Kong, indicating that, with a majority of pirated goods being manufactured there, firms have to consider taking special precautions in relation to China.

To optimize work with customs, firms are encouraged to hand in a customs application, which is an information sheet to help custom officers identify pirated goods. Handing in the customs application is free of charge, as is the support received from custom officers. This means that by initiating a customs application that includes details of both genuine and pirated goods firms can increase the likelihood of customs keeping an eye out for counterfeits.

Civil and criminal litigation

In a civil litigation the plaintiff, the original brand owner, takes the defendant, the manufacturer of the pirated goods, to court to obtain financial damages for the injuries suffered. In a civil suit the plaintiff is responsible for the cost of litigation. In some countries this is dealt with by attorneys gaining their fee from a deduction in the final award. To engage in a civil lawsuit, a firm must hire local lawyers. Civil lawyers generally only handle cases in the location in which they are licensed to practice law.

Criminal law suits differ from civil lawsuits in that criminal prosecutions carry an emphasis on punishment, whereas civil litigation emphasizes compensation for the plaintiff.

Conclusion

In this chapter we highlighted the dimensions and scopes to be considered in terms of an IP strategy. The chapter had two goals. First to present an IP strategy framework that firms yet to work IP strategy could benefit from, and secondly, to empirically examine the antecedents of each of the strategies presented. The empirical evidence showed significant differences in how the different IP archetypes utilized different IP instruments. IP Strategic Dealers were significantly more active in utilizing all IP instruments.

The reader should note that, with regard to the empirical evidence used in this chapter, it is important to be cautious. The sample is biased towards IP-intensive firms, which is why the statistics on percentages on the different usages of IP (for example, descriptive statistics on patent, trademarks and design rights) are inflated.

Exercises

1. Identify a firm and analyze the firm's IP strategy, use the following to identify: the firms patenting activities at www.espacenet.com, Google

- patents, WIPO or USPTO; the firms trademarking activities at OHIM or USPTO; the firms design right registrations at OHIM or USPTO.
2. Write down the different products and services that your firm currently has on the market, try and define an IP strategy each product and/or service.
 3. Write down the required steps to perform a freedom to operate (FTO) analysis of a new product.

Notes

1. Several websites are available for calculating fees and estimated costs for example: www.ip-calculation.com and www.globalip.com
2. Patent forward citations are commonly used as an indicator of patent value in academic research. Forward citations are used to signify the relevance of a patent to subsequent patents, and the higher the relevance, the higher the relative value within a technology area. Harhoff, Scherer and Vopel (2003).
3. Multiple types of trademark class exist worldwide, although it is possible to translate between classifications. The most commonly used classifications are the USPTO trademark classification and the EPO NICE classification.
4. This is to ensure market access and lower the expenditure on trademark registrations.
5. For the full list, please refer to http://www.wipo.int/export/sites/www/treaties/en/documents/pdf/madrid_marks.pdf

Recommended readings and bibliography

- Arora, A. and M. Ceccagnoli (2006). "Patent Protection, Complementary Assets, and Firms' Incentives for Technology Licensing." *Management Science* 52(2): 293–308.
- Berger, F., K. Blind and A. Cuntz (2012). "Risk Factors and Mechanisms of Technology and Insignia Copying – A First Empirical Approach." *Research Policy* 41(2): 376–390.
- Bessen, J. and M. J. Meurer (2013). "The Patent Litigation Explosion." *Loyola University of Chicago Law Journal* 45(401).
- Chandler, A. (1962). *Strategy and Structure*. Cambridge, MA: MIT Press.
- Cohen, M., R. Nelson and J. Walsh (2000). "Protecting Their Intellectual Assets: Appropriability Conditions and Why US Manufacturing Firms Patent (Or Not)." *National Bureau of Economic Research*.
- Dechenaux, E., B. Goldfarb, S. Shane and M. Thursby (2008). "Appropriability and Commercialization: Evidence from MIT Inventions." *Management Science* 54(5): 893–906.
- Gilbert, R. and C. Shapiro (1990). "Optimal Patent Length and Breadth." *Rand Journal of Economics* 21(1): 106–112.
- Gonzalez-Alvarez, N. and M. Nieto-Antolin (2007). "Appropriability of Innovation Results: An Empirical Study in Spanish Manufacturing Firms." *Technovation* 27(5): 280–295.

- Hall, B. H. and R. H. Ziedonis (2001). "The Patent Paradox Revisited: An Empirical Study of Patenting in the US Semiconductor Industry, 1979–1995." *Rand Journal of Economics* 32(1): 101–128.
- Harhoff, D., F. M. Scherer and K. Vopel (2003). "Citations, Family Size, Opposition and the Value of Patent Rights." *Research Policy* 32(8): 1343–1363.
- Heeley, M. B., S. F. Matusik and N. Jain (2007). "Innovation, Appropriability, and the Underpricing of Initial Public Offerings." *Academy of Management Journal* 50(1): 209–225.
- Hill, C. W. L. (1992). "Strategies for Exploiting Technological Innovations – When and When Not to License." *Organization Science* 3(3): 428–441.
- Lanjouw, J. and J. Lerner (1998). "The Enforcement of Intellectual Property Rights: A Survey of the Empirical Literature." *Annales d'Economie et de Statistique* 49–50: 223–246.
- Levin, R. C. (1988). "Appropriability, R&D Spending, and Technological Performance." *The American Economic Review* 78(2): 424–428.
- Levin, R. C., A. K. Klevorick, R. R. Nelson, S. G. Winter, R. Gilbert and Z. Griliches (1987). "Appropriating the Returns from Industrial Research and Development." *Brookings Papers on Economic Activity* 1987(3): 783–831.
- Lippman, S. A. and R. P. Rumelt (2003). "A Bargaining Perspective on Resource Advantage." *Strategic Management Journal* 24(11): 1069–1086.
- Merges, R. P. and R. R. Nelson (1990). "On the Complex Economics of Patent Scope." *Columbia Law Review* 90(4): 839–916.
- Polidoro, F., Jr. and P. K. Toh (2011). "Letting Rivals Come Close or Warding Them Off? The Effects of Substitution Threat on Imitation Deterrence." *Academy of Management Journal* 54(2): 369–392.
- Reitzig, M., J. Henkel and C. Heath (2007). "On Sharks, Trolls, and their Patent Prey – Unrealistic Damage Awards and Firms' Strategies of "Being Infringed"." *Research Policy* 36(1): 134–154.
- Reitzig, M., J. Henkel and F. Schneider (2010). "Collateral Damage for R&D Manufacturers: How Patent Sharks Operate in Markets for Technology." *Industrial and Corporate Change* 19(3): 947–967.
- Rivette, K. G. and D. Kline (2000). "Discovering New Value in Intellectual Property." *Harvard Business Review* 78(1): 54–66.
- Somaya, D. (2003). "Strategic Determinants of Decisions Not to Settle Patent Litigation." *Strategic Management Journal* 24(1): 17–38.
- Somaya, D. (2012). "Patent Strategy and Management: An Integrative Review and Research Agenda." *Journal of Management* 38(4): 1084–1114.
- Somaya, D., D. Teece and S. Wakeman (2011). "Innovation in Multi-Invention Contexts: Mapping Solutions to Technological and Intellectual Property Complexity." *California Management Review* 53(4): 47–79.
- Staake, T., F. Thiesse and E. Fleisch (2009). "The Emergence of Counterfeit Trade: A Literature Review." *European Journal of Marketing* 43(3–4): 320–349.
- Sullivan, P. and J. M. Raley (2010). "Building a Winning IP Strategy." *Intellectual Assets Management* Jan/Feb: 9–15.
- Teece, D. J. (1986). "Profiting from Technological Innovation – Implications for Integration, Collaboration, Licensing and Public-Policy." *Research Policy* 15(6): 285–305.
- Teece, D. J., G. Pisano and A. Shuen (1997). "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18(7): 509–533.

8

Markets for IP

Abstract: *Markets for IP represent opportunities for firms to reap additional rents from IP or to reach out and harvest further competitive advantages through alternative channels. As we will see in this chapter, one reason for becoming active in markets for IP may be that firms are subject to increasing competitive pressure. One way to harness competitive advantages beyond internal ones is to embark on IP exchange with the licensing or trading of IP rights. However, this is not an easy task and there are many pitfalls and dangers. To facilitate this process, firms often employ IP brokers to identify which IP rights might be valuable for the firm to license and to act as mediators in the process of matching up with the most appropriate partners in a fruitful manner. This chapter discusses some of these issues and presents some thoughts to allow the reader to anticipate some of the dangers and understand how they may realize maximum benefit from IP markets.*

Introduction

LEGO both in-licenses and out-licenses. Firms that produce shoes, clothing, books and so on can have a license for the LEGO brand. LEGO also in-licenses stories or characters, such as Star Wars, The Hobbit, and Teenage Mutant Ninja Turtles. Andrea Ryder, a senior licensing director at LEGO, explains how the company utilizes in-licensing to develop a product portfolio:

It is intended to merely support the main product. It is atypical in the sense that we are not looking for brand extension, but merely to supply

other things that the LEGO core consumer might like. We are not looking to merchandise the characters; everything has to link back to the bricks and the building ethos of LEGO.¹

Smaller firms also engage in licensing and use it to build their businesses. One example is the Danish furniture company Fritz Hansen A/S, which in-licenses creative works protected by copyright or design rights on, for example, chairs, tables, sofas, and lighting. The designers are often well-known, such as Arne Jacobsen, Hans Wegner, Poul Kjærholm and Piet Hein. Fritz Hansen is an excellent example of a firm that has entered the IP market for different reasons. It has overcome obstacles and thought strategically about their position in the market for IP. By so doing, they are building a business model that integrates IP to a greater extent than in the majority of firms.

The term market is rather complicated and tricky. There is little dispute that it is characterized by being a “place” where buyers and sellers interact to trade goods or services, either by bartering, exchanging one good for another, or by transferring money from one party to another. The function of a market is to determine the price of the goods through an interaction between demand and supply, to communicate price information, to facilitate a match between supply and demand, the conditions of the exchange, and a redistribution of goods and values. It may sound simple and straightforward but the market concept has puzzled economists in many respects, not least by its mechanisms.

A simple but core question is how to determine a market’s boundaries. It is tempting to say that a market consists of all goods that are homogenous, in the sense that two goods only belong to the same market if they are perfect substitutes. This definition, however, would create a myriad of markets, each one consisting of a single firm that enjoyed a monopoly. However, this is far from reality. There is substantial competition between goods that are not fully homogenous, in which the adjustment of the price of one good may have repercussions on the market position of another, even if customers do not consider them perfect substitutes. Indeed, a significant price increment for Coca-Cola would undoubtedly have a positive impact on the sales of Pepsi even if most of us agree that the two products are not homogeneous. At the other extreme, we also need to define

the market in such a way that Coca-Cola is not categorized in the same market as John Deere tractors. If we do define a market by the substitution of goods, what if we allow that H&M clothing is in the same market as Hugo Boss and that Hugo Boss is competing against Hermés. But do H&M products belong in the same market as products from Hermés? It can hence be exceedingly difficult to determine the boundaries of a market.

Markets for IP share all the functionality, properties and values of the more traditional markets of goods and services. The only difference being that markets for IP do not involve the transfer of traditional service or goods, like the postal service or pens. Instead it involves a transfer of the rights to use or exploit a given IP asset specified in a contractual agreement between the supplier and receiver of that asset. LEGO, for instance, purchased the rights to use the Star Wars trademark from Lucas Film in order to launch LEGO Star Wars. In the music industry artists transfer rights in their music to record labels, called a transfer of copyright. Bruce Springsteen, for instance, signed with Columbia Records in 1972 when the talent scout John Hammond assigned Columbia the rights to the music.

