2.5 Technology Transfer: Ground Rules for Wealth Creation

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Introduction

Technology transfer is a dynamic process that is critical to the creation of a body of knowledge which accelerates the process of technological development, both for developing countries and for industrialised nations.

Of the many specific methods of technology transfer, the one which in the long term is of greatest benefit to the recipient is the transfer of technology by the imparting of knowledge. This process comprises four distinct cycles:

1. The **creation** of an invention or **package** of inventions.

2. The commercial **protection** of the invention created. The process of transferring a technology starts with the communication of proprietary knowledge often called Intellectual Property Rights or 'IPR' for short. IPR is protected by national laws and international conventions through the grant of patents and copyright.

3. The process of extracting optimum value from IPR relating to an invention or body of inventions is the **licensing** of technology.

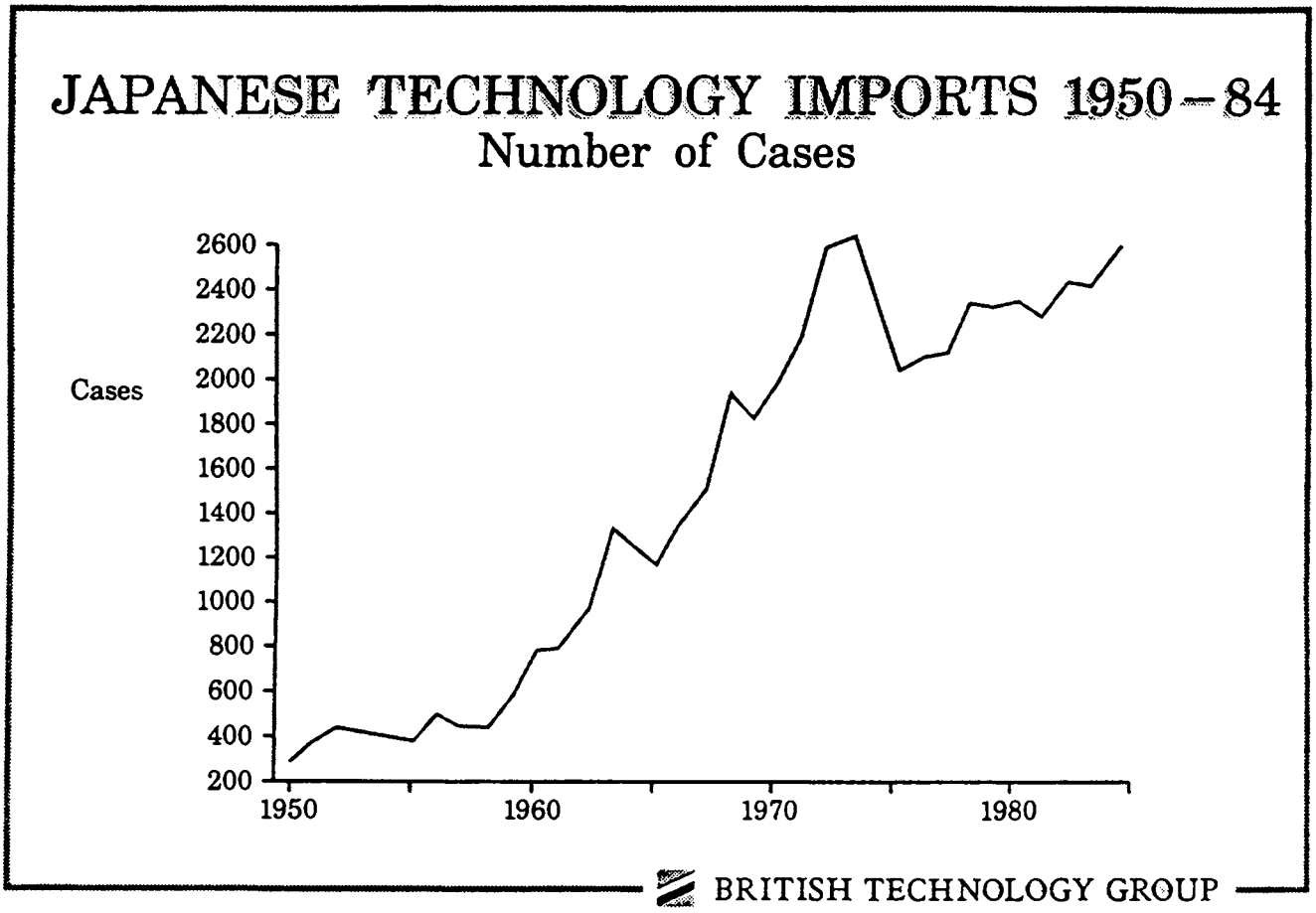
4. Finally, the defense of IPR and the pursuit, through litigation where necessary, of infringers who use IPR without recognising the legitimate commercial and financial interests of the owner. BTG has successfully fought five such cases in the USA in the last five years against infringers ranging from small companies to multinationals to the US Government itself. However, it would be misleading to suggest that the easiest way of creating wealth from technology transfer is through the law courts. On the contrary, it is to be used only as a last resort.

