

Technology Transfer and IPR Policy for Small and Medium Firms in South-East Asia¹

STUART MACDONALD & TIM TURPIN

ABSTRACT *In theory, small and medium firms have much to gain from the intellectual property rights system: in practice, SMEs have trouble using the IPR system. Yet the developing world is encouraged by the developed to look to IPR to make its SMEs more innovative and hence competitive. If SMEs are to make effective use of IPR, it must be within their existing business strategy. For them, copying may be a more appropriate and successful form of technology transfer than licensing IPR from developed countries.*

Keywords: ASEAN technology transfer; innovation; IPR policy; SMEs

Introduction

This paper is derived from a report for the Association of South-East Asian Nations (ASEAN)—Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei Darussalam, Vietnam, Lao PDR, Myanmar and Cambodia.² The report focuses on the relationship between the region's intellectual property rights (IPR) system and the innovation of its small and medium enterprises (SMEs). ASEAN policy makers feel that SMEs need IPR to be competitive, an opinion only intensified by pressure to comply with the Trade-Related Aspects of Intellectual Property Rights Agreement (TRIPS). Despite an extensive survey and many interviews in SMEs and relevant agencies in the ASEAN countries, the authors could find little evidence to support their conviction.

SMEs and Innovation

The reality of innovation in SMEs is often at variance with the theory behind policy for innovation in SMEs. Market failure logic justifies government intervention with all manner of schemes to encourage innovation in SMEs. They tend to miss the point, which is that SME managers are often not unwilling to innovate, but unable. SME managers are far too busy coping with a wide range of immediate demands to

give much attention to innovation that is not urgent and absolutely essential. It follows that their horizons are limited, and their views of the world restricted. The typical SME is isolated, which is presumably why SMEs look to their own resources for development. Inevitably, these resources are limited and often inadequate. The result can be frustration, not just with failure in innovation, but also with government exhortations to succeed that are based on an inappropriate understanding of innovation in SMEs.

In theory at least, the IPR system is particularly appropriate for encouraging the creativity of small firms and independent inventors. Large organisations are more likely than small to have the internal resources to develop their own inventions, and so can keep the information of invention to themselves. Smaller organisations must generally seek these resources outside and so must reveal all. In practice, though, the protection that the IPR system affords the weak against the strong is often illusory, and the problems that small firms encounter in protecting their inventions through the patent system are widely acknowledged. Other forms of IPR, including trademarks and copyright, are sometimes assumed to be more appropriate for SMEs and to contribute more to their competitiveness. This assumption also needs to be questioned.

SMEs and IPR in Practice

There is surprisingly little research on the actual use of IPR by SMEs. What has been carried out is almost unanimous in declaring that, with few exceptions, SMEs make sparing use of IPR.³ There is also little interest in why this might be; government policy is usually resolute in encouraging SMEs to make more use of IPR.⁴ Typically this is to be achieved by exhortation, public relations, advertising, roadshows, and so on; and by adapting the IPR system (with petty patents and the like) to make it more suited to what are imagined to be the requirements of SMEs.

It was always optimistic to assume that a single IPR system would suit all organisations, the small engineering firm as much as the multinational oil company. And it was always disingenuous to present IPR theory in terms of the particular benefits the IPR system affords the small and the weak. IPR practice has long meant that these benefits have generally been reaped only by the large and the strong. And yet governments are immensely fond of presenting case studies in which SMEs succeed through their use of IPR, and particularly patents. Other SMEs are expected to follow their example. But if SMEs make little use of IPR in their innovation, how can IPR support their competitiveness? What needs to change, and how?

The IPR system has changed a great deal in the last 20 years. The scale and scope of the patent has been much extended with the result that its value has grown both absolutely and in relation to other forms of IPR. The patent has become very much the IPR of choice in the global economy. There is now huge interest in IPR, especially patents, and in protecting and exploiting the value in IPR. Corporate strategy is increasingly finding a central place for IPR, though not necessarily to facilitate innovation. IPR can have a strategic value in its own right, quite detached from any part it might play in innovation.

The administration of IPR has also changed. National patent offices, unaccustomed to the limelight, are now expected to be leading actors in government innovation policies. They are often agencies, distinct from government departments and often forced to justify their existence not in terms of public benefit, but rather in terms of transactions. Integration of national IPR activities by international

agreement, consolidation of functions in such organisations as the European Patent Office, and contracting out such IPR tasks as searching, are turning IPR administration into a global business.

