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THE INNOVATION POTENTIAL OF AN SME AND THE VALUE OF THE INTELLECTUAL PROPERTY RIGHT

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Introduction

Worldwide the focus of attention is shifting to the SME sector. Nations are recognizing the contribution SMEs are making to their economy. They have been variously described as the backbone of the economy and as the drivers of the economy. This is particularly true of Asian countries where many enterprises are the outcome of first generation entrepreneurs. They often have a product or service idea, some money, a zest to work hard but limited knowledge about markets, Government or bank procedures, cash flows or how to manage their creative idea. Their innovation potential and the value of intellectual property rights are of special significance in economic development.

Contribution of SMEs

Countries	Share % of			
	All Establishments	Output	Employment	Exports
Japan	99	52	72	13
Singapore	97	32	58	16
Republic of Korea	90	33	51	40
Malaysia	92	13	17	15
India	95	40	45	35

It is the advantages of cost and of generating innovating ideas that have given rise to an increasing number of SMEs. Indeed, a nation's ability to convert knowledge into wealth and social good through the process of innovation determines its future. Intellectual Property issues have emerged as an integral part of technology management and competence building in SMEs and have a pervasive relevance to their growth. Economics of knowledge, more than mere capital or natural resources, will dominate this century. The changes are truly dramatic.

History of Silicon Valley is full of stories of SMEs being the driving force of growth and innovation. The German economic miracle after World War II is largely the result of the enormous success of its SMEs. In India, about 60% of companies registered with the software technologies parks are SMEs.

The Changing Nature of Technology

The nature of what constitutes technology itself is undergoing a major paradigm shift. We define it differently today than we did two decades ago. The emphasis is moving away from physical or tangible assets, to intangible knowledge assets. The world's major growth industries – such as microelectronics, biotechnology, designer made materials and telecommunications are brainpower industries.

Understanding the effects of technological progress on economic growth, was spearheaded by the Austrian economist, Joseph Schumpeter, best remembered for his views on the "creative destruction" associated with industrial cycles 50-60 years long. He was the first to challenge classical economics as it sought to optimize existing resources within a stable environment. A healthy economy, as he observed, was not one in equilibrium, but one

that was constantly "disrupted" by technological innovation. The cycle of "long waves" is unique, driven by entirely different clusters of industry.

A long upswing in a cycle starts when a new set of innovations comes into wide spread use. This happened in the late 18th century with waterpower, textiles and iron; in the mid 19th century with steam, rail, and steel; and at the turn of the 20th century, with electricity, chemicals, and the internal combustion engines.

These long booms petered out as the technologies matured and returns to investors declined with reducing number of opportunities. After a period of slow expansion, inevitably came the decline – only to be followed by a wave of fresh innovations, which destroyed the old way of doing things. Conditions were created for a new upswing.

By 1950's the third cycle of these successive industrial revolutions had already run its course. The fourth, powered by oil, electronics, aviation and mass production is winding down. There is evidence that a fifth industrial revolution based on semi-conductors, fiber optics, genetics and software, is not only well under way but has, possibly, run two-thirds of its course and may be approaching maturity. The long economic waves are shortening 50-60 years to around 30-40 years.

We should also look at the *changing paths in technology developments*. Over 50 years ago, before World War II, the driving force for innovation was search for knowledge – individual and organizational. Scientific research work was pursued by the few small enterprises. Little interaction existed between academics and industry.

The World War II and the years after that witnessed emergence of Government funded research driven by demands of economics, defense and health. Science based industries such as Biotechnology and Information Technology grew. There was also growth of industrial scientific research. Industry support to academia was intense.

After the cold war, defense - based science and technologies declined economic growth and health became prime movers. Serious questions have been raised of late to driving innovation through defense and space, spending and hoping for its subsequent diffusion into society through technology "spin offs".

The process of globalization has also given rise to privatization and corporation of innovation effort. As these have grown, the issues of ownership of intellectual capital and proprietary information have begun to assume greater importance. The Uruguay Round (1986 – 94) under GATT and subsequent emergence of WTO in 1995 have brought the issues of intellectual property rights to the fore.

