

The Role of SMEs in Commercialising University Research & Development: The Asia-Pacific Experience

John Milton-Smith

ABSTRACT. Technopreneurs are emerging in the New Economy; yet Australia has a relatively weak innovation system. Authored by the Deputy Vice Chancellor of Curtin International, Curtin University of Technology, this article enlightens the reader about technopreneurship. In this important think-piece, Professor Milton-Smith reflects on current realities; he addresses Australia's relatively weak innovation system and argues that a successful business model is a necessity. He shows that we can learn from successful facilitators of research commercialisation, such as Yissum, which is the research development company of the Hebrew University of Jerusalem and Zernike, a venture capital company in the Netherlands. Although Yissum is a university-based company, it has established an unusual record of achievement in technology transfer. It is currently a large source of applied research projects, filing 30 to 40 patent applications per year and, at any one time, promoting around 200 projects.

1. Introduction

The triumph of the free market philosophy has had a pervasive impact on politics, trade, finance, public administration and consumer behaviour around the world. However, in some areas, it has been carried to absurd and potentially dangerous lengths. Market forces cannot decide everything. For example, they cannot, and should not be a substitute for what Hamel and Prahalad call "strategic intent". Despite this, even at a national level, some governments have left the direction and pattern of economic development largely to the serendipity of the global market. It is argued that pursuing an industry policy – that is, having a

competitive strategy – is like trying to pick winners at a racetrack. Sadly, the extreme free market view has taken root in some official circles in Australia, despite the evidence and arguments put forward by peak science and trade bodies such as the CSIRO and Austrade. The latter highlight Australia's potential comparative advantage in international markets in high added value areas such as:

- Biomedical and pharmaceutical products
- Scientific and medical instruments
- New plant-based industrial and food products
- Remote sensing equipment
- Solar technology
- Clean, green mineral and exploration technology
- Land-care, water-care and sea-care systems
- Aircraft and car components
- Telecommunications technology
- Intelligent, energy-efficient buildings

For a country with Australia's profile, it makes sense for governments to invest in the creation of world-class capabilities and enterprises in these fields. It is not enough to merely provide research grants. Support is also required in the form of infrastructure, education, business incentives, market development and specialised intermediary services.

Even when they work together, entrepreneurs and academics need help in establishing viable businesses at the cutting edge of high technology. As John Kenneth Galbraith has pointed out during his long and extraordinary career, entrepreneurs and academics have very little in common. In his *Memoirs*, for example, he sums up the difference by referring to the business philosophy of his friend, Ralph Flanders, a machine tool manufac-

Final version accepted on November 1, 2000

Curtin University of Technology
GPO Box U 1987
Perth, WA 6845
Australia
E-mail: jms@curtin.edu.au



Small Business Economics 16: 141–148, 2001.
© 2001 Kluwer Academic Publishers. Printed in the Netherlands.

turer: "I got to the top in my business", said Flanders, "by getting up earlier than anyone else – working harder than anyone else – inventing a machine that made a great deal of money, having a keen eye for the interests of the company, and by marrying the daughter of the owner". Academics aren't always that practical. Indeed, business academics, who get too close to business, often put their academic careers in jeopardy.

Worldly academics not only attract jealousy but they also tend to lose credibility. Scholarship, it is said, requires detachment, lots of footnotes and, in most cases, irrelevance to the practical world. Again, based on his own experience at Harvard, Galbraith argues that: "Scholarship in the social sciences is assessed by its depth and precision, but also by the length of time it has required. A quickly completed job, regardless of quality, is bad. A five-year effort is good *per se*. A lifetime work, not quite finished at death, is superb".

This mindset has been institutionalised in Australia – in the form of the Australian Research Council (ARC), which is responsible for allocating the most prestigious research grants to academics. So deep is its suspicion of Business and those who describe themselves as Business Academics, that not one of its major funding categories is even labelled "Business" or "Management". However, as a concession to the real world, the ARC has invented Cooperative Research Centres, as a way of diverting well-intentioned entrepreneurs, into the world of university politics – and enmeshing them in the duties of endless meetings and report-writing.

