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SMES, Open Innovation and IP Management: Advancing Global Development

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Introduction and Overview

Micro-Small-Medium Enterprises (abbreviated herein henceforth as “SMEs”) are global drivers of technological innovation and economic development. Perhaps their importance has been somewhat eclipsed by the mega-multinational corporate entities. However, whereas the corporations might be conceptualized as towering sequoia trees, SMEs represent the deep, broad, fertile forest floor that nourishes, sustains and regenerates the global economic ecosystem.

SMEs have been variously defined. This has created a certain amount of confusion, which then complicates analyses and studies of SMES and hence has been implicated in delaying adequate appreciation of their importance in global economic development.

Accordingly, the European Commission established definitional guidelines that might serve as a benchmark for broader, global analyses of SMEs:

Table 1: Definitions of MSMEs.			
Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover OR.....>	Annual balance sheet total
Medium-sized	< 250	≤ €50 million	≤ €43 million
Small	< 50	≤ €10 million	≤ €10 million
Micro	< 10	≤ €2 million	≤ €2 million

From: A new SME definition: User guide and model declaration. Enterprise and industry publications. The European Commission, 2005.

Whereas the precise circumstances in developing countries vary considerably, a head count definition of SMEs as proposed by the European Commission is the result of careful empirical research, is ergo generally not unacceptable, and is therefore consistent with the information detailed in this brief paper.

Broadly recognized as engines of economic and global development, SMEs account for a substantial proportion of entrepreneurial activity in both industrialized and developing countries. Indeed, their role as dynamos for technological and economic progress in

developing countries is critical and cannot be underemphasized. In industrialized countries, SMEs as major contributors to GDP and private sector employment, in more than a few countries contribute to as much as 60% of the national workforce. In a not unsubstantial portion of developing countries, SMEs are known to employ more than 70% of workforce.

Across Southeast and South Asia, the contribution of SMEs to the overall economic growth and the GDP is high. Specific examples include:

- Thailand, where SMEs account for more than 90% of the total number of establishments, 65% of employment and 47% of manufacturing value-added.
- The Philippines, where SMEs comprise 99% of the total manufacturing establishments and contribute 45% of employment and 18% of value added in the manufacturing sector.
- Bangladesh where SMEs contribute 50% of industrial GDP and provide employment to 82% of the total industrial sector employment.
- Nepal, where SMEs constitute more than 98% of all establishments and contribute 63% of the value-added segment.
- India, where SMEs' contribution to GDP is 30%.

Considerable interest in SMEs in developing countries has focused on their roles in the alleviation of widespread poverty. However, looking beyond the immediate, pressing concern of the poor, Andy Warner has advanced the concept that SMEs are the building blocks of innovation and sustainable growth in developing countries, i.e., SMEs represent foci of technological creativity. These concepts are linked as sustained economic growth can alleviate real poverty. Hence, as SME development drives growth, there is a concomitant reduction in poverty.

As foci of technological creativity, SMEs propel long-term growth by facilitating innovation and its diffusion across local, national, regional and international economies. However, innovation immediately begets intellectual property (IP) and the concomitant urgent need to address intellectual property rights (IPR). Hence, to realize the maximum value of innovation, SMEs need to recognize, understand and manage IP in order to protect their IPR and thereby accelerate their innovations towards commercialization; this will, in turn, not only improve their business revenue flow, but ultimately raise the standard of living in their respective countries. IP is thus the essential link in the economic/technological development chain, between creativity/invention, on the one hand, and innovation/commercialization, on the other.

SMEs therefore face a number of needs and challenges with respect to IP, IPR and management thereof. This will involve efficient utilization of assets, resources and capital, of which the human/intellectual aspect becomes increasingly important in the emerging global knowledge economy. SMEs in the future will need to recognize the reality and indeed necessity of economies of scale, i.e., the need to “merge” in virtual networks which whereas they might resemble larger firms, are not, i.e., are more like the jellyfish (loosely assemble, organized colony of single-cellular organisms: “SME networks”) and less like the whale (highly structured, systematized, hierarchical

organism: the “corporate firm”). This will require sophisticated understanding how open innovation networks, IP management and global economic opportunities can be strategically merged to drive development.

Open Innovation Basics

What is open innovation, and how does it differ from older models, e.g., the time-honored closed innovation system? Closed innovation is the historical approach, perhaps best epitomized by the old automotive giants such as Chrysler and Ford Motor Companies. Closed innovation consists of a contained, straight and sequential line from basic and applied research to product development, manufacturing and sales. This is frequently done in house, via subsidiaries, or carefully managed licensees and contractual arrangements. Order and structure are key aspects of closed innovation.

Open innovation, on the other hand, consists of vigorous networking with other companies, R&D facilities, interacting with start-up ventures, public research institutes, universities, external suppliers and sharing and accessing outside information and technology. It is far more fluid, adaptable and organic. Dynamism and flexibility are key aspects of open innovation: once again, the fluid/adaptable jellyfish (SME) as compared to the rigid/prone-to-extinction whale (large multi-national).