It can be as difficult to define the boundaries of IP markets as for other goods. Certainly, there are boundaries between different types of IP, like patents, copyrights, trademarks and design rights. However, there are also a multitude of markets within each category of IP. Some record labels have specialized in classical music while others have centered their attention on jazz or blues. They do not consider copyright on jazz to be a substitute for copyright on classical music. Similarly, patents on a pharmaceutical component can hardly be considered as in the same IP market as a patent on nuclear fusion. Defining the boundaries of an IP market is as difficult as defining it for a more traditional market. In order not to linger too much on such details, we will continue on the assumption that the reader can think of the boundaries theoretically, even if it is difficult to define them empirically.

While contractual and legal aspects can be important in traditional markets for goods and services, there tends to be a greater focus on such issues in IP markets. This will become apparent throughout this chapter. For this reason, markets for IP are distinct from the local weekend market in that the transfer often requires legal expertise and some times rather complex and excessive contracting. This makes

operating in IP markets a more daunting and resource-heavy activity than engaging in traditional markets. For this reason, markets for IP tend to be more like exchanges in Business2Business operations than Business2Consumer operations.

Having defined and debated the general concept of markets for IP this chapter deals in more detail with the nature and objective of such markets. In particular, it addresses the incentives of the supply and demand side of the markets, considers various advantages and limitations of such markets, and considers some strategic aspects of these markets, drawing on law and economics and, in particular, contract theory. While the chapter will raise some important aspects with regard to markets for IP, it will only briefly touch upon a small part of the rather extensive facets of this topic. We strongly recommend the book by Arora, Fosfuri and Gambardella (2004) for a more detailed and thorough discussion.

In the context of the book, this chapter articulates some of the difficulties of moving from IP Rookie to IP Dealer or of transforming the business from IP Strategist to IP Strategic Dealer. We look at some of the reasons why this should be and under what circumstances firms should consider such steps, and identify some of the difficulties or hazards that may be present when venturing into markets for IP. Therefore this chapter focuses on the key mechanisms in different types of IP exchange to provide an insight into the advantages and disadvantages of engaging in markets for IP.

Incentives of supply and demand

Engagement in IP exchange is commonly the result of a decision to acquire access to a specific technology, design or trademarked brand for use in one's own products. The firm can conduct an IP exchange with other firms, entrepreneurs, scientists, customers, and so on. This activity commonly takes place through buying or selling IP rights, in- or out-licensing technologies, brands or original arts, or through cross-licensing of (mainly) technologies. It may, however, also be a byproduct of another activity, for example, if the firm engages in research collaboration with an external partner where the ownership of the IP resulting from the collaboration is not specified. This can result in a licensing agreement to settle potential disputes.

There is a long list of reasons for becoming active in the market for IP and a few are listed in this section. The reason may depend on whether the underlying asset is a patent, a trademark, a copyright or a design right. The aims and goals may be short- or long-term. But common to all the reasons is that firms engage with the aim of securing a competitive position, which allows them to operate and generate rents. We will support the listed reasons with illustrative examples or with reference to academic publications on the subject.

Securing direct rents

On the supply side of an IP market, the exchange may take place as a source of direct income. Often the deal that takes place entails that the supplier of the IP asset receives a monetary compensation in return. Three different payment schemes are traditionally used. First, firms may negotiate an upfront payment as a one off, lump sum transfer of money, where the receiver pays an agreed amount of money based on the value of the underlying IP.

Second, the two parties specify in the contract that the receiver pays a royalty to the supplier of the IP. The amount is a fraction of the sales that can be directly traced back to the use of the IP. This may, for instance, be a percentage of the sales on a good sold by the receiver, which builds on a technology patented by the supplier of the IP. Such royalty payments can also be coupled with a minimum royalty agreement where the supplier does not want to run the risk that the receiver will be unable to generate sales based on the asset. In case there are no sales, the royalties would amount to zero. However, minimum royalties secures that the supplier is at least compensated with a minimum amount in each specified period.

Third, the agreement may be based on milestone payments, a remuneration structure which dictates that the receiver pays the supplier a specific amount of money at clearly defined points in time, given the continued use of the IP.

Firms can combine different payment schemes so that a contract might include both an upfront payment and a royalty. There are, however, circumstances in which one type of remuneration structure is favored over another. For instance, principal agent conditions in the form of adverse selection or moral hazard can impact the value of the underlying asset. Assume that firm A buys the right to use a trademark held by firm B. After having signed the contract, firm B engages

in a questionable activity, which taints the value of the trademark. If firm A agreed on an upfront payment, the money may be lost or only retrieved after lengthy legal action. However, if firm B makes use of a royalty agreement or milestone specification, the loss can be kept to a minimum since the money had yet to be transferred, giving firm A more options and flexibility in its operations.

Apple has made extensive use of licensing their trademark after deciding that they should not branch out into products for which they had no core competences. But there could be excellent reasons for having the Apple trademark on products that have been designed and developed to be integratable with Apple devices. Accordingly, external partners could make products to bundle with Apple products and receive the right to use the Apple logo, thereby extending their sales since customers associate the logo with a certain style and quality. This was done for products like headphones, carrying cases, and other accessories. In return Apple receives an economic compensation for allowing the external partner to use their logo and package the item as an Apple product. Apple generates direct rents by allowing others to use their trademark.

Another example is Hennes & Mauritz AB (H&M), a Swedish clothing retail company known globally for fashion clothing for men, women, teenagers and children. Clothes carrying the H&M brand are produced in low income countries and often sold at a very low price. However, H&M cooperates with world renowned designers, such as Karl Lagerfeld, Versace, and Stella McCartney, and presents guest designer collections. In this way it in-licenses the use of celebrity names, who sometimes take a major role in producing the original designs.

Infringement and product launch

When developing new products and extending a product portfolio, firms run the risk of infringing on the IP of another firm, whether copyright, patent or trademark. This can be a barrier for some firms, who hesitate to launch a product that may have legal repercussions *ex post*. This potential for infringement can hamper an organization's operations and, at worst, may stop a firm from launching a product that they had developed through a costly and resource-heavy R&D process. Some firms go through the entire process only to find that they do not have the freedom to operate on the developed asset.

Licensing the IP that the new product or service is in danger of infringing may be a way to secure freedom to operate (FTO). Indeed, licensing may also be used as a means to open up new markets. While you may have FTO in Europe, it may nevertheless be that your product infringes IP in the US. In this case the firm may secure FTO through licensing the IP from the IP holder in the US. We sometimes hear of patent thickets, which are cases where a firm needs to secure multiple patents from a number of different IP holders before having the FTO.

Firms may also be hesitant about how to launch a product and unsure how to place the product in the market by sending the right signals. Markets for IP may assist in this since it is possible to secure an entire platform and concept of how to go about this. One example of such a solution is the adoption of HOWARU's conceptual package launched by Dupont.

As a HOWARU® licensee, you gain access to our unique marketing concept and the right to employ our consumer-friendly HOWARU® logo on your product packaging and marketing material. The name itself – pronounced “how are you” – draws an immediate connection between your probiotic product and health.²

The trademark is thought to signal a food and beverage intake that has been developed with the aim of improving consumer health. Adopting an already established trademark can indeed lower a barrier to launching the product.

Creating partnerships

Engaging in a contractual relationship in which firms transfer the rights to a given IP may be the first step in facilitating further integration and partnership activities. Indeed, partnerships can be difficult to secure since they often require trust, especially in matters regarding a firm's IP. Small young startups can find it difficult to establish linkages and suffer from what is known as the liability of newness (Stinchcombe, 1965) since they have not established the necessary trust relationships which are a prerequisite to securing partnership agreements and stable professional relationships (Nguyen and Rose, 2009). Firms consider it essential to protect themselves against potential piracy, imitation or of engaging with a firm with questionable business ethics. For this

reason, they can be hesitant in creating formalized partnerships with other organizations and reluctant to establish alliances.

Licensing or similar contracts can be a first step towards gaining the trust of a potential partner. Such contracts are arm's-length relationships where associated risks are relatively manageable. Indeed, such contracts often only involve a particular item or asset, which limits the scope of any problems that may arise with respect to the agreement. During the contractual period, the two firms may observe each other up close in terms of values and conduct. These contracts also establish a channel of information and knowledge since networks are being established across the organizational boundaries. Such ties can become essential in identifying common interests and opportunities and may lower the barrier for further collaboration in other areas of business and develop into more formalized alliances.

Markets for IP may also be used as a channel through which firms transfer information and knowledge about their assets to partners, particularly where products or technologies may be highly complex and difficult to absorb. Danisco (now owned by Dupont), a bio-based firm focused on food production, enzymes, other bio-products, and pharmaceuticals, states the following:

*Communicating the benefits of probiotics can be a tricky challenge. Our licensing program is designed to give all the help you need.*³

In this way, the firm's IP operates as a conveyor of usage and integration of their products through an IP market, helping them to diffuse their products more easily.

Entering into the market for IP may hence allow a firm to form professional ties that center the firm in the business in which it is operating. In fact, it may make the firm much more visible making it more likely that it can enter into other business relationships with an IP angle, such as standard settings or patent pools.

Securing an innovation edge

Entering the market for IP may also take place as part of a firm's strategic considerations with regard to R&D and other innovation related activities. We already know that engaging in the market for IP may prove fruitful in establishing more integrative collaboration

partnerships. A firm can benefit from external collaboration in many ways. First, engaging with external collaborators opens up a large pool of knowledge. While the firm may have considerable competence itself to research and develop new and innovative products, it is often insufficient to rely solely on these competences due to the complexity and variation of knowledge required in innovation. By making a larger pool of knowledge available through in-licensing, the firm increases the likelihood of identifying and acquiring the missing pieces of knowledge required to push their innovation process forward.

Second, external collaborators are likely to have different experiences, whereby they can provide new ideas and shed a new light on existing issues. For example, it is not uncommon that a firm relies heavily on customer feedback to continuously improve their products, or build a relationship with suppliers where ideas and improvements are discussed.

Third, external collaboration can be used to overcome a lack of capability. When the firm pursues a certain assignment it may experience that a particular capability is required. If this is a specialized capability, it may not be available within the firm. While the firm can choose to build this capability, this often entails a costly and long-winded process, whereby it makes more sense to access this capability through an external partner.

Fourth, engaging in IP speeds up the innovation process by allowing the firm to learn from the experiences of others. By gaining access to the technology and knowledge of an external partner, a firm can boost their own development process, and focus on novel, innovative development, rather than expending resources on re-inventing the wheel. Indeed, other partners may not only assist in providing specific components for a new technology but may also provide insights on unfruitful and dangerous approaches or steps so that the firm avoids using resources in the wrong places, thereby focusing their attention on a lower number of tasks. In turn, they can cut the time of their development process (Leone and Reichstein, 2012).

A firm's survival can depend on its ability to innovate, reflected in a need to increase the number and quality of innovative ideas. This puts it under pressure from an increase in the speed in which new innovations occur. In response many firms turn to, for example, their customers and users for inspiration, and develop new knowledge through a

collaboration with, for example, university academics. Opening up the firm's innovation process to external sources is commonly known as open innovation, a term coined by Henry Chesbrough and defined as:

Open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. (Chesbrough, 2003, p. 24).

Engaging in open innovation can be highly beneficial to a firm, bringing new knowledge, ideas and insights to the innovation process. However, opening up to external parties also requires the firm to consider and assess critically how the process is opened up to ensure that vital information, such as trade secrets, is not disclosed or abused.

Activities such as licensing can also be used to gauge the attractiveness of a potential partnership with another firm. By in-licensing technologies firms can select and assess their quality and then decide on potential collaboration partners, increasing the likelihood of a successful partnership. IP partnering makes it straightforward to identify the most promising partners, since their competences and abilities are, at least partly, uncovered through their IP activities.