Then there is TRIPS. TRIPS establishes a common set of international standards and procedures for the protection of IPR, and recognises the need for effective enforcement of trade-related IPR. Under TRIPS, each member country can determine the method by which obligations are implemented within its own legal system and practice. In recognition of the problems facing the least developed countries, TRIPS allows the changes necessary to comply with the agreement to be introduced in phases. A transitional period of 10 years was provided under the agreement to allow 'least developed' countries time to bring their laws and practices into line with TRIPS. A lesser period (five years) was set aside for 'developing countries' to comply.⁵ Irrespective of these conditions, the national economic benefit from becoming a signatory to TRIPS was always going to be far greater for industrialised countries. But the theory promised economic benefit for all, and it was this promise that helped entice the smaller and weaker countries into the fold.

The literature is generally consistent in arguing that neither the new strategic importance of IPR nor the growing internationalisation of its administration seems to be making the IPR system more attractive to SMEs. On the contrary, the value that SMEs might find in IPR seems to have become more elusive than ever. The more the value of IPR lies in grand international strategy, the less likely are SMEs to be able to realise this value. There are, of course, exceptions, most notably the high technology SME, its business dominated by a single new product or process and instantly global. For these SMEs, innovation is inseparable from IPR and the fortunes of the firm are dependent on the strategic exploitation of this IPR. But these are not typical SMEs. The innovative advantage of the typical SME lies in speed to temporary niche market. This is not an advantage that recent changes in the IPR system have done much to complement.

It is quite clear that, in many cases, the small and weak are unable to enforce the temporary monopoly the patent affords, and that patents play little part in their innovation. Nor do SMEs generally innovate by exploiting the information the IPR system makes available. This tends to be information about the IPR behaviour of others rather than information for their own innovation. SMEs have never innovated by meticulously trawling IPR databases. Indeed, the very databases that patent offices offer SMEs to aid their innovation are inaccessible in practice, and unsuited to their requirements anyway. They are suited to IPR professionals, practised and skilled in their exploitation, people who are searching for very specific information for very specific purposes. They are not appropriate to SME managers desperate for a quick and easy way to assess threats and opportunities. Nor does the typical SME manager have sufficient time, energy or inclination to track and map the patenting activity of others, or to integrate the SME's patenting with that of global industries. The innovation of SMEs is a world away from the patent blocking and blitzkriegering of huge multinationals.

An effective role for IPR in supporting the competitiveness of SMEs cannot be built on the simple assumption that IP protection and the diffusion of information through the IPR system will increase innovation. The new IPR regime must also be accommodated. As ASEAN moves further towards an ASEAN Free Trade Area, business pressures and opportunities will change. The target date for ASEAN economic integration has already been brought forward from 2020 to 2015. A new approach to IPR will be required and time is short.

IPR in the ASEAN Region

It is not easy to discover the extent of IPR use in the ASEAN region. Government departments responsible for IPR have different working practices and operate under a range of regulatory and legislative IPR regimes. Even the terminology of IPR differs from country to country. Statistics are collected in most ASEAN states, and published in all but Myanmar, but there is vast variety in how consistent and comprehensive these statistics are. Although there have been moves towards an ASEAN agreement on IPR, little progress appears to have been made in making the IPR data of ASEAN countries compatible and, importantly, readily accessible.

Some ASEAN countries make annual returns to the World Intellectual Property Organisation (WIPO) in Geneva, the body responsible for international IPR data, but most do not. Only two or three ASEAN countries make regular returns, and even these can be very late. There are huge inconsistencies and illogicalities in the data, and sometimes even typographical errors. Consequently, ASEAN policy makers with responsibilities for IPR must often be at a loss to know what is going on. Those less familiar with IPR must be even less certain. There is simply no sound statistical basis for determining what impact IPR may be having on the economy, or what impact the economy may be having on IPR.

It is important to place ASEAN IPR in context. There were over 1,300,000 patent applications made in the world in 2001, 81% by residents of Japan, the United States and Europe. Residents of all other countries combined accounted for just 19% of all patent applications. ASEAN data do not allow even an estimation of what proportion of world patent applications is made by ASEAN residents, but US data do provide some sort of proxy. Because of the size of the US market, US patents are keenly sought. All the ASEAN countries together were responsible for just 0.3% of applications for US patents in 2003, Singapore accounting for nearly all the ASEAN total. Although there is significant domestic patenting in Indonesia, the Philippines and Malaysia, only Singapore patents are registered in any number in the United States. Because Singapore is outstanding among ASEAN nations in IPR activity, it might be assumed that Singapore is a hub for ASEAN IPR, attracting applications from throughout the ASEAN region. In fact, it is no such thing. Other Asian countries, and especially Japan, are much more likely to be active in registering their IPR in Singapore than ASEAN countries.