The common thread running throughout the entire process is that it is important to create and commercialise IPR in the technology transfer process.

The Importance of Globally Traded IPR

The flow of scientific information and the trade in IPR stemming from scientific discoveries has historically been international and largely unrestricted. Any successful industrial country today must draw on technology that originated not only from within itself, but also from many other external sources such as companies and universities internationally.

The international market in IPR is large, about $15 billion in 1988 prices, supporting products with an end market value estimated at $300 billion per year. Operating in this market as a buyer clearly provides tremendous opportunities to expand the technological skill base and encourage organically generated industrial growth through technology acquisition. Japan became the industrial giant it is today through a very effective policy of 'licensing-in' foreign technology (see figure below).



The people who benefit from free trade in IPR at the end of the day are the consumers who see competitive, leading-edge products brought to the marketplace in the shortest possible time at the lowest cost justifiable in commercial terms. BTG has become the world's largest and most successful technology transfer company, earning over 70% of its revenues overseas, because we address the global markets to which that technology is relevant. Technological protectionism is exactly the same as trade protectionism - it benefits few and damages most.

The overriding message of all of this is that developing countries will always remain 'developing countries' until they make their indigenous technology internationally competitive. This cannot be achieved unless they are prepared to acquire and absorb the technology they need to compete successfully in the international market place.

The Undervaluation of IPR

Commercially valuable intellectual property, particularly in the form of product and process patents, often arises from research and development programmes (R & D) in industrial concerns. However, in spite of evidence to the contrary, it is surprising how many companies still believe that R & D expenditure will depress stock prices. Companies do not communicate their R & D strategies to their shareholders, or they mistakenly believe that their shareholders will value R & D spend negatively.

A key problem, however, is the internal recognition by corporations and governments of the value of IPR. Although there are notable exceptions, many countries do not understand the full value of the opportunities for licensing-in technology that is relevant to their future development.

Licensing Technology

Because the innovative process cannot be predicted, well-run companies expect not to use 70% of the inventions which are made within their laboratories. However, this IPR almost certainly can be used by other companies with a different product mix, in other markets or geographic areas, or in products unrelated to the core business of the company.

Many developing countries try to 'go it alone'. They take unnecessary risks in technical uncertainty in highly competitive and fast moving technological areas, in costs and in timescales. Some countries believe that the best way of conserving scarce financial resources, particularly foreign exchange, is to develop indigenous technology - all very well if the domestic product is internationally competitive in quality and price. However, this is often a flimsy excuse to protect inefficient domestic producers from legitimate foreign competition.

Some governments assume that any technology offered for licence must be second-rate, redundant or otherwise unattractive; this is simply not true, as evidenced by Japan's obviously happy experience with imported technology (see figure on page 108). Developing countries can benefit from licensing-in technology in a number of ways; in particular, it reduces both the development time and the risk. Small companies can acquire fully engineered products. Large companies can license-in either products or discoveries which they can develop into new products. By doing so, they create their own future economic well-being without being in hock to the bogeyman of the Third World, the 'foreign multinational'.

Paying for IPR

Payment for the use of IPR is clearly an issue that has dominated the Uruguay round of GATT. There are two issues that are significant to the framework in which IPR will be traded in future. They relate to the problems of unifying patent systems worldwide. Only by doing this can there be a level playing field when it comes to paying for the acquisition of technology.