Not so easy

There are lots of incentives to and reasons for entering into IP markets and it sounds like all firms should consider engaging in the process. However, there are also an equal number of reasons why firms should hesitate. Obviously, engaging may possibly reveal more of the firm's own IP than it is comfortable with and, for instance, increase the likelihood of piracy. Engaging also means opening up, which is risky in itself since it may cause leakages and risk the firm being subjected to the dissipation effect or the boomerang effect. The dissipation effect refers to the situation where firm A license an IP to firm B and then experience a reduction in competitive advantage when firm B starts stealing market shares, thereby cannibalizing on firm A. The boomerang effect is when a firm loses its IP edge when entering into an contractual agreement on an IP asset. The contractual partner overtakes the supplier in the further development of the IP leaving the

supplier with IP that may become obsolete (Choi, 2002). This effect refers to patenting, licensing of patents, and the technological race.

It should be apparent by now that entering into the markets for IP more often than not entails considerations of legal issues and contracting. In terms of legal issues, there is the potential need to take legal action against a contractual partner and the resources needed to be successful in legal actions in contractual disputes on IP issues may be tremendously large. This is apparent from the dispute that took place between Apple Corps and Apple Computers in the mid-1980s. The two firms had agreed in the early 1980s that both could use the Apple trademark but that Apple Computers would not venture into the music recording business, which was the core business of Apple Corps founded by the Beatles. However, Apple Computers included audio recording software and integrated a sound chip into their computers in 1986. Apple Computers was legally forced to discontinue further development of their products in this direction after the dispute. However, the dispute between the two did not end there. Apple Computers continued to introduce new editions which Apple Corps considered infringed their trademark. Not until 2007, almost 30 years after the first dispute and contractual agreement, did the two firms finally reach an agreement. Apple changed to Apple Inc. and is thought to have paid Apple Corps a total of \$500 million for the full trademark rights. With the agreement that Apple Corps would continue to operate with their name. The dispute is a clear indication of how demanding on resources it can be to enter into markets for IP.

In terms of contracts, the challenge can be substantial and may in fact scare many firms away from taking on the markets for IP. Indeed, contracts can be exceedingly long and demand an extensive overview of contracting. For the same reason, many firms that have entered into IP markets rely on external advisors to formulate contracts and ensure that the right entries are included. While it can become a basic process after having engaged in numerous contracts, the first time may nevertheless cause lots of concerns and be a hurdle to engagement.

Firms also need to consider their resource endowment and whether it contains the capabilities and know-how that will allow them to engage efficiently in the markets for IP and to circumvent associated risks. Indeed, engaging in IP markets may be a highly resource-heavy

activity. Without the right human resources, the firm may have a fruitless experience, which may also lead to substantial costs and losses.

Core to being successful in markets for IP is an understanding of contractual clauses and specifications. Without that understanding, firms may well make mistakes that can have catastrophic consequences. Contractual economics is a field of science that deals with these issues and provides guidelines as to what an optimal contract looks like, given the relationship between the two parties. It is concerned with the question about optimal decisions and there are numerous circumstances that may impact these. For now we will try to give a brief outline of some of the issues that may be relevant to an understanding of the requirements for being successful in IP markets.

Depending on the aim for signing an IP agreement, the contractual specifications may be central to obtaining the right balance of fairness between the supplier and receiver of the IP. Take the example of a demand side firm which has identified an IP asset it is seeking to utilize in its own IP development process. IP assets can be rather complex and difficult to understand. For this reason, the receiver of the IP may want to secure the collaboration of the supplier. By securing his collaboration, the receiver may be able to retrieve more information and knowledge than that disclosed in the transferred asset. This can be done in the contractual specifications – in contractual clauses. Let us say we are talking about a technology which is being transferred from firm B to firm A. Firm A wishes to use the technology in combination with its own technology to generate a new product. However, firm A does not fully understand firm B's technology and needs to make sure that firm B is willing to help and assist firm A in assimilating and absorbing the technology into its own stock of knowledge. This can be done in numerous ways.

First, firm A can insist on a milestone-based agreement in which payments are made when firm A has completed specific stages in the assimilation of the transferred technology. Firm B will then reserve resources to assist firm A in reaching these milestones so that it will release the agreed payments. Firm A has incentivized firm B to work collaboratively to overcome problems and challenges regarding the technology transfer. Who better to do that than the firm that developed it?

Second, firm A can include a grant-back clause in the contractual agreement, which dictates that firm A has to grant firm B rights to the newly developed technology, which is based on the transferred technology. By doing so, firm B is incentivized to assist firm A in understanding and integrating the transferred technology. Any IP outcome of this assimilation will automatically be shared with firm B. Firm B in fact leverage on resources supplied by firm A in its R&D activities simply by releasing resources to help firm A understand the technicalities of the transferred technology. Again, the contractual specification is written in a form which ensures that the involved parties share the incentives given the strategic considerations of the involved parties.

Contractual specifications can also protect firms with regard to moral hazard and adverse selection. It is virtually only in the theoretical world that contractual partnering is not characterized by asymmetric information where each firm does not have full information about, for example, the partner and the IP asset. Asymmetric information may cause firms to select the wrong partner (adverse selection) or it may cause a partner to act differently than expected or agreed after signing the agreement (moral hazard). Inclusion of contractual clauses can circumvent such issues allowing firms to manage the risk of entering into contracts on IP.

It is not difficult to see from this that human capital and extensive experience in contracting can be instrumental when considering a strategy for entering the markets for IP. Not many organizations have the necessary means to pursue markets for IP successfully. For the same reason, we see numerous IP agents offering a service to guide firms through this major labyrinth and some firms decide to outsource such activities. Yet, outsourcing IP decisions may make it difficult to get the full reward since it becomes more difficult to integrate and align markets for IP affairs with the overall strategic goals of the firm.

Markets for IP and the archetypes

Engagement in the markets for IP is clearly affected by the IP exchange orientation dimension of the archetype classifications. This means that IP Rookies and IP Strategists do not actively engage in the activities described in this chapter. If they do, then it is at a minimum level. The two archetypes that do engage in these activities are the IP

Dealers and the IP Strategic Dealers. However, we can also separate one from the other, so let us try and distinguish between them based on the contents of this chapter.

The IP Dealer is active in trading and exchanging IP with other firms or organizations. However, they do not do so strategically. This means that their activities revolve around generating income in the form of securing direct rents through upfront payments, royalties or milestone payments where they are the supplier of the IP asset. They have understood that an IP asset can generate rents in alternative ways to the traditional when it involves the firm's competitive position in a given market and adds value in combination with a given product. The IP Dealer also considers the IP as a product in itself, which can be traded. They may also have engaged on the demand side of the market for IP. But not as a means to obtain a strategic position through, for example, partnerships. They do so as a way to avoid a legal action or as the outcome of one, either because they have been able to identify possible infringements themselves or because a holder of an IP asset has contacted the firm arguing it has infringed his IP right.

The IP Strategic Dealer on the other hand is much more all embracing with regard to the possibilities of IP. These firms tend to engage professionally in the markets for technology since their IP activities are also part of their strategic considerations. While entering the market for the same reasons as the IP Dealer, the IP Strategic Dealer also considers the other motives for being present, for example, partnerships, innovation purposes, and formal collaboration agreements like alliances. Since these firms seek to exploit fully the potential markets for their IP, their contracts also tend to be more comprehensive and rich in clauses. They seek to design contracts to gain all advantages and make sure they adhere to the strategic considerations of the firm. For this reason, IP Strategic Dealers tend to have substantial capabilities in contracting, legal aspects and contractual economics, which enables these firms to successfully integrate their market for IP activities into the firm's overall strategic conduct.

Exercises

1. What is the nature of markets for IP and how does it compare with traditional markets?

2. What benefits are firms able to realize through entry into markets for IP?
3. What is agency theory and why does it play a role in IP markets?
4. What do successful markets for IP management require in terms of resources?
5. How can entry into the markets for IP be used as a means to improve a firm's own IP conduct?

Notes

1. <http://www.managingip.com/Article/2992060/Interview-How-Lego-handles-licensing.html>
2. Please see <http://www.danisco.com/product-range/cultures/howarur/> for a presentation of the trademark. Authors accessed the website on December 9, 2014.
3. <http://www.danisco.com/dietary-supplements/licensing-program/>

Recommended readings and bibliography

- Arora, A., A. Fosfuri, & A. Gambardella (2004). *Markets for Technology: The Economics of Innovation and Corporate Strategy*. Cambridge, MA: MIT press.
- Chesbrough, H. W. (2003). *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business School Press.
- Choi, J. P. (2002). "A Dynamic Analysis of Licensing: The 'Boomerang' Effect and Grant-Back Clauses." *International Economic Review* 43: 803–829.
- Laursen, K., and A. J. Salter (2013). "The Paradox of Openness: Appropriability, External Search and Collaboration." *Research Policy* 43(5): 867–878.
- Leone, M. I. and T. Reichstein (2012). "Licensing-in Fosters Rapid Invention! The Effect of the Grant-Back Clause and Technological Unfamiliarity." *Strategic Management Journal* 33(8): 965–985.
- Nguyen, T. V., and J. Rose (2009). "Building Trust – Evidence from Vietnamese Entrepreneurs." *Journal of Business Venturing* 24(2): 165–182.
- Stinchcombe, A. L. (1965). "Social Structure and Organizations". In March, J. G. (ed.), *Handbook of Organizations*. Chicago: Rand McNally & Co: 142–193.
- Simon Crompton, London (2014). <http://www.managingip.com/Article/2992060/Interview-How-Lego-handles-licensing.html>, accessed May 2014.

9

IP Archetypes and Demographics

Abstract: *This chapter maps similarities in IP practice between firms sharing particular demographic dimensions. We explain, theoretically, how IP practices may overlap among a defined set of organizations. Specifically, we emphasize four mechanisms: isomorphism; heritage of practices; market selection; and resource constraints. These mechanisms operate globally and shape general practice. However, they may also impact the choices made with respect to IP management causing overlap in, for instance, practices across firms within the same geographical area, in the same industry, or of the same size. The chapter also puts forward empirical investigations which suggest that these four mechanisms do indeed operate in numerous dimensions, putting a upper limit on the observed variation in IP practices in a specified set of organizations. In comparing the four IP archetypes with respect to size and composition of employees, we find that IP Strategists and IP Strategic Dealers in general employ a relatively higher number of managers, engineers and scientists with a PhD. These firms tend to be both larger and younger when compared to IP Rookies and IP Dealers.*

Introduction

All firms are different, in fact, no two could be said to be monozygotic twins and will differ from each other in various aspects, in size, in the products they sell, some will pursue an aggressive pricing strategy while others will compete on quality. Some firms organize themselves as a flat structure while others install several layers of hierarchy. Newly established firms will have a dynamic and vibrant

corporate culture, while mature organizations will have all the indications of a dusty bureaucracy. However, in the words of Louis V. Gerstner Jr, "Who says elephants can't dance?", which suggests that even established firms may have the virtues of a young and spirited organization if they are managed and organized in the right way. All of these things clearly indicate that firms are overwhelmingly heterogeneous.

Firms are not rigid cast-iron structures. They can change and adjust their way of doing business. Indeed, this is rooted in the idea that organizations learn (Simon, 1965). As a consequence we see them installing new structures (Chandler, 1962), new systems (Miles and Snow, 1984), or new actions (Cyert and March, 1963). They may be rigid but certainly not unchangeable, as is evidenced by Louis Gerstner's revival of the IBM business model, which changed the firm from being foremost a firm dealing in computers and computer-related products to transitioning into being foremost a consulting firm. This tremendous transformation involved changes not only in the product portfolio, but also in organizational structures, strategies, external partners, right down to the smallest routine or practice of the firm.

But how do firms organize themselves? What makes them choose particular practices over others? What is it that drives a firm to engage in lean production methods to preserve the consumer's perception of value with less work? What causes some firms to center their attention on just in time principles and build their competitive advantage with such practices? Why do some firms engage heavily in IP management while others do not engage in it at all? One possible answer to all these questions could be the logic of competition (Barnett, 2008). As already introduced in Chapter 7 on patent strategy, certain competitive environments influence firms to adopt proprietary, defensive or leveraging patent strategies. We argue that in some settings it is rational to bet on IP management practices since these practices can offer a competitive advantage. In other settings it may not be the rational choice. It may, in fact, be sensible to either completely disregard IP rights or to operate with IP at a relatively low level of effort. In the biotech and pharmaceutical industries it has become the rule rather than the exception to make use of patents to create a strong position in the business, while in carpeting it seems less relevant to engage in patent than in trademark strategizing to signal cheap labor

or high quality. In some circumstances it may not be beneficial to apply any form of IP management in order to compete in the business environment.