It is tempting to conclude that there has been an increase in patenting in several ASEAN countries in recent years, but the figures are too irregular and unreliable to draw even such an elementary conclusion. Occasional data series allow a glimpse of who makes most use of the IPR system in ASEAN countries. In Malaysia, for example, between 1988 and 2000, 38% of patents were granted to US residents, 21% to residents of Japan, 24% to residents of Europe, and only 3% to residents of other ASEAN countries. In Thailand between 1992 and 2002, 26% of patents granted were granted to US residents, 26% to Japanese residents, 17% to European, and just 0.3% to residents of other ASEAN countries. In Vietnam, 28% of patents granted in 1999 were granted to US residents, and 27% to Japanese residents. Quite clearly, ASEAN residents make almost no use of the monopoly provisions of their own patent systems. This is not necessarily an indication of underdevelopment. Most countries award vastly more patents to non-residents than to their own residents. However, there is always a trade-off between the inventiveness of the national economy as reflected in a propensity to patent, and the attraction of its market to patentees elsewhere.

Of course, patents are not the only form of IPR, and for SMEs probably not the most significant sort. Trademarks, industrial designs and copyright are likely to be more important. Here, though, data problems are even more grave. If patent statistics in the ASEAN region are unreliable, trademark and industrial design statistics are even more so. Copyright statistics are almost non-existent. Despite these limitations, it seems that there are many more applications for trademarks in the ASEAN countries than there are for patents, and Singapore does not dominate in trademarks in the way that it does in patents. In trademark registration, ASEAN countries are as active within the ASEAN region as developed countries. Industrial design registration exhibits a not dissimilar pattern. ASEAN registrations of industrial designs are increasing rapidly and residents are responsible for most of these.

IPR and Technology Transfer

A major purpose of intellectual property rights—some would say the only purpose—is to prevent others appropriating intellectual property without the consent of the owners of the IPR. Appropriation takes the form of copying, piracy, passing off and counterfeiting. The argument is straightforward: the incentive to invent will be much impaired if others are free to appropriate the invention. There is also a social cost in that less invention means less innovation and thus a poorer society.

We have already observed that innovation in SMEs generally takes place outside the IPR system. If the IPR system is marginal to SME innovation, it follows that erosion of the IPR of SMEs by copying will have little effect on their creativity. It may be, of course, though this is yet to be proven, that the erosion of the IPR of large firms, especially large firms in the developed world, does reduce the creativity of these firms. In as much as they are less innovative, or less willing to transfer their new technology to SMEs in developing countries, ASEAN SMEs may be worse off. But the assumptions are heroic. And even if it is allowed that diminished IPR means less innovation, it does not follow that less technology would be transferred to ASEAN SMEs.

TRIPS is supposed to bring benefits to the developing world in terms of technology transfer from North to South, but it is hard to see how these benefits are to be realised by the developing world's SMEs. Just how, in practice, does the IPR system assist the transfer of new technology from, say, a large American firm, to, say, a SME in some remote part of Indonesia? Is the Indonesian firm really to negotiate a licence with the American firm incorporating an effective technology transfer agreement? And are large American firms genuinely anxious to reach such agreements with Indonesian SMEs, and to ensure that technology actually is transferred? Probably the only practical way by which the SMEs of the developing world can acquire new technology is by copying.

Just as the pharmaceutical industry was influential in formulating the TRIPS arrangements,⁶ so the software, music, movie, sportswear, perfume, spare machine parts, luxury and fashion industries, as well as the pharmaceutical industry, of course, have set the agenda for discussions of copying, and have organised themselves into powerful pressure groups, such as the International AntiCounterfeiting Coalition (IACC), the Business Software Alliance, the International Federation of the Phonographic Industry and the Motion Picture Association. An example is the amassing by the IACC of hundreds of instances of copying reported in the popular media in order to shape arguments likely to influence a political audience.⁷ Gone

are the days when large firms had to depend on civil courts to protect their IPR; they now expect governments to protect their interests as part of national responsibility for international trade. The ICC Counterfeiting Intelligence Bureau has even produced a report on copying under the auspices of the Organisation for Economic Co-operation and Development in Paris, an ultra-respectable group to which the developed world looks for comparative economic statistics.⁸ The stakes are huge, and lobbying efforts commensurate.