The Innovation Process

The purpose of innovation is to create a new value, be it for individual, team or organization or for the society at large.

Invention ⟹ to conceive the idea

Innovation ⟹ to use the process by which an invention or idea is translated into the economy

Value creation could take the form of:

- break through Products or Services
- New Strategies
- New Process, and
- New methods of organization

What precisely constitutes innovation is hard to say. It is usually thought of as the creation of a better product or process but it could just as easily be the substitution of a cheaper material in an existing product or a better way of marketing, distributing and supporting a product or service. Entrepreneur's, usually the most successful, though not only innovators, seldom stop to examine how they do it. "The entrepreneur", said Jean-Baptist Say, the French Economist who coined the word around 1800, "shifts economic resources out of an area of lower and into an area of higher productivity and greater yield".

Though the notion of innovation lacks a rigorous definition, the WIPO Model Law for Developing Countries on Inventions (1979) reads as follows: " 'Invention' means an idea of an inventor which permits in practice the solution to a specific problem in the field of technology". The Japanese patent law is one of the rare laws that contains a definition. It says that an invention is a "highly advanced creation of technical ideas by which a law of nature is utilized".

If we examine the different roads to innovation, three approaches become visible:

The *first* is the innovation on a large scale. They take the form of strong social and economic commitments, like building pyramids or man on the moon. They became the crucibles of innovation creating challenges to innovations and integrating technologies, people, systems, organizations and methods. These require visionary leaders and resources which usually the nation states have at their command. Strategic programs in space, defense, agriculture, and atomic energy represent such large-scale innovations. These are fired by dreams and great ambitions and by denials as in case of war or sanctions.

The *second* kind is the incremental innovation. The process of technology development at the operations level is driven by the competitive forces. They lead to influx of improved products and services. The number of patent applications in the world each year is estimated to be well over one million. Those applications result in the grant of over half a million patents. The number of patent documents since the time when patents were first published is close to 30 million. Of course, not all inventions are taken to patent offices. The point is that, at grass roots – at the firm or the individual

level – the innovative activity is very intense. The heart of competitiveness lies in the human endeavor to excel and in continuous innovation to develop superior products, in terms of quality, features, design, content and service that satisfies the end-user.

The *third* type of innovation arises through major breakthroughs. They give rise to altogether new industries. Telephones, x-rays, photography, Xerox, jet engines, stereo sound are some examples of radical innovations. Often, they come about by serendipity. Many products in the chemical, plastic and antibiotic industries came about by accident. People usually call them 'lucky accidents' but it requires an inquisitive mind to spot them. Eyes do not see what the mind does not know.

Innovations not only break the mould, they also yield far better returns than ordinary business ventures. One American study found that the overall rate of return for some 17 successful innovations made in the 1970's averaged 56%. Compare that 16% average return on investment for all American businesses over the past 30 years. Innovators with good ideas and track record, with all the riskiness of their endeavors, attract investments.

The Chairman of 3M said in 1993 that 25% of its sales would be based on 3M's innovation carried out during the last 5 years. He increased the challenge by changing this from 25 to 30 % and 5 years to 4 years.

Technical staff at 3M are encouraged to spend 15% of their time working on ideas they hope will one day become new products for their company. They not only get time to pursue these ideas, they can also get money to buy equipment and even hire extra help.

Impact of Intellectual Property Rights on SMEs

Wealth is more measured in terms of fixed assets such as building, land, machinery, bank account etc. It is measured now in terms of knowledge based systems, which add value. Countries are introducing legislation where intellectual property can be considered as security against a loan.

The progression of many large companies up the value chain is creating in its wake, an increasing number of SMEs. The Internet and all the attendant changes that it brings along with it, means for the first time SMEs developing product more cost effectively. Sharply reducing communication costs are rendering distances irrelevant, opening up opportunities for SMEs to offer cost effective solutions all over the globe.