This chapter seeks to map some similarities in IP practices across firms that share particular demographic dimensions. We will start with four reasons why we expect practices to be alike within defined subgroups of organizations. These mechanisms are not only on a higher level of aggregation but may also work in smaller communities of organizations. We will then offer some empirical data that points to a pattern of homogeneity across different sub-populations of firms when it comes to IP management practices.

Mechanisms leading to similarity in practices across firms

There are four different mechanisms, in the context of demographic patterns of IP management, that cause many firms to choose a similar way of operating with IP. These four mechanisms may be referred to as *isomorphism*, *heritage*, *market selection*, and *resource driven similarity*. Each are presented below.

Isomorphism

Firms tend to become more similar in their operating modes as they face the same environmental conditions. As they are challenged by similar problems they are also likely to adopt similar practices and ways of organizing themselves, a process referred to as isomorphism (DiMaggio and Powell, 1983). This leads to an adoption of more legitimate practices or practices that are more likely to allow the firm to survive. Organizations hence adopt practices for legitimate rather than efficient reasons (DiMaggio and Powell, 1991). And they do it through normative pressures.

Large organizational adjustments, however, can be a liability, which may translate into a higher probability of exiting the market (Hannan and Freeman, 1989). They disrupt and can lead to inconsistencies in practices and operations. Accordingly, firms start to look alike due to a normative pressure and the exiting of those firms that needed to make large adjustments to their practices.

In the software industry, for instance, we have seen the emergence of two major populations of IP conduct. This is particularly evident

in operating system software where firms like Microsoft have taken a strong stance in favor of formalized IP protection and have engaged in appropriability using traditional tools like patents, copyrights, and trademarks. At the other extreme, the open source (OS) community represents a movement towards a different strategy with respect to IP and IP conduct. Among the OS systems in this community are Ubuntu, MintLinux, Fedora and Debian. In each community, there are strong normative pressures to operate in a given way and the firms in each camp tend to rely on specific IP practices that are common across the firms. Creating a culture of operating from a specific set of values and beliefs with regard to rights and strategies for the further development of underlying assets.

Heritage of practices

A large proportion of active firms are in fact byproducts of other firms (Sørensen and Fassiotto, 2011). Established firms are the most dominant source from which entrepreneurs are spawned (Freeman, 1986; Burton et al., 2002; Gompers et al., 2005). When entrepreneurs start up a new firm they rely heavily upon the experiences they bring with them. They do not instate practices and structures randomly. In fact, it has been argued that entrepreneurs are limited in the organizational choices they can make, based on what they already know from prior employment (Baty, Evan and Rothermel, 1971; Boeker, 1997; Sørensen, 1999; Kraatz and Moore, 2002). They are therefore imitating the organizational models and practices they have been exposed to previously. Indeed, it has been argued that entrepreneurs suffer from cognitively biased perceptions that lead them to copy practices from their prior affiliations (Boeker, 1989). Accordingly, we see that newly started businesses are images of their founder's prior affiliations wherefore organizational practices are copied through the entrepreneurial act. Put differently, entrepreneurs seek to install the practices they know from the prior employment triggering a heritage effect where newly founded firms tend to strategize and operate in a similar way as their parent firms. We accordingly see a tendency for similarity in the way firms operate and do business.

Being exposed to IP conduct in a firm not only allows an individual to obtain competences and qualifications in managing IP but also to start considering IP as a central part of a successful business model and natural conduct for an organization. Accordingly, such

individuals, when starting their own firm, will automatically think of IP as part of their operations and organize IP activities in a similar way and install some of the same IP practices in their newly founded firm. Coming from a patent intensive firm will lead you to establish firms that also build on patenting. Having experience with contracting on technology assets will cause you to think of technology contracting as a means of achieving a competitive advantage. Having been exposed to a business in which appropriability is a strategic action of operations increases the likelihood that the entrepreneur will choose to think of IP in a strategic manner in his new firm. There is a transfer of IP conduct from established firms to their offspring, which is realized through the founder of the new entity.

Market selection

Some configurations of organizations and strategic choices favor the survival of particular firms through a selection mechanism that takes place at the market level where only firms with particular ways of doing business will be left to compete. Indeed, organizations learn from and adapt to the environment in which they operate. They tend to search for better practices to sustain their position (Nelson and Winter, 1982). Firms that have installed the best practice will display a higher productivity, grow faster, and have higher survival rates (Bloom and Van Reenen, 2010). Firms will select the best practice configuration through organizational adjustments and competitive pressures. In the context of entrepreneurship, it has even been shown that spin-offs (defined by firms established by a founder coming from the same industry) tend to exhibit a higher performance (see for example, Klepper, 2001; Klepper and Thompson, 2010). Furthermore, spin-offs coming from high-performing parent organizations tend to outperform firms coming from low-performing parent organizations (Burton et al., 2002; Dahl and Reichstein, 2007). The argument being that such newly started firms tend to be based on superior knowledge with regard to the business and hence are able to adopt the better practices needed to compete in the setting (Agarwal et al., 2007; Klepper, 2007). All in all, there is a market selection process that ultimately impacts the practices of organizations in such a way that they tend to do things in a similar way across time.

In some markets, the competitive pressure can be rather fierce and in some the name of the game is IP. Indeed, in settings in which IP

is the game, small start-ups can be especially vulnerable and fierce competition may result in the start-up having to file for bankruptcy. In biotech, it is a necessity to engage strategically and secure an IP position if the firm wishes to continue operations. Indeed, IP is the trade of biotech firms and is often their sole living. Without IP, these firms cannot transform their assets into a positive cash flow. They are competed out of the market. For this reason, all active biotech firms engage in IP activities.

Resource driven similarity

The resources available in firms may also dictate the way they operate and organize, not to mention strategize. Indeed, firms tend to compete with scarce resources and may indeed be forced to choose between different activities and competitive strategies (March, 1999). Firms that are similar in terms of organizational structure or of employee composition may be more likely to make similar choices. For this reason, the choices and organizational practices instated in an organization may indeed be a byproduct of the resources available to it. Firms operating in particular environments may be forced to make similar choices due to limitations on resources available. Facing the same constraints may cause firms to behave more like twins than distant cousins, thereby sharing many of the same ways of operating.

Apart from the process underlying the creation of intangible assets covered by IP, which in itself often requires a specific skillset, applying and managing IP also requires a particular set of skills. There are forms and applications that need to be completed and filed, not to mention the contract and potential legal actions that may be required for the successful undertaking of IP management. It can be extremely difficult for firms without the necessary human capital and skills to even consider engaging in IP activities.

Empirical similarities across dimensions

In the following we provide empirical evidence of similarities in the IP strategy a firm chooses given industry affiliation, geographical context, internationalization, organizational size, firm structure and the internal availability of human resources. We will draw on the above mechanisms for seeing similarities across firms under these

conditions and to investigate how particular IP archetypes may be a dominant feature among specific sub-populations.

Industry

There are different logics of competition across industries. Some industries compete on color of products; some on services attached to a given product; while others on the quality or functionality in the product. Some industries are highly capital intensive while others are labor intensive. Pharmaceutical and biotech firms are, by definition, knowledge intensive industries while automobile production is scale intensive with large capital equipment and production units to assemble their products. Some industries are characterized by a myriad of small operators, like the construction industry where production is characterized by in situ systems with lots of suppliers working to deliver a final product, while others are characterized by lean production methods, as often seen in steel production.

These differences in operating and producing may be attributed to the underlying product and the characteristics of the logic underlying the competitive pressure. You will find firms engaging in IP in all industries, although some industries exhibit a greater tendency to use IP than others. In some firms the pursuit of IP is a matter of life and death, while in others it is more the exception than the rule. In biotech, for instance, a proprietary patent strategy may be the focus for their investors, securing the rights to a developed intellectual property by producing revenues through, for instance, licensing royalties or upfront payments. In electronics the name of the game has been technological advances and patenting, while in the wood manufacturing industry patents are used very little. Manufacturers of audio and video equipment exhibit a high trademark intensity but few trademarks are taken by construction firms. Some industries consider IP protection of major importance while others consider it of no importance.

These industry patterns may be due to an isomorphism, where firms identify themselves with firms operating in a similar market. But it is more likely to be a matter of competitive pressures that dictate firms should protect their intellectual property or perish. In some industries it is imperative to engage in IP in order to compete at par with other firms in the same industry. This is also known by entrepreneurs coming from the industry, which is why even smaller firms

in such settings will engage in IP in order to sustain their business, this creates a strong pattern of similarity in IP management within particular industries.

We empirically investigated the degree to which the archetypes were predominant in particular industries (data not presented here). We found that pharmaceuticals, IT, and electronics included an above average number of Strategic Dealers, while more moderate and traditional industries like restaurants, beverages, paper and allied products, and machinery production tend to be inhabited with a higher share of Rookies. Indeed, we found a clear tendency for a higher share of Strategic Dealers among the more knowledge intensive industries. But we also found some firms operating out of industries characterized by scale of specialized supply to be among the more intensive IP-managing firms.

Geography

There is a tendency for firms operating in similar environments to resemble each other. Isomorphism may be particularly strong in a geographical dimension since firms tend to focus on the things that they can physically see and observe. Indeed, there are much higher chances of a manager of a firm in northern Denmark following the routines and practices of another firm in northern Denmark than one located in Timbuktu. The likelihood of the manager even being aware of the firm in Timbuktu is slim while he is highly likely to be informed about a firm in close proximity. For this reason two firms that are proximate to each other are more likely to be subject to a common isomorphism and hence start to resemble each other, since they are more likely to be familiar with each other's routines and practices than two firms located in two distinct geographical areas.

Second, the logics of competition may be different across different geographical borders. For this reason competitive pressures may act in different ways on different organizations across geographical borders. Competitive pressures may be harsher in some areas than in others. For this reason we may see different archetypes surviving in different geographical contexts. Differences in the populations of archetypes may be present across geographical borders and to a lesser extent within them.

Entrepreneurs tend to locate their firm in close proximity to their social capital and social relations. Indeed, there is a clear tendency for

individuals to locate newly established ventures close to their prior professional affiliations, since firms issue from other firms and the environment you live in often shapes social relations. Since entrepreneurs borrow organizational practices from their parent organization, we may see the emergence of a geographically specific organizational form where firms in proximate locations tend to share similar ways of operating and strategizing.

Finally, regions differ in the resources they have available. This also holds true in terms of human resources. It is often the case that highly educated individuals live in close proximity to metropolitan areas since this is where they can find work in the type of organization they would fit into best, with opportunities and a life which is more difficult to obtain in more rural areas. For this reason we may expect firms in metropolitan areas to be able to attract individuals with an educated background, allowing them to pursue IP related strategies and invest in activities which may produce IP.

We investigated the degree to which the archetypes tended to predominate among firms in metropolitan areas. At the aggregate level, about 29 percent of firms were located in a metropolitan area. About 34 percent of IP Strategic Dealers were located in metropolitan areas, while only 20 percent of IP Rookies were in this location. Indeed, there is a significant tendency for the more IP intensive firms to be located in metropolitan areas. We also investigated the degree to which there were differences in geographical location among IP Dealers, IP Strategists and IP Strategic Dealers. We found no particular evidence in support of this, suggesting the significance really to be between IP Rookies and others than between the remaining three IP archetypes.