These industries argue that copying is theft, and that stealing is simply wrong. They commonly estimate the magnitude of their losses, and hence the degree to which they have been wronged, by multiplying product price in the legitimate market by the estimated number of copies made—a figure which allows some scope for imagination.⁹ This loss is then related to a statistic likely to be meaningful in the developed world, say, tax losses and consequent inability to pay for hospitals and schools. So, some \$23 billion is said to have been spent on counterfeit goods during 2003 in New York City alone, a tax loss to the city of \$1 billion.¹⁰ For good measure, the financial loss is customarily converted to jobs lost to make it perfectly clear that the developing world is stealing bread from the tables of the developed world.

Counterfeit automobile parts, such as brake pads, cost the auto industry over \$12 billion in lost sales. If these losses were eliminated the industry could employ an additional 200,000 workers.¹¹

From a mere \$5.5 billion in 1982, losses from copying jumped to \$60 billion in 1988, and were no less than \$200 billion in 1996.¹² So vast are these losses that the costs of common crime are relatively trivial.

Bank robberies, by contrast, generally involve less than \$70 million a year, but seem to garner more public attention and law enforcement resources.¹³

But the argument goes further, much further: because copying is a high-profit, low-risk offence requiring organisation rather than skill, it attracts organised crime. Those who copy are the very villains who traffic in drugs. Devoid of all scruples, these cold-blooded criminals copy drugs, and parts for cars and aeroplanes.¹⁴ Thousands die. Even the tobacco industry demands protection on the grounds that counterfeit cigarettes may damage the health of smokers.¹⁵ Inevitably, terrorists turn to copying to raise cash for their activities. It is apparently only a matter of time before the terrorists make the logical leap and use copying itself to spread terror, perhaps by pasting copies of innocent labels onto bottles that really contain deadly chemicals.¹⁶

... the September 11 attacks cost only \$500,000—a little more than \$26,000 per terrorist—certainly not a large or unattainable amount of money. Based on the aforementioned figures, one successful large scale intellectual property crime could potentially fund multiple terrorist attacks.¹⁷

According to the private investigator conducting the research, a raid of a souvenir shop in mid-town Manhattan led to the seizure of a suitcase full of counterfeit watches and the discovery of flight manuals for Boeing 767s, some containing handwritten notes in Arabic.¹⁸

There is less interest in the benefits that owners of IPR might gain from copying. That something can be copied may well enhance the value of the original.¹⁹ Indeed, if it is the case that copying is so ubiquitous, it would be extraordinary if the price of original goods did not already reflect the ability to be copied. New products may well have no market until one is created, a process in which copying can be an effective mechanism. The QWERTY keyboard had little to recommend it as an innovation; its value lay in its acceptance as standard.²⁰ Similarly, software improvements are related to the number of consumers, not to the legitimacy of their purchases.²¹ One study finds that copied software generates something like 80% of software sales.²² With fashion products, where demand tends to be related to demand itself rather than to price, copying may boost sales of a whole range of both exclusive and popular fashion products.

Though those who own the IPR commonly use the price of the original to calculate their losses, they do not usually claim that the copy is as good as the genuine article. They insist instead that their reputation and market are being eroded by copies. The copied goods produced by the SMEs of ASEAN are unlikely to be taken for the real thing: the market that pays a few dollars for copied goods is usually quite distinct from the market that pays a few hundred dollars. Consumers seem to have no trouble distinguishing between original and counterfeit²³ and, unlike the owners of the IPR, do not think the value of originals is eroded by counterfeits.²⁴ Copies can sometimes be high quality, not really surprising when they are over-runs surplus to the requirements of the trademark owner and come from the very factories that produce the genuine article.²⁵

What copying does do, though, is allow SMEs to establish a basic competence on which they can build with their own innovation—something at which SMEs are inherently good. Consider the single example of an Indonesian SME in the leather goods industry. SMEs in East Java now produce good quality, fashionable leatherware. At one time, they simply copied Western designs. Their employees would watch the carousels at the airport, waiting for examples of the latest designs from the most fashionable designers. They made exact imitations, copying the brand name too. After warnings from the government, they changed their brands so that these merely resembled the designer brand. They have now begun to adapt the designs as well, and with change in design, they have also begun to use their own brand names. Copying lowers the barriers to entry for SMEs in developing countries to a level at which economic activity is possible. But, for this very reason, the SME that has acquired new technology (by whatever means) must innovate to compete with others entering the industry by copying its own products. In ASEAN at least, it is the breaking of the IPR monopoly that encourages SMEs to be innovative.