Other well-intentioned attempts to bring business and academia together have been equally futile – Technology Parks, for example. The theory is compelling – the concept provides for applied research centres, incubators, spin-offs, lots of cocktail parties, and talks by politicians and visiting gurus on the general theme of technology transfer but, as a rule, not much synergy develops in practice. The presence of the university is little more than a real estate feature – nice to have, pleasant to look at, but not much use.¹

Is there a way forward? Gary Hamel gives us the clue in his recent *Harvard Business Review* (HBR) article: "Bringing Silicon Valley Inside". In fact, he gives us two clues. The first is the fundamental importance of a medium such as HBR,

in creating an interface at the cutting edge between universities and Business. The second clue is Hamel's treatment of Silicon Valley as a BUSINESS MODEL – a free market for ideas, capital and talent driven by a strategy of resource attraction. The model is a system designed to nurture innovation, rather than the traditional corporate/bureaucratic strategy based on resource allocation, spreading risk, soothing egos and avoiding failure (Hamel, 1999).

Hamel's analysis of Silicon Valley has much wider application. For example, in creating a new paradigm for promoting technopreneurship, a strategic business model based on the critical developmental processes is required. Such a model must address at least five processes including innovative, market-driven applied research, access to seed funding, the incubation of a viable commercial activity, spinning off a self-sustaining enterprise and successfully marketing and distributing its products. Almost by definition, most entrepreneurs and university researchers lack the resources and management capability needed to effectively negotiate all of these functions and transitions. However, three organisations with a good track record in successfully guiding commercialisation are the Zernike Group, Yisum and Foursight. They highlight the important role for an innovation broker and facilitator in guiding the process.

The Zernike Group B.V. is an extremely innovative Netherlands-based venture capital company. It specialises in seed funding new technology enterprises including assistance with business plans, market research, business partnerships and distribution. Zernike has close links with university researchers, technology parks and the investment community, as well as the international contacts needed to open up export markets. In addition to working in collaboration with universities in Amsterdam, Groningen and Bologna, and managing a number of technology parks in Europe, it recently established Zernike Australia, based at the Technology Park at Bentley, Western Australia. It is currently exploring opportunities in Asia, which could also lead to the creation of regional and global technology transfer and marketing networks.

Another successful facilitator of research commercialisation is Yisum, which is the research

development company of the Hebrew University of Jerusalem. Although it is a university-based company, it has established an unusual record of achievement in technology transfer. It is currently Israel's largest source of applied research projects, filing 30 to 40 patent applications per year and, at any one time, promoting around 200 projects to a wide variety of potential partners and investors around the world. With an annual budget of US\$60 million, Yisum specialises in biotechnology, agriculture, food, medicine and pharmaceuticals and operates through a wide variety of licensing agreements, joint ventures and contract research agreements.

Whereas Zernike is a business initiative and Yisum is the commercial arm of a university, Foursight is a consultancy led by four of Australia's most eminent scientists. Given the very high visibility and credibility of the scientists involved, Foursight has made good progress in winning the confidence of the finance industry and is now successfully building a bridge between scientific research institutes and the venture capital industry (Gome, 1999).

2. The Australian experience

It is generally agreed that Australia has a relatively weak innovation system. Apart from the lack of adequate funding, there is a high level of fragmentation and confusion. Awareness, and use of incubators is very limited and the potential benefits of clustering activities and resources in and around technology parks is only just beginning to be recognised. Currently, there are at least 80 business incubators funded by the Australian Government under its regional assistance program, quite apart from those operated by state governments and the private sector. However, they appear to have had limited impact and many have vacancies (Report, 1999).

A recent survey of Australian companies sought to identify the critical issues in Research & Development (