Internationalization

Firms that operate in an international market may be more subject to competitive pressures and focused on other measures of competitive advantage. Indeed, internationalization may subject the firm to a higher risk of piracy and of being subject to infringements, wherefore they are in need of being more careful with their IP assets. Argued differently, firms that have considered and actively reflected on IP as a firm's asset to be used for achieving a competitive advantage are also more likely to move into a global market. Internationalization more or less requires that firms take an active stance on IP related

issues. Those moving into the export market may therefore be more likely to engage actively in IP management if they also choose to move to a more global competitive environment.

Figure 28 shows the degree to which firms from different archetypes also are active in the export market. There is a statistically significant difference in the share of firms that export across the five categories of IP management. The share of firms among Strategic Dealers that export are a little more than 80 percent while the corresponding number for the Inactive is about 50 percent. It is, however, interesting that IP Dealers have fewer firms that also export, relatively speaking, than other IP active firms. Indeed, only about 55 percent of IP Dealers also export. This may be due to the fact that IP Dealers are mostly firms that are active more by chance than strategy, so have not necessarily made as active a choice with regard to IP as other IP active firms.

The figures for revenues resemble those for the share of exports (see Figure 29). IP Dealers exhibit a lower level than other IP active firms. Inactive firms export to a lesser extent than other firms and Strategists and Strategic Dealers have the highest export levels in the population. Figure 29 shows that about 37 percent of revenues stem from exports among Strategists and Strategic Dealers. Rookies can attribute about 23 percent of the revenues to exports while numbers for IP Inactive firms and IP Dealers are 14 percent and 17 percent, respectively. Statistically, we cannot conclude that there are differences between Strategists and Strategic Dealers and the difference between Inactive firms and Dealers is weak. All other comparisons suggest a difference in levels of exports across the archetypes.

Firm size

Large firms tend to identify themselves with other large firms and small firms identify themselves with firms of a similar size. Hence, they look at what firms of the same size tend to do to secure their position, so isomorphism will also act on the size dimension creating a similarity in IP practices among firms of the same size.

Heritage would suggest that small firms will start out as spitting images of the larger organizations from which they come. However, entrepreneurs do not tend to come from larger organizations. Larger organizations tend to be characterized by bureaucratic structures, mechanical work routines, rules and regulations that are unattractive to entrepreneurial individuals (Ozcan and Reichstein, 2009). For this

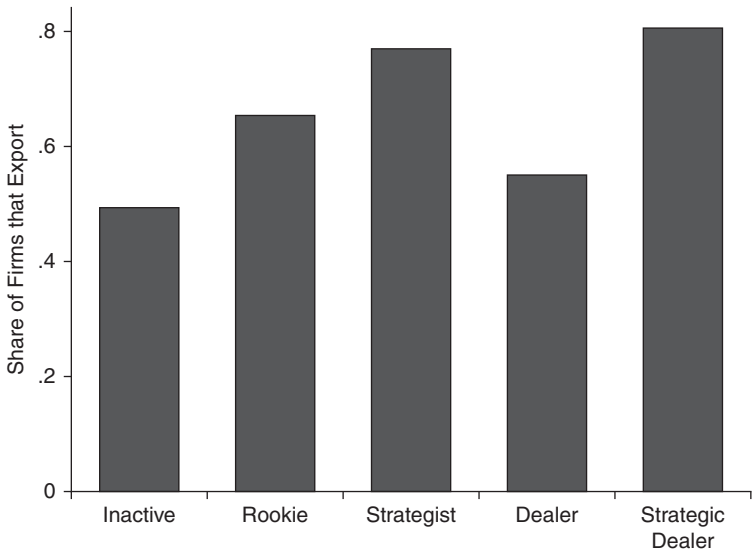


Figure 28 Share of firms that export across IP archetypes

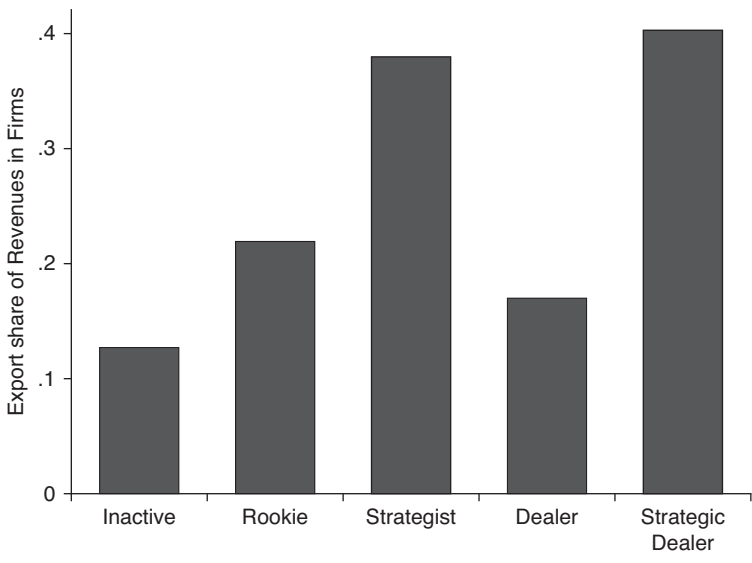


Figure 29 Mean share of revenues from exports across IP archetypes

reason we see very little entrepreneurship coming out of large organizations compared to medium and small sized firms. For this reason we can see substantial differences in IP management between firms of different sizes.

Market selection has been operating for a longer period on larger corporations. They have been subject to competitive pressure and proved to be survivors. Smaller firms are, to a greater extent, a mixture of experimental ways of doing things and have not been subject to the same eroding force of competition, which weeds out those with less proven and productive practices. Market selection may hence create a greater commonality between large firms in terms of IP management than among small and newly established firms. We may hence see a difference in the IP management practices across firm size since larger firms may exhibit similar tendencies creating specific characteristics, which are not visible among smaller firms.

Large firms also have resources not available to small firms. Indeed, slack resources and the ability to engage in many more operations defines large firms. IP and IPR management practices can be a resource-heavy activity, which make them inaccessible to small firms with scarce resources. For this reason, small firms may be represented in that part of the matrix where IP management is either not part of the strategy or is present at a minimum level.

Tables 15 and 16 show tendencies with respect to firm size across the five different IP archetypes. Table 15 shows the numbers for revenues while Table 16 shows numbers of employees. There are similarities in tendencies across the two measures for firm size. Strategic Dealers tend to be the largest firms in general. In terms of revenues they are significantly larger than Inactive firms, Rookies, and Strategists. In terms of employees they exceed Inactive firms and Rookies. This in itself suggests that Strategic Dealers, on average, are able to secure higher revenues per employee than Strategists. We will look more thoroughly into this in Chapter 10.

These tables also show that the IP Inactive are generally significantly smaller firms than all other archetypes (except for Rookies in terms of revenues). The Strategists also tend to be larger than Rookies, regardless of which of the two measures we consider. The Dealers place themselves in between and do not exhibit strong significant tendencies of being either large or small firms. Nevertheless, we see

Table 15 Revenues (1,000 USD) across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	46.29	50.40	4.11
IP Inactive	IP Dealer	46.29	94.53	48.24***
IP Inactive	IP Strategist	46.29	88.52	42.23***
IP Inactive	IP Strategic Dealer	46.29	156.27	109.98***
IP Rookie	IP Dealer	50.40	94.53	44.13*
IP Rookie	IP Strategist	50.40	88.52	38.12***
IP Rookie	IP Strategic Dealer	50.40	156.27	105.87***
IP Dealer	IP Strategist	94.53	88.52	-6.01
IP Dealer	IP Strategic Dealer	94.53	156.27	61.74
IP Strategist	IP Strategic Dealer	88.52	156.27	67.45**

Note: *: $p < 0.1$, **: $p > 0.05$, ***: $p > 0.01$

Table 16 Employees across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	157	195	38*
IP Inactive	IP Dealer	157	369	212***
IP Inactive	IP Strategist	157	379	222***
IP Inactive	IP Strategic Dealer	157	431	274***
IP Rookie	IP Dealer	195	369	174
IP Rookie	IP Strategist	195	379	184**
IP Rookie	IP Strategic Dealer	195	431	236***
IP Dealer	IP Strategist	369	379	10
IP Dealer	IP Strategic Dealer	369	431	62
IP Strategist	IP Strategic Dealer	379	431	52

Note: *: $p < 0.1$, **: $p > 0.05$, ***: $p > 0.01$

an overall tendency of the archetypes to be predominant among specific subgroups of firms defined by firm size.

Firm structure

Some firms are organized in small units while others are organized in larger units with a few managers. Generally speaking, the relative number of managers in an organization tends to express how centralized or decentralized it is. Firms with a relatively high number of managers are organized in a decentralized manner with decisions being made independently between units. In a centralized organization, decisions are made at the firm level. For each small unit in a decentralized organization a manager makes the decisions for that unit only, making sure these decisions are aligned with the aims and goals of the organization following the strategy that has been outlined. Each of these ways of operating has advantages and disadvantages. Centralized firms are often top down decision makers, where actions and operations are dictated from a higher level in the organization. This has efficiency gains as it secures a coherent and targeted profile for the firm. There is a direct supervision approach to decision making. In the more decentralized manner of organizing, there needs to be a mutual adjustment where co-ordination is achieved through the communication of information.

We can expect firms that operate in a particular fashion to seek inspiration and legitimacy by copying the way things are done by those similar to themselves. If it is predominant among centralized (or decentralized) organizations to engage in IP management, it is more likely that similar firms will adopt such practices. Also, should decentralized firms engage in IP management to a greater extent than centralized ones, it is likely that new firms will not only copy their way of organizing, but also install similar IP practices. Consequently, we see a coupling of IP practices and organizational structure as the population evolves. Finally, it may also be best practice to pursue IP for decentralized firms only, while best practice not to pursue IP when the organization is centralized. Hence, we will see the emergence of a combination between IP and organization structure as the market selection process weeds out the less fit firms who have not adopted the better combination of practices.

Table 17 shows how firms tend to be organized across different archetypes of IP management by comparing the average relative

Table 17 Relative number of managers across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.122	0.131	0.009
IP Inactive	IP Dealer	0.122	0.142	0.02**
IP Inactive	IP Strategist	0.122	0.185	0.063***
IP Inactive	IP Strategic Dealer	0.122	0.182	0.06***
IP Rookie	IP Dealer	0.131	0.142	0.011
IP Rookie	IP Strategist	0.131	0.185	0.054***
IP Rookie	IP Strategic Dealer	0.131	0.182	0.051***
IP Dealer	IP Strategist	0.142	0.185	0.043***
IP Dealer	IP Strategic Dealer	0.142	0.182	0.04***
IP Strategist	IP Strategic Dealer	0.185	0.182	-0.003

Note: *: $p < 0.1$, **: $p > 0.05$, ***: $p > 0.01$

number of managers that work in the firms associated with a specific category. While we cannot distinguish between Inactive firms and Rookies, between Rookies and Dealers, and Strategists and Strategic Dealers, it does seem that firms with a relatively higher number of managers are the firms that have pursued IP and strategizing for IP more intensively. Decentralization seems to be the favorite form of organizational structure among the Strategists and Strategic Dealers compared to the others. These firms have, on average, a manager in approximately every fifth position. The corresponding number for Inactive firms and Rookies is a manager for every eight employees.

Human resources

Resources may dictate the way firms behave. IP management is likely to require a particular type of worker since there are many intertwined steps between developing an IP asset to carrying out the process of applying for exclusive rights to the developed property. This means managing and organizing a complex development process in a successful manner and having the competence to complete a myriad of administrative steps, and specify the underlying asset. It often entails establishing a formal IP strategy not to

mention being able to see the benefits and potential of engaging in IP related activities.

We consider three different human resource variables that can have an impact on the likelihood of firms engaging in IP. First, we consider the number of scientific employees, measured by those with a PhD background. Taking on such employees may indicate that the firm has a vision that includes creating a competitive advantage through intensive technical knowledge and employing individuals who can assess the potential of knowledge intensive undertakings and contribute actively in developing IP assets.