The Internet, coupled with the advent of WTO's lowering of the tariff walls further levels the playing field. In combination, they provide a strong base for SMEs. Economist Ronald Coase argued way back in 1937 that the main reason why firms exist is to minimize transaction costs. Since the Internet reduces such costs, it also reduces the optimal size of such firms. Small firms can buy in services from outside more cheaply and barriers to entry, based on size alone, fall.

Echoing Coase's theory, Economist Andie Xie at Morgan Stanley in Hong Kong argues that because the Internet cuts transaction costs and reduces economies of scale from vertical integration, it reduces the economical size of firms. One big advantage rich economies have - their closeness to wealthy consumers - will be eroded as transaction costs fall.

The advantages of cost and of generating innovative ideas have given rise to an increasing number of small and medium enterprises. Outsourcing has increased, leading to reduction of large conglomerate.

For example, smaller firms in emerging economies can now sell in global markets. It is now easier, for instance, for a tailor in Shanghai to make a suit by hand for a lawyer in Boston or software designer in India than to write a programme for a firm in California.

As competition increases, one of the key benchmarks for competitiveness would be technology. Hitherto, SMEs could work with low technology levels, coupled with high labor intensity. Often, second-hand machines were purchased in an effort to minimize capital outlay. These would result in greater wastage or sub-optimal production but were more than offset by lower labor costs. As the market was not very demanding, the focus on quality tended to be diffused. The rules of the game are set to change all this.

Knowledge, embodied in new ideas and inventions, stimulates even the traditional industries to become knowledge driven. New knowledge in oil industry in three-dimensional acoustical sounding, horizontal drilling and deep offshore drilling is turning it into a knowledge industry.

Tomorrow's society will be knowledge society. Tomorrows markets will knowledge markets. It has been said that tomorrow's wars will be fought not by the conventional weapons but with the new thermo-nuclear weapons called information and knowledge.

The importance of knowledge is seen in the vigor with which companies protect infringement of their intellectual property. The top damage awards since the creation of CAFC (Court of Appeals of the Federal Circuit) in the United States is an indication of the changes.

Polaroid vs. Eastman Kodak	$ 873.2 million
Smith International vs. Hughes Tools	$ 204.8 million
Pfizer vs. International Rectifier	$ 55.8 million
Shiley, Inc. vs. Bentley Laboratories	$ 44.8 million

The legal protection of intellectual protection has spread to a number of developing nations. The idea that intellectual property is an asset with definite commercial value is growing significantly. Attitudes to IP are shifting.

Intellectual Property is being increasingly recognised as a powerful tool to create wealth through knowledge. The TRIPS agreement defines use of technologies, marketing, territorial restrictions and non-tariff barriers. Importance of IPR in technology development needs to spread more widely in SME sector. The protection of technology is increasing for industrial investment particularly in technology sensitive sectors such as pharmaceuticals, information technology etc.

Conclusion

As labor laws become stringent, labor costs can be expected to go up and the hidden advantage in terms of cheap labor hitherto available to SSIs would be considerably diluted. SMEs have to increasingly look at technology which improves productivity, effectiveness and competitiveness.

The emergence of new technologies, including the Internet offers a new information system, a new marketplace, a new form of communication and a new means of distribution. The power of digital distribution has the power of leading to development of wholly new products and services that nobody has imagined, offering the hope of further increases in economic growth.

SMEs have traditionally enjoyed strengths in innovation, reverse engineering and in serving niche markets. They are also a favored destination of outsourcing and sub-contracting on account of their lower overheads and personal attention which an entrepreneur can give to the production processes.

SMEs can independently build upon these inherent skills rather than get into head on competition with large companies/MNCs wherein they will begin with a disadvantage of lack of marketing acumen, advertising support and minimal access to establish channels of distribution. By nurturing innovation and protecting their knowledge through Intellectual Property Rights, such as Patents, industrial designs, copyright and related rights, trademarks, geographical indications, layout designs of integrated circuits and through protection of undisclosed information. SMEs would thus be in the best position to capitalize on their comparative advantage.

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