It is critically important to note that open innovation does not refer to free knowledge or technology. While “open source” refers to royalty-free technologies, open innovation refers to collaborative networking, and may still involve the (significant) payment of license fees for IP.

Essential components of open innovation include:

- Networking, building contacts, meeting colleagues, creating opportunities
- Collaboration, working synergistically with partners
- Entrepreneurship, thinking creatively to find solutions
- IP management, maximizing value
- Global Vision, recognizing that the 21st century marketplace is planet earth
- Knowledge, the key asset in the global knowledge-based economy
- Access to finance, learning how to be a magnet for investment
- Access to information, which is the key driver of innovation

In the emerging global knowledge economy, knowledge itself has become the key resource. Open innovation needs to be embedded in an overall business strategy that emphasizes the interchange of ideas, knowledge and technology in value creation. In the 21st Century, SMEs cannot expect to do it alone, as contained units. They must connect to the global network of information, technology, innovation and product development. What is needed, therefore, is *An Integrated Global Innovation Network System*.

Intellectual Property Management and Open Innovation

From the very beginning, one must understand and differentiate the concepts of IP and IPR. Although the distinctions might be viewed as subtle, to do so will facilitate management of IP via IPR in a way that ultimately derives more value and thus creates more wealth for subsequent investment and development.

Table 2: Differentiating Intellectual Property (IP) and Intellectual Property Rights (IPR)	
IP	IPR
Inventions	Patents
Proprietary Business Information	Trade Secret
Brands and Logos	Trademarks
Shapes of Items	Industrial Designs
Fixed Works (writing, films, phonographs)	Copyrights
Source Karl Jorda, Professor Emeritus, Franklin Pierce Law Center (http://www.piercelaw.edu/karljorda/index.php) and, UK IP Office Web Site: http://www.ipo.gov.uk/	

One can think of IPR, as bundles of rights which can in toto, selectively or individually be parsed and conveyed: e.g., patent owners can divide their bundle of rights not only into separate exclusive licenses to make, sell, and use the patented item, but also divide each of those into fields of use and also geographic locality. Hence, in an open innovation system, “IPR sticks” from the “IPR bundle” are strategically parsed and conveyed via licensing or assignment in order to maximize value and foster the research, development, innovation business enterprise.

IPR protection strategically facilitates (via IP Management) facilitates a broad array of strategic objectives, including:

- Preventing the copying or imitating of a company’s products or services
- Wise investment in research, development and marketing
- A corporate identity through a trademark and branding strategy
- Negotiating licensing, franchising or other IP-based agreements
- Obtaining access to new markets

As a specific example, the strategic use of patents in technology management is (as least) threefold:

1. A granted patent protects the inventor, at least for a period of time, with exclusive IPR.
2. Patents contain important information for technology management and development.
3. Patent, and patent application, specifications serve as advertisements to solicit potential licensees, assignees and/or other product development partners.

Thought of in another way, business information is an integral component of today’s global environment, a key factor in competition, and is essential for effective research and development of innovation; patent information, as business information, has a

powerful and important role to play. SMEs need to recognize, and indeed embrace, this core concept.

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(57) Abstract: The invention relates to an A-frame step ladder which includes two hingedly connected frame-like members that have collapsible stay members acting between them that determine the A-frame configuration of the step ladder. Each frame-like member includes a pair of stiles and cross members holding the stiles in a required spaced configuration, the cross members of one of the frame-like members forming the rungs of the ladder. The frame-like member including the rungs of the ladder includes two elongate, substantially parallel, spaced apart guide formations that extend along the length of the respective stiles and within which arms of an extension member are slidably displaceable. The arms carry a support formation that is locatable in different positions above the top rung of the ladder by the displacement of the arms in the guide formations. Locating means releasably locates the support formation in its different positions.

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Figure 1. Example of PCT Patent Application Front Page (<http://www.wipo.int/pctdb/en/>).

In the emerging global knowledge economy, knowledge itself is a key asset: access to information drives innovation and patent documents contain a wealth of information essential for effective IP management. For example, SMEs can benefit from the wealth of technological and commercial information available in patent and trademark databases to:

- learn about recent technological breakthroughs,
- identify future partners,
- find out about the innovative activities of competitors, and
- formulate IP management strategies that will maximize the value of their intellectual assets.

Companies engaged in open innovation need to organize licensing activities and strategic alliances for a pro-active IP strategy that aims at sharing technologies rather than hoarding IP as a defense mechanism (antithetical to the very concept of open innovation).

However, from the beginning, information and knowledge are fundamental for sustainable, and indeed profitable, IP management.

Challenges Facing SMEs in the Global Economy

As the inexorable pace of globalization juggernauts into the 21st century, SMEs need to recognize the value of IP as information, a tool and an asset. Then, SMEs need to learn how to optimize IP management to sustain and foster growth. IPR enable SMEs to have exclusivity over the exploitation of their innovations. Exclusivity confers control and creates an incentive for investment, collaborations, licensing and thereby provides a solid business platform for advancing a coherent global strategy.

In many cases, SMEs face significant risks because they often have fewer resources and limited expertise in IP issues when compared to the larger multinational corporations. Still and all, as these same corporations have demonstrated over the past 5 decades, the effective management of IP is crucial for identifying useful knowledge and for capturing the value of a firm's IPR. SMEs can take steps towards similar IP management capacity and capability.