Second, we consider the number of employees with a law degree. IP management entails lots of administration, following protocols, and being able to read and understand legislative texts. Let's face it, IP activity is about securing rights in a legal manner and writing contracts that are legally binding. Individuals with a law degree will be central to such a process and hiring them indicates that the firm intends to engage in matters with a legal aspect, like IP. Having an in-house, law related competence can make the task of engaging in IP seem less intimidating and more manageable. Such a resource may also enable the firm to cut down on the costs involved in undertaking IP management in general, since the process can be managed in a more efficient manner.

Finally, we look at the number of employees with an engineering degree. Specifically, a civil engineering degree, which represents engineers with a master of science degree. Engineers are often central to product and process developments, certainly within manufacturing but also in some service industries. They may be the engines that enable firms to produce tangible intellectual assets useful in the pursuit of a competitive advantage through knowledge creation. Engineers may therefore be the spark that allow firms to produce assets that are candidates for patenting.

Number of scientific employees

Table 18 contains a comparison between the number of scientific employees in firms across the archetypes. IP Strategic Dealers have almost three PhDs per firm, whereas IP Strategist have 1.67, and IP Dealers and IP Rookies 0.34. Inactive firms exhibit by far the lowest number of scientific employees, with only 0.17 on average. Table 18 shows that IP Strategic Dealers have significantly more scientific

Table 18 Number of scientific employees across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.17	0.34	0.17*
IP Inactive	IP Dealer	0.17	0.34	0.18**
IP Inactive	IP Strategist	0.17	1.67	1.50***
IP Inactive	IP Strategic Dealer	0.17	2.94	2.77***
IP Rookie	IP Dealer	0.34	0.34	0.00
IP Rookie	IP Strategist	0.34	1.67	1.33***
IP Rookie	IP Strategic Dealer	0.34	2.94	2.60***
IP Dealer	IP Strategist	0.34	1.67	1.33***
IP Dealer	IP Strategic Dealer	0.34	2.94	2.60***
IP Strategist	IP Strategic Dealer	1.67	2.94	1.27*

Note: *: $p < 0.1$, **: $p > 0.05$, ***: $p > 0.01$

employees than any other group, and IP Strategists significantly more than the three remaining groups (IP Dealers, Rookies and Inactive). IP Dealers and IP Rookies resemble each other and have a significantly higher number of scientific employees than IP Inactive firms.

Number of employees with a law degree

Table 19 contains the comparison of the number of employees with a law degree in firms across the archetypes. IP Strategists and IP Dealers have almost two such employees on average and are not significantly different in this respect. Both of these types of firms involve themselves in writing contracts. They may be key to ensuring that contractual engagements do not entail a loss of competitive advantage through legal blunders and the fine print on the legal documents. Both Dealers and the Strategic Dealers have significantly more employees with a law degree than Inactive firms and Rookies. Strategists also have fewer than Dealers and Strategic Dealers, though the difference is not as significant.

Number of employees with an engineering degree

Having employees with an engineering background means that technical solutions could be core to the firm and such a background often

Table 19 Number of employees with a law degree across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.735	0.439	-0.296
IP Inactive	IP Dealer	0.735	1.864	1.129***
IP Inactive	IP Strategist	0.735	0.707	-0.028
IP Inactive	IP Strategic Dealer	0.735	1.901	1.166***
IP Rookie	IP Dealer	0.439	1.864	1.425**
IP Rookie	IP Strategist	0.439	0.707	0.268
IP Rookie	IP Strategic Dealer	0.439	1.901	1.462***
IP Dealer	IP Strategist	1.864	0.707	-1.157*
IP Dealer	IP Strategic Dealer	1.864	1.901	0.037
IP Strategist	IP Strategic Dealer	0.707	1.901	1.194*

Note: *: $p < 0.1$, **: $p > 0.05$, ***: $p > 0.01$

relates to product development. Many engineers are therefore inventors of patented inventions. Table 20 shows the differences across IP archetypes in terms of the number of engineers employed. IP Strategic Dealers and IP Strategists have a significant higher mean than the other types (mean of 4.53 and 5.94, respectively), in fact, IP Strategic Dealers, on average, have over seven times as many engineers as IP Inactive firms, six times as many as IP Rookies, and four times as many as IP Dealers. IP Inactive and IP Rookies are not significantly different from each other (mean 0.79 and 0.99), whereas IP Dealers do employ a significantly higher number of engineers than IP Inactive, whereas there isn't any significant difference between IP Dealers and IP Rookies.

Conclusions

This chapter has shown a clear tendency for IP management to be present in specific types of firm operating in a given environment. We know that intensive IP management practices are predominantly found among firms operating in metropolitan areas in an industry characterized by being knowledge intensive. They also tend to be

Table 20 Number of employees with an engineering degree across archetypes

Archetype 1	Archetype 2	Mean of Archetype 1	Mean of Archetype 2	Difference
IP Inactive	IP Rookie	0.79	0.99	0.19
IP Inactive	IP Dealer	0.79	1.48	0.68*
IP Inactive	IP Strategist	0.79	4.53	3.74***
IP Inactive	IP Strategic Dealer	0.79	5.94	5.15***
IP Rookie	IP Dealer	0.99	1.48	0.49
IP Rookie	IP Strategist	0.99	4.53	3.55***
IP Rookie	IP Strategic Dealer	0.99	5.94	4.95***
IP Dealer	IP Strategist	1.48	4.53	3.06***
IP Dealer	IP Strategic Dealer	1.48	5.94	4.46***
IP Strategist	IP Strategic Dealer	4.53	5.94	1.41

Note: *, $p < 0.1$, **, $p > 0.05$, ***, $p > 0.01$

firms of a relatively large size with an organizational structure that demands a relatively high number of managers. In general their employees are relatively highly educated and they have a substantial number of employees engaged in scientifically demanding work tasks. IP management tends to be conducted by firms that engage a relatively high number of individuals with law and engineering degrees.

These results suggest that IP management is a trait of a particular type of firm in a given context and they also point to some management implications. They suggest that firms can benefit from considering their position in a given environment and adjust their practices accordingly. They also suggest that there may be contextual or business considerations dictating that a firm not engage in formal IP management practices but rely on more informal IP management instruments.

Exercises

1. Which demographic dimensions may explain the variance and similarities between different IP archetypes?

2. What is meant by isomorphism and how does it influence firms when deciding on which IP archetype to become?
3. How can the heritage of practices influence a firm's IP archetype behavior?
4. Identify a real life example to exemplify 'heritage of practice' spillovers? Who were the carriers?
5. Which resources do different IP archetypes rely on? What are the differences and similarities observed across scientists, engineers, lawyers and managers?

Recommended readings and bibliography

- Agarwal, R., Audretsch, D. and Sarkar, M. B. (2007). "The Process of Creative Construction: Knowledge Spillovers, Entrepreneurship, and Economic Growth." *Strategic Entrepreneurship Journal*, 1(3–4): 263–286.
- Baty, G., W. Evan and T. Rothermel. (1971). "Personnel Flows as Interorganizational Relations." *Administrative Science Quarterly* 16: 440–443.
- Barnett, W. P. (2008). *The Red Queen Among Organizations: How Competitiveness Evolves*. Princeton, NJ: Princeton University Press.
- Bloom, N. and J. Van Reenen (2010), "Why do Management Practices Differ Across Firms and Countries?," *Journal of Economic Perspectives*, 24(1): 203–224.
- Boeker, W. (1989). "Strategic Change: The Effects of Founding and History." *Academy of Management Journal* 32(3), 489–515.
- Boeker, W. (1997). "Executive Migration and Strategic Change: The Effect of Top Manager Movement on Product-Market Entry." *Administrative Science Quarterly*, 42: 213–236.
- Burton, M. D., J. B. Sørensen and C. M. Beckman. (2002). "Coming from Good Stock: Career Histories and New Venture Formation." In M. Lounsbury, ed. *Research in the Sociology of Organizations*, Vol. 19. Emerald Publishing, Bingley, UK: 229–262.
- Chandler, A. (1962). *Strategy and Structure*. Cambridge, MA: MIT Press.
- Cyert, R. M. and J. G. March (1963). "A Behavioral Theory of the Firm." *Englewood Cliffs, NJ*, 2.
- Dahl, M. S. and T. Reichstein (2007). "Are You Experienced? – Prior Experience of Managers and the Survival of New Organisations." *Industry and Innovation* 14(5): 497–511.
- DiMaggio, P. J. and W. Powell (1983). "'The Iron Cage Revisited' Institutional Isomorphism and Collective Rationality In Organizational Fields." *American Sociological Review* 48(1983), 147–160.
- DiMaggio, P. J., & W. Powell (Eds.). (1991). *The New Institutionalism in Organizational Analysis* (Vol. 17). Chicago: University of Chicago Press.
- Freeman, J. (1986). "Entrepreneurs as Organizational Products: Semiconductor Firms and Venture Capital Firms." In G. Libecap, ed. *Advances in the Study*

- of *Entrepreneurship, Innovation, and Economic Growth*, Vol. 1. JAI Press, Greenwich, CT: 33–58
- Gompers, P., J. Lerner and D. Scharfstein (2005). "Entrepreneurial Spawning: Public Corporations and the Genesis of New Ventures, 1986 to 1999." *Journal of Finance* 60(2): 577–614.
- Hannan, M. T. and J. Freeman (1989). *Organizational Ecology*. Cambridge, MA: Harvard University Press.
- Klepper, S. (2001). "Employee Startups in High-Tech Industries." *Industrial and Corporate Change* 10(3): 639–674.
- Klepper, S. (2007). "Disagreements, Spinoffs, and the Evolution of Detroit as the Capital of the US Automobile Industry." *Management Science* 53(4): 616–631.
- Klepper, S. and P. Thompson (2010). "Disagreements and Intra-Industry Spinoffs." *International Journal of Industrial Organization* 28(5): 526–538.
- Kraatz, M. S. and Moore, J. H. (2002). "Executive Migration and Institutional Change." *Academy of Management Journal* 45(1): 120–143.
- March, J. G. (1991). "Exploration and Exploitation in Organizational Learning." *Organization Science* 2(1): 71–87.
- March, J. G. (1999). *The Pursuit of Organizational Intelligence: Decisions and Learning in Organizations*. Cambridge, MA: Blackwell Publishers, Inc.
- Miles, R. E. and Snow, C. C. (1984). "Designing Strategic Human Resources Systems." *Organizational Dynamics* 13(1): 36–52.
- Nelson, R. R. and S. G. Winter (1982) *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press.
- Özcan, S. and T. Reichstein (2009). "Transition to Entrepreneurship from the Public Sector: Predispositional and Contextual Effects." *Management Science* 55(4): 604–618.
- Simon, H. A. (1965). "Administrative Decision Making." *Public Administration Review*: 31–37.
- Sørensen, J. B. (1999). "Executive Migration and Interorganizational Competition." *Social Science Research* 28: 289–315.
- Sørensen, J. B. and M. A. Fassiotto (2011). "Organizations As Fonts of Entrepreneurship." *Organization Science* 22(5): 1322–1331.

10

IP and Economic Performance

Abstract: *Innovation and technological development play a major role in driving economic growth. Firms who utilize IP to protect their investment in research and innovation can therefore expect to see a higher economic performance. Those firms that pursue IP and IP management to gain and preserve a competitive advantage do, however, expend considerable resources in the registration and enforcement of rights, so that not all IP active firms can expect an increased economic performance. In this chapter we compare the economic performance of the different IP archetypes, taking into account variation among firms, such as industry, size and structure. We find that IP Rookies and IP Inactives generally have lower revenues and profits when compared to similar firms that are more advanced IP archetypes. IP Strategic Dealers tend to outperform others, with higher revenues and profits when compared to similar IP Strategists or IP Rookies. However, IP Dealers sometimes see an increased economic performance when compared to the IP Strategist and IP Rookie, remaining at a level similar to the IP Strategic Dealer.*

Introduction

Economic theory on and empirical scrutiny into the association between technical change and economic growth all suggest they are tightly knit. Indeed, technical change has been called out as the main driver of growth, development and prosperity. Nobel laureate Robert A. Solow (1956) provided empirical evidence to suggest that the bulk of economic growth should not be attributed to additional labor or capital, but rather ascribed to technical change that generates a growth in productivity and is therefore able to produce the same

amount with fewer inputs or more with the same inputs. Economic growth theory also emphasizes innovation as a major driver of growth (Romer, 1990; Grossman and Helpman, 1991). It is true that the causal mechanisms that produce this association have been challenged. But no one questions that these variables are closely linked.