1. OECD Countries

It is commonly accepted by economists that a level of monopoly created by patents is acceptable for the increase in innovation and thus wealth that innovation will create. Significant problems, however, are created by the difference in patent standards between countries. The World Intellectual Property Organisation (WIPO) is a forum for one set of discussions aimed at harmonisation and standardisation. The key player in this game, the USA, is also taking independent action through it bilateral agreements with individual countries such as Taiwan and Korea in order to win allies in the current battle over whether priority should be given to the first to invent (the US position) or the first to file (all other industrialised countries).

There is much to be said for uniformity of patent systems. We must ensure, however, that the standards we adopt are the 'best' and not those imposed by the strongest members of the economic order on the weakest. That having been said, the protection afforded to patent holders in the OECD countries, even though it remains variable with mixed success in working towards common standards, is relatively strong and robust. It is a major factor of growth. Which brings us to the second point.

2. Lesser Developed Countries

By comparison, many developing countries provide little or no patent protection or enforce it only weakly. This they do on the grounds that patents are a legal way of the rich exploiting the poor, or that limited national recognition of foreign IPR redresses the economic balance because they get access to technology which they could not otherwise afford. This misguided policy damages developing countries more than the companies whose IPR goes unrecognised, because those developing countries forgo the economic growth they could otherwise generate.

A major mistake in failing to provide enforceable patent systems denies developing countries a flow of growth-creating technology, forcing them into relying on overpriced obsolete technology rather than maximising the returns which could be made from the proper import and use of technology for wealth creation.

Thus, any movement to unify patent systems worldwide would go a long way towards ensuring universal acceptance of the need to reward adequately the use of IPR. The needs and problems of developing countries' ability to pay also deserves sympathetic consideration.

BTG believes that the establishment of a unified and universal system of patent protection should go in hand with the provision of financial assistance to developing countries. This is necessary to ensure that they are encouraged to abide by the rules and to adopt 'best practice' without involuntarily penalising themselves.

Policy Issues for Developing Countries

Attitudes in developing countries vary and the stage of development reached is usually dictated by the receptiveness of countries to foreign technology and foreign investment.

There are countries within the Commonwealth which possess natural advantages like a skilled labour force, an entrepreneurial culture and relatively few 'hang ups' about their colonial past; their governments have a commercial or strategic focus, encourage academic research and emphasise competitive self-reliance, while their industries probably have capabilities in R and D, production, design and engineering. Such countries tend to outperform their counterparts who, although possessing the same skills and potential enterprise, nevertheless still believe in a command economy surrounded by a panoply of controls and a vast and inefficient public sector operating to socio-political objectives whose only aim seems to be the preservation of an entrenched bureaucracy.

The critical role of governments in formulating appropriate policies to encourage the growth in a country's technological capabilities must therefore never be underestimated.

Conclusion

Technology alone will not create growth. However, it is the seed from which genuine growth will emerge. Identifying the seed, placing it in the most fertile ground and then helping it to germinate and bloom is a challenging but highly rewarding task. Patience, dedication and adherence to the principles of technological excellence and commercial realism over a forty year period made British Technology Group the world's most successful technology transfer organisation. If governments adopt those very principles, there is no reason why that success cannot be repeated many fold in different countries.

The Author

Rusi Kathoke was born in India. After obtaining an Honours degree in Economics and History from St Xavier's College, Bombay he qualified as a Chartered Accountant with KPMG Peat Marwick McLintock, London. In 1979 Mr Kathoke joined the National Enterprise Board (NEB) which merged with National Research Development Corporation (NRDC) in 1981 to form the British Technology Group (BTG). He was appointed Assistant Finance Director of BTG in 1982 and Finance Director in 1986. He is a director of BTG's American subsidiary - British Technology Group USA Inc - and is responsible for the development of BTG's business in India in particular and the Third World in general.

British Technology Group is the world's leading technology transfer organisation. The annual sales value of products licensed by BTG amounts to around $3 billion. BTG's licensing strategy is international, with more than 75% of its total revenues arising from overseas. It has recently established its first joint venture in technology transfer by setting up a company in India, British Technology Group India Private Ltd, in collaboration with Creditcapital Finance Corporation Ltd, an Indian Merchant Bank.

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