Broadly speaking, SMEs must recognize the critical importance of IPR in their business strategy. For example, SMEs need to understand the enormous value of patent information. Currently, there is still a lack of understanding and appreciation of this resource. Challenges include:

- A lack of understanding of the use of patent information as a business tool;
- Low lever of sophistication as to how to access/mine patent information;
- Lack of knowledge as to where to access patent information;
- Inadequate level of expertise needed to be able to extract and apply the information;
- Lack of appreciation of patent information as an enormous source of technical information.

Hence, one major challenge for SMEs is IP management, including the capacity to effectively access and manage and then exploit critical business, technical and legal information, e.g., patent information.

The Necessity to Embrace Open Innovation in the 21st Century

Globalization is rapidly creating new market opportunities that require new innovation strategies. The increasingly intense acceleration of globalization is being driven by technological progress and international trade, including highly integrated global value chains. These, in turn, further catalyze the frenzied internationalization of research and development, innovation and commercialization. Globalization, hence, can only be ignored, disregarded or scorned at great peril.

Recognizing that the inexorable trend of globalization in the 21st century will continue unabated, it is crucial to recognize that open innovation can accelerate the

internationalization of innovation for SMEs. SMEs need to connect to, develop and integrate global innovation networks. Sourcing of knowledge and capacity across the globe will consolidate research and development, focus innovation, lower transaction costs and advance product commercialization. One particularly attractive model for integration of SMEs into the knowledge economy of developing countries is a hub and spokes arrangement, wherein the hub is a national research institute or university and the spokes are SMEs which serve as innovation conduits moving basic research and development towards practical commercial development and, ideally, global commercial distribution.

For SMEs, open innovation will require more open IP management, e.g., licensing in from external parties to access complementary technology and also creating value by licensing unused technologies or by selling off ancillary patents, i.e., assignment. This network of transactions results in a win-win exchange, an open global marketplace for innovation. Technology, and resulting innovation, market transactions can become more efficient, with buyers and sellers networking in an open global marketplace.

IP, or to be more specific IPR, is increasingly seen as a currency for facilitating and accelerating international technological transactions. For SMEs, embracing open innovation will involve shifts in managerial culture; implementing a pro-active strategy towards management and maximization of value for IPR is fundamental. Still and all, this will not occur spontaneously; building a culture of open innovation requires rewarded teamwork and organizational changes that foster internal and external collaboration. This requires risk taking. Nevertheless, SMEs must recognize that risk is manageable, that potential rewards can be enormous and that in the 21st century a global perspective might become imperative.

The Way Forward (Strategies, Tactics, Options)

Ecosystems of innovation link global networks with people, institutions (universities, government agencies, etc.) and other companies, in their own or different countries, to solve problems, source knowledge, generate ideas and drive innovation. SMEs can maximize their potential via bold, yet careful, integration into these ecosystems. Pragmatically, SMEs can implement this by appropriate tactical implementation of their global strategies.

Tactical implementation involves specific application of techniques to manage IP, build networks and move products into the global stream of commerce, and includes:

- Bundle of IPR, i.e., divvy patent rights in the most efficient and cost-effective manner;
- Patent pools, i.e., assemble, via cross-licensing, patent rights so as to accelerate product development;
- Non-assertion covenants, i.e., agree not to assert patent rights in specific jurisdictions or on specific parceled rights;
- Field of use licensing strategy, i.e., defined areas or technologies which are to be licensed from the IPR bundle;

- In-Licensing of core technologies, i.e., seeking complementary technologies and negotiating licenses to requisite IPR;
- Out-Licensing of peripheral technologies, i.e., “spinning-off” ancillary IPR, e.g. on non-core technological applications, to build extra value in the SME;
- Global PCT strategy, i.e., recognizing the power of the PCT system as a informational, marketing and legal tool;
- Join AUTM, LES, LinkedIn, i.e., aggressively and persistently building global networks of professionals;
- Lead time advantage, i.e., accelerate products to market, ahead of the competition, sometimes irrespective of IPR protection.

An example of effective tactical implementation of global IP management for SMEs is a coherent and planned PCT global program. A global patent filing program maximizes value and protects the integrity of an organization’s patent portfolio. This requires knowledge, organization, and planning. For any given technology, the dynamics of the international patent landscape, i.e., patent information, must be understood to identify competitors, licensees and partners. This information, then, can be used to develop research and development priorities, identify target markets, build commercialization partnerships and accelerate the launch innovations into the global stream of commerce.

For a network of SMEs to amalgamate their IPR is therefore synergistic: IPR is both an asset and a tool that needs to be combined with another’s IPR, as a series of valuable complimentary tools (e.g., a silver hammer combined with a golden chisel) which alone have minimal value but when strategically combined have potentially far-reaching and profound global commercial impact. As the 21st century unfolds, SMEs need to carefully consider their options, and cultivate the requisite capacities and capabilities to compete and grow in the global marketplace. Indeed, SMEs are poised to be the very seedbed of global innovation in this century.

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