It is a different story when considering IP. We already know that IP regulatory systems have been established with the aim of giving firms and individuals the incentive to develop new products, new services, new designs, and so on and to create mechanisms that help the economy avoid agency problems, which in turn is thought to be an engine for economic development and growth. Indeed, the need for IP systems in this respect is evident considering the following statement made by Novo Nordisk, a world leader in the development and manufacturing of insulin products:

Making it more difficult to protect improvements on successful products could have severe consequences, and could reduce investment in research and innovation.¹

IP is thereby a central part of the strategic conduct of Novo Nordisk and the firm clearly considers IP central to their business in linking IP and IP management to their key activities and their competitiveness. Without the possibility of securing exclusive rights to their creative outputs, firms would be much less inclined to invest in the assets that drive much of their economic growth and development. Furthermore, it is believed that the development of a proper working IP system is key to the general attractiveness of economies in terms of investments, making IP systems a central part of a policy plan with regard to foreign direct investments (FDI). Such arguments could easily be put forward when looking at numbers from, for instance, India and Brazil, who instated IP regulatory laws in the 1990s whereafter they both observed a rapid increase in FDI.

IP and IP management practices may, however, also have a profound impact on economic performance on the micro level. IP may be instrumental in developing and growing a business and has been recognized by some of the most widespread firms in the world. IBM for instance clearly states that the

vast collection of intellectual property can increase [IBM's] ability to operate, to grow your business, make it more efficient or launch new products.²

Indeed, firms pursue IP and IP management in order to gain a comparative advantage. For the same reason, we observe countless cases of legal litigations where firms spend massive resources in fighting for their IP assets. McDonalds, for instance, has engaged in numerous lawsuits and legal cases with regard to their trademark, although not all went as well as McDonalds had hoped for. One example was McDonalds' lawsuit against a Danish hotdog vendor who had called his stand MacAllan after the whisky brand and with permission from the whisky producer. McDonalds sued the hotdog vendor for using a name too close to their trademark but lost the case and were forced to cover the hotdog vendor's legal expenses. This example illustrates how important McDonalds considers its trademark as a competitive asset, leading them to take legal actions against small but insignificant competitors with very little impact on one of the world's largest and most successful fast food chains. IP is thereby thought by many firms to be a means through which profits are generated. McDonalds' decision to legally pursue the small probably rest in the desire to have a ruling which may establish precedence in the future. What better way than to establish this in legal actions that are likely to be of minor financial expense.

This chapter seeks to uncover if there is any micro evidence to suggest a close link between archetype categorization and economic performance. Indeed, there is lots of evidence to suggest that some firms believe they need not rely on traditional ways of operating with IP, where protection and secrecy is at the helm in order to reap rents on their activities. This is questioned by Pisano (2006) in his article stating that:

Phenomena such as open source software and forms of deliberate intellectual property sharing are increasingly being utilized by for-profit enterprises as a rent seeking strategy. Such strategies cast into new light old questions about the impact of intellectual property protection on the rate and direction of innovation.

There are hence good reasons to investigate the associations between performance measures and the different archetypes (IP Inactive, IP Rookie, IP Dealer, IP Strategist and IP Strategic Dealer). We will initially investigate tendencies across the different IP archetypes and consider various measures of economic performance by looking

at associations. First, we look descriptively at the data to uncover regularities. Then we conduct a regression analysis to account for the various differences across demographic dimensions, which in Chapter 9 was found to be significant in understanding differences in levels of IP management across the population of firms. We will then take a step further by providing empirical evidence that points more strongly to a causal link between variables. This subsection aims to suggest whether it is high-performing firms that tend to be categorized in particular archetypes or whether being a firm of a specific archetype allows it to outperform others. The chapter closes with an overall assessment of the findings and some further thoughts on the association between IP and economic performance.

IP and economic performance

There are numerous examples of inventors unable to reap the economic benefit of their investment in new technologies. Apple invented a graphical interface for operating systems as an alternative to terminal-based systems. But Microsoft ran away with the profits after launching Windows. Apple also invented the PDA, while it was Palm who captured the market. And it was certainly not Google that was first on the market for Internet search engines. But they have nevertheless grabbed the lion's share of the information highway search traffic. History is full of examples of firms and individuals that have made a substantial breakthrough but have lost out in harvesting the income. Lack of IP and IP management or even IP mismanagement may be one of the reasons why such examples exist.

Firms increasingly use IP assets as a means to argue for a firm's viability and future performance. Indeed, firms are transforming the way they think of IP, which is exemplified not least by the tendency to re-categorize IP from a liability to an asset in the balance sheet. There is a trend among firms to consider trademarks, copyrights, patents, designs and trade secrets as something of a requirement rather than simply nice to have. It used to be the case that firms invested in IP, with a relatively high amount of activity, but which never appeared in the balance sheet and was often alluded to as hidden value. Today, firms value their IP assets and transform them into registered assets, allowing them to claim a higher overall value of the firm. In fact, for many firms, their IP may be considered their most valuable asset. This

means that even if a trademark does not warrant the right to operate in terms of commercialization of a product, it nevertheless may assist a firm to operate financially and liberate resources for further development of the business. Perhaps not directly into the balance sheet but indirectly through expected future earnings and as a result favorable quotes on the stock exchange.

Some IP assets may boost performance directly by providing temporary, monopoly-like market power and hence increase margins on products. Pfizer for instance, were the proud owner of the most valuable patent in history. They patented a drug called Lipitor that helped reduce heart attacks and stroke risks. No other firm had a similar patent that could be translated into a commercial substitute for Lipitor. Pfizer therefore enjoyed a monopoly position in that market. As a consequence, that particular drug generated about \$12.6 billion in revenues in 2006 and a total of \$105 billion in revenues by 2009. Unfortunately for Pfizer, the Lipitor patent expired in 2011. IP may boost the performance of a firm with a share of market power through monopoly-like positions, as firms with patents can keep others away from technological inventions.

Other's IP assets are vehicles for a firm's ability to attract new customers and keep existing ones. Trademarks are indeed engines of recognition for a particular type of product, which the public may know only too well, such firms as Microsoft, Paypal, Amazon.com, and Red Bull. These trademarks engender trust, recognition and, indeed, send out a signal of a particular quality, value and association. Red Bull has, for instance, become the world's most popular energy drink through extensive aggressive campaigning, giving customers particular associations with the trademark. The trademark can be used as a way to gain market power without controlling the majority of the market but simply through the creation of customer loyalty and recognition, which is only possible due to the trademark. In 2011 Red Bull sold approximately 4.6 billion cans of the energy drink, generating substantial revenues through the trademark and the advantages it held.

Finally, some IP operations may have a direct impact through revenues by becoming the product itself. Some organizations generate substantial revenues from IP by licensing it out to other firms or organizations. Indeed, this is often the preferred way of operating for universities since they often have little interest in commercializing products

outside higher education yet routinely generate new IP values. New York University generates, on average, more than \$500,000 in licensing revenues for each \$1,000,000 spent on research over a 20-year period. Given that it is not their main business model, it nevertheless clearly provides the university with a substantial boost in performance. In biotech, many firms only operate based on licensing revenues since they pursue a business model in which commercialization of technologies has been rendered out. In entertainment industries, for example, the LEGO brand is also used on clothing, whereas Disney cartoons can be seen used in LEGO's brick boxes, combining several high profile trademarks. Licensing out the IP may provide significant additional income to the out-licensing firm.

All these arguments suggest that firms with the right complementary assets and strategic choices with regard to IP may be able to secure the rents that their IP represents. Indeed, this was also the argument of Teece (1986) in his seminal work. He asserted that firms operating in relatively weak appropriability regimes find it difficult to realize the benefits of their IP and can only do so through their complementary assets. Firms in stronger appropriability regimes, on the contrary, can do so through traditional channels like licensing. The way firms operate with regard to IP may depend on the contextual setting in which they reside.

Descriptively

The idea that IP and IP management generally allow firms to outcompete their rivals is certainly believable. Indeed, the idea of an IP system is to provide a firm with the tools to allow them to gain an advantage over their rivals given investments they have made in developing IP. The exclusive right would hence give the firm a higher margin on earnings, which may be traceable in accounting statistics.

Table 21 provides some descriptive statistics on accounts from the five identified archetypes of firms. It compares the mean performances covering four different measures: revenues, gross result, profits before tax and value added. All measures in thousands and per employee make them comparable regardless of differences in firm size. Stars indicate the degree to which the differences in mean can be considered significant. The more stars, the more significant the difference. No star signifies that the means cannot be considered different at all.

Table 21 Descriptive statistics on firm performance across IP archetypes

Variable Considered		Mean of Archetype 1	Mean of Archetype 2	Difference
Revenues (\$1000 per employee)				
Inactive	Rookie	0.475	0.310	-0.165
Inactive	Dealer	0.475	0.398	-0.077
Inactive	Strategist	0.475	0.330	-0.145
Inactive	Strategic Dealer	0.475	0.399	-0.076
Rookie	Dealer	0.310	0.398	0.087
Rookie	Strategist	0.310	0.330	0.019
Rookie	Strategic Dealer	0.310	0.399	0.089
Dealer	Strategist	0.398	0.330	-0.068
Dealer	Strategic Dealer	0.398	0.399	0.001
Strategist	Strategic Dealer	0.330	0.399	0.069
Gross profits (\$1000 per employee)				
Inactive	Rookie	0.210	0.124	-0.086
Inactive	Dealer	0.210	0.125	-0.085
Inactive	Strategist	0.210	0.136	-0.074
Inactive	Strategic Dealer	0.210	0.154	-0.056
Rookie	Dealer	0.124	0.125	0.002
Rookie	Strategist	0.124	0.136	0.012
Rookie	Strategic Dealer	0.124	0.154	0.030***
Dealer	Strategist	0.125	0.136	0.010
Dealer	Strategic Dealer	0.125	0.154	0.028***
Strategist	Strategic Dealer	0.136	0.154	0.018*

Profits before tax (\$1000 per employee)			
Inactive	Rookie	0.074	0.016
Inactive	Dealer	0.074	0.016
Inactive	Strategist	0.074	0.015
Inactive	Strategic Dealer	0.074	0.016
Rookie	Dealer	0.016	0.016
Rookie	Strategist	0.016	0.015
Rookie	Strategic Dealer	0.016	0.016
Dealer	Strategist	0.016	0.015
Dealer	Strategic Dealer	0.016	0.016
Strategist	Strategic Dealer	0.015	0.016
Value added (\$1000 per employee)			
Inactive	Rookie	0.156	0.090
Inactive	Dealer	0.156	0.087
Inactive	Strategist	0.156	0.097
Inactive	Strategic Dealer	0.156	0.100
Rookie	Dealer	0.090	0.087
Rookie	Strategist	0.090	0.097
Rookie	Strategic Dealer	0.090	0.100
Dealer	Strategist	0.087	0.097
Dealer	Strategic Dealer	0.087	0.100
Strategist	Strategic Dealer	0.097	0.100
			-0.058
			-0.057
			-0.059
			-0.057
			0.001
			-0.001
			0.001
			-0.001
			0.000
			0.001
			-0.066
			-0.069
			-0.059
			-0.056
			-0.003
			0.007
			0.011*
			0.010*
			0.013**
			0.003

Note: *, p<0.1, **, p>0.05, ***, p>0.01

Table 21 reveals that the differences are rather weak. Indeed, IP Inactive firms display the highest value for all measures. However, the mean cannot be considered significantly different since there are no stars attached to the values. The reason for this is that Inactive firms indeed portray the highest values. But they also have the highest variations in economic performances. Some Inactive firms perform really well but others perform really poorly. A similar pattern can be seen among IP Rookies. These descriptive data hence suggest that IP and IP management may help firms to sustain a level of performance comparable to others and avoid very low performances. The IP active firms portray a more secure and less turbulent life in that variations are more controlled. They consequently exhibit less of a risk, suggesting a promise for an acceptable lower level threshold in performance.