Copying has long played an important and not dishonourable part in technology transfer. It was probably the major means by which the innovation of the agricultural and then the industrial revolutions of the eighteenth and nineteenth centuries spread from Britain to Continental Europe.²⁶ Then, British firms often welcomed imitators, arguing both that copying extended the market for British firms, and that their rate of innovation outpaced the rate at which copies could be made. Indeed, copying was seen as not just the means by which innovation could be brought about through technology transfer, but also the means by which further innovation would be stimulated in firms that had been copied. Before R&D, it was imitation that was considered the fundamental contribution to innovation.²⁷ This is reminiscent of the style of thinking in modern SMEs: it is very different from the

thinking in many large companies, ruled by modern managers, qualified in Management Science and trained to value information as a fundamental resource. The IPR regime, as an instrument of knowledge management, is seen as having an important role to play here.²⁸

The irony is that many of the countries now so strident in defending the IPR of their own companies, and in attacking infringement by foreign firms, were once themselves guilty of allowing their own firms to copy and to infringe the IPR of others.²⁹ These countries permitted their nationals to disregard foreign IPR throughout most of the nineteenth century, and often allowed their citizens to claim foreign IPR as their own.³⁰ As long as technology elsewhere was more advanced, it seemed sensible to focus on its acquisition and IPR was seen as an obstacle, not an aid, to this acquisition. Only once these countries had acquired a technological infrastructure, in part through illicit copying, did they become interested in exploiting IPR to deter the copying of others. The US did not acknowledge foreign copyright until 1891. It was pressure from the more developed countries that resulted in the Paris Convention of 1883 on patents and the Berne Convention of 1886 on copyright, both declaring that signatories must provide the same IPR as they offered their own citizens. It is important to appreciate how new is this switch in policy; the United States did not join the Berne Convention until 1899.³¹ Pharmaceutical firms may insist that patents are essential to their survival, but many developed countries did not allow the patenting of pharmaceutical inventions until very recently: France in 1960, Ireland in 1964, Germany in 1968, Japan in 1976, Switzerland in 1977, Italy and Sweden in 1987, and Spain in 1992.³²

Some observers have detected more than a whiff of hypocrisy in the current attitude of the developed world to the use of IPR for transferring technology to the developing world.³³ Having found IPR a hindrance to their own acquisition of new technology, developed countries now declare that the IPR system will actually assist technology transfer to the countries that are currently developing. The rationale of TRIPS is that strict enforcement of IPR in developing countries will encourage the licensing of firms in these countries, and the consequent transfer of technology. This may lead to net increases in foreign investment which may in turn stimulate innovation. However, even those SMEs that do innovate in this way seem doomed to a catch-up existence, always lagging rather than ever leading. The reality is that firms in the developed world do not want the cost and inconvenience of licensing SMEs in the developing world and of ensuring that technology is successfully transferred to them. If these SMEs are ever to acquire this technology, there is little alternative to copying.

Conclusions

IPR within business strategy is important for SMEs, not IPR itself.³⁴ Some SMEs will engage in IPR activity: some will claim monopoly rights, some will license, some will search the IPR databases for information. But the vast majority of SMEs in most ASEAN countries are simply not in this game. Their competitiveness relies on deft marketing and building strategically on niche opportunities. Our interviews with SME leaders in the ASEAN region indicate that what strategic use is made of IPR is limited to trying to understand its complexities to avoid infringing the rights of clients and competitors; in short, to stay in business rather than forge new opportunities. If the IPR system is to enhance the competitiveness of these SMEs, there is a need for more user-friendly information about IPR, presented in the context of

current and potential business plans. Industry associations and professional bodies should be involved in preparing and disseminating such information. A regional database on the use of IPR by SMEs and the sectors and types of business activity in which they are most engaged is essential. Above all, while government policy in the ASEAN region must accommodate TRIPS, it could do much more to take advantage of what flexibility TRIPS allows for innovation and technology transfer.³⁵ One size does not fit all, and an IPR system that satisfies the requirements of a global pharmaceutical firm is unlikely to be particularly relevant to the needs of a SME in the developing world. To pretend otherwise does not serve the interests of the developing world, or its SMEs. The demonisation of copying reflects an attitude to innovation more appropriate to the R&D programmes of large, high technology companies from the developed world:³⁶ it ill suits the methods of technology transfer upon which ASEAN SMEs depend for their innovation and competitiveness.

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