Table 21 does exhibit some significant differences. In terms of gross profits, the data suggest that Strategic Dealers portray higher performances than Rookies and Dealers and weakly better performances than Strategists. The significantly higher performance of the Strategic Dealer disappears when looking at profits before tax, suggesting that Strategic Dealers reinvest their higher performance in activities that enter the accounts and are deductible. These descriptive statistics thereby indicate that Strategic Dealers reinvest their gains from a competitive advantage in the pursuit of developing and growing their business further. We also see signs of a higher performance among Strategic Dealers compared to Rookies (weak significance) and Dealers in terms of value added per employee. Strategists also tend to exhibit a significant higher value added per employee than Dealers. However, this result is weak at best.

Econometrically

To investigate further the degree to which we can say that IP dealing and IP management is associated with higher performance, we undertook a regression analysis, which allowed us to remove variations in performance which may be attributable to things like industry affiliation, firm size, and firm structural variables. We used a regression model to control for other observables when investigating the association between IP management practices and performance. Results are displayed in Table 22.

Table 22 Results of regression against firm performance

Variable	Revenues	Gross Profits	Profits Before Tax	Value Added
Archetypes				
Inactive	-33623.15*	-5265.48	181.18	-3784.01
Rookie	-42312.54**	-10225.12**	-571.85	-4742.77
Strategist	-37221.49*	-6684.91	-2289.94	-4313.00
Dealer	-33024.59	-10341.73*	-825.79	-7520.98*
Strategic Dealer	Benchmark	Benchmark	Benchmark	Benchmark
Industry Controls				
Construction	9824.52	-1676.04	-1795.29	-1505.68
Trade and Transportation	26010.01**	-1074.35	-2352.41	-5043.32**
ICT	-16756.09	9480.24	-916.34	5000.26
Financial, insurance and other business service	-37451.59***	-12434.30***	-4816.58*	-9496.70***
Manufacturing	Benchmark	Benchmark	Benchmark	Benchmark
Resources				
Share of employees that are managers	25934.46	5547.29	3428.93	6862.94
Share of employees that are scientists	-448923.50**	-342578.20**	-157104.30***	-243865.00***
Share of employees that are engineers	-237966.00*	-227173.00**	-43361.02	-167944.50**
Share of employees with a law degree	123926.50	-234535.80**	-45418.21	-189488.40**
Number of managers	-6607.56	-3150.73	-697.81	-3806.01
Number of scientists	5723.11**	4543.05**	1850.58***	3118.52***
Number of engineers	1863.74	1745.49**	218.70	1335.89**
Number of employees with a law degree	-563.33	1759.25**	410.61	1412.62*
IP Controls				
Total number of utility models	-3735.83	533.38	1479.09	1234.63
Total design rights	-9653.43	-3889.39	-1609.48	-2596.96
Total trademarks	1453.11*	696.21	296.52	477.67
Total patents	-782.59	-477.13	-194.53	-299.68
Other				
Export	38312.25***	12245.96***	2034.48**	5912.33***
Employees	167.95***	57.60***	5.36***	39.86***
Constant	28395.17*	11602.03*	1894.71	9795.024**
Number of observations	3196	3195	3195	3195
F test	12.87***	16.36***	3.87***	14.66***
R square	0.55	0.50	0.17	0.60

Note: *, p<0.1, **, p>0.05, ***, p>0.01

The regression results reveal that most of the differences are to be found in terms of revenues. The Strategic Dealer outperforms Inactive firms, Rookies and Strategists in terms of revenues. They also outperform Rookies in terms of gross profits and slightly more so than Dealers. There are also weak suggestions that Strategic Dealers outperform Dealers in terms of value added. A look at statistics beyond those of the table indicates that there are little to no significant differences between the other archetypes in terms of these performance measures using a regression approach.

Among the controls, we find that firms that export and larger firms perform better than their counterparts. Also, firms with a high number of scientists exhibit lower performances but that this is conditional on the positive impact of the scientists. A similar pattern materializes when looking at engineers and employees with a law degree, but only when measuring performance with gross profits and value added. Firms in the trade and transportation industry exhibit high revenues but perform relatively bad when it comes to value added compared to manufacturing. Financial, insurance and other business services exhibit relatively poorer performance tendencies compared to manufacturing.

Finally, the estimates on number of utility models, design rights, trademarks and patents tend to be insignificant. They have no systematic association with performance of the firms. The relation between IP and performance is hence not expressed in terms of volume of IP. The results therefore indicate the positive relationship only holds when firms utilize their IP assets in a more strategic manner. Red Bull does not enjoy advantages from their IP just because they registered it. Red Bull have worked intensively to exploit their IP strategically and transformed the IP into performance by drawing up a carefully considered strategy plan designed to reap maximum value out of the IP asset. It is through such actions and initiatives that firms reap the benefits from IP.

Causal inference

In order to investigate whether it is likely that IP and IP management practices allow firms to outperform rivals rather than it being the high-performing firms that engage in IP, we took steps to identify groups of firms that are comparable on a number of observable

dimensions yet are different in terms of IP management practices. After having identified these comparable groups, we then investigated the degree to which the firms exhibited differences in performance. This section hence seeks to take one step further to uncover if IP and IP management are, in fact, a driver of economic performance. The objective of these steps is to ask whether a firm would have performed differently had it not made specific choices in terms of IP management.

Table 23 shows the results of the comparisons of the identified groups. For the sake of simplicity, we only report on the differences rather than all point estimates. Overall, the table provides evidence for substantial differences in performance across archetypes. IP engagement does seem to have an impact on a firm's performance, not only IP engagement, but also the extent to which firms engage in IP management.

Generally, Inactive firms perform equally as well as Rookies and Strategists. Dealers perform better than Inactive firms measured by profits before tax. These statistics are relatively strong, indicating the result to be highly robust. Strategic Dealers perform better than Inactive firms when measuring performance in terms of gross profits and profits before tax. There seems to be a positive performance implication from engaging in IP related activities.

Much of the difference in performance can, however, be observed to take place between the categories of IP engagement. Rookies in particular seem to be struggling in terms of performance compared to the other three IP active archetypes. There seems not to be a performance related incentive to engage in IP at the Rookie level since their performance is comparable to that of Inactive firms. Also, compared to the other categories of IP management, Rookies obviously seem to lag behind. They pay for not making IP management a more integrated part of the business. In terms of revenues, gross profits and value added, Rookies suffer, with lower performances than their other IP active counterparts. Only measured in terms of profits before tax do we see them performing on a par with the others. Even on this measure we see Dealers have a slight tendency for higher performance than Rookies. This in itself seems to be an indication that IP management may be a substantial barrier for business. Firms that do wish to engage in IP management often need to do so at a Rookie level. However, this may have substantial negative short-term performance implications, which

Table 23 Results of performances across matched samples

	Archetype 1	Archetype 2
Revenues	Inactive	Rookie
	Inactive	Dealer
	Inactive	Strategist
	Inactive	Strategic Dealer
	Rookie	<<< Dealer
	Rookie	<<<< Strategist
	Rookie	<<<<< Strategic Dealer
	Dealer	>>> Strategist
	Dealer	Strategic Dealer
	Strategist	< Strategic Dealer
Gross profits	Inactive	Rookie
	Inactive	Dealer
	Inactive	Strategist
	Inactive	< Strategic Dealer
	Rookie	<<< Dealer
	Rookie	<<<< Strategist
	Rookie	<<<<< Strategic Dealer
	Dealer	>>> Strategist
	Dealer	Strategic Dealer
	Strategist	<<< Strategic Dealer
Profits before tax	Inactive	Rookie
	Inactive	<<< Dealer
	Inactive	Strategist
	Inactive	< Strategic Dealer
	Rookie	< Dealer
	Rookie	Strategist
	Rookie	Strategic Dealer
	Dealer	> Strategist
	Dealer	Strategic Dealer
	Strategist	<< Strategic Dealer
Value added	Inactive	Rookie
	Inactive	Dealer
	Inactive	Strategist
	Inactive	Strategic Dealer
	Rookie	<< Dealer
	Rookie	<<<< Strategist
	Rookie	<<<<< Strategic Dealer
	Dealer	>> Strategist
	Dealer	Strategic Dealer
	Strategist	<<< Strategic Dealer

Note: <: Smaller than, >: Greater Than.

Note: The more signs, the stronger the significance.

may represent a substantial hurdle for firms. This may be a reason why firms are reluctant to move into IP management in the first place.

The results also suggest that an ad hoc approach to IP management tends to be more fruitful in terms of performance than only engaging in strategic considerations without dealing with the asset. There is a strong performance to be gained from dealing with IP. Dealers and Strategic Dealers perform better than Strategists in virtually all measures of performance. There are great gains to be won from making IP a more integrated part in generating revenues and income rather than simply using it as a means to pursue a protective strategic conduct. Yet, strategizing with respect to IP is essential if firms wish to reap some of the performance benefits which may otherwise remain unrealized.

Summary and conclusion

This chapter has provided evidence that it is difficult to simply look at the population of firms and then decipher whether IP allow firms to outperform their competitors. Only by identifying firms that are truly comparable do we find strong evidence that IP engagement has an implication for performance. What is more, we have been able to show, using the typology of IP archetypes, that the approach and extent of engagement matters when translating IP into performance. Overall, we suggest that firms should think of IP in a much more integrated and far-reaching way than simply a means through which the firm can protect its intellectual property assets. IP can be an instrument to produce above average profits, revenues, value added and dividends for shareholders. By identifying the true potential of their IP, a firm can maximize the gains that are to be realized through such assets. Indeed, some firms have realized this and enjoy the competitive advantages of IP, including those advantages that lie beyond the most obvious ones. By engaging in the market for IP, and by combining this with a strategic way of thinking about IP, firms may produce results beyond those expected by managers, market and stakeholders, putting the firm in a favorable position for years to come.

We do think it is important to mention, however, that these measures are short-term. IP may be less instrumental in governing short-term performance but more so in long-term performances. Due to data limitations, we have not been able to investigate the survival

tendencies across the different IP archetypes. We nevertheless think that the robust estimates of the matching analysis do suggest that IP has a profound positive impact on the performance of firms and, since we are able to confirm this using short-term measures, we are confident an investigation into long-term effects will prove highly significant.

Exercises

1. Why do we expect IP activities to lead to higher economic performance?
2. Why is the relationship not as straightforward as one might expect?

Notes

1. <http://www.lifesciencesipreview.com/article/a-global-approach-novo-nordisk-s-ip-strategy>
2. <http://www.ibm.com/ibm/licensing/>

Recommended readings and bibliography

Grossman, G. M. and E. Helpman (1991). *Innovation and Growth in the Global Economy*. Cambridge, MA: MIT Press.

Pisano, G. (2006). "Profiting from Innovation and the Intellectual Property Revolution." *Research Policy* 35(8), 1122–1130.

Romer, P. M. (1990). "Endogenous Growth and Technical Change." *Journal of Political Economy* 98: 71–102.

Solow, R. M. (1956). "A Contribution to the Theory of Economic Growth." *Quarterly Journal of Economics* (The MIT Press) 70(1): 65–94.

Teece, D. (1986). 'Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy.' *Research Policy* 15: 285–305.

<http://www.lifesciencesipreview.com/article/a-global-approach-novo-nordisk-s-ip-strategy> – accessed May, 2014.

<http://www.ibm.com/ibm/licensing/> – accessed May, 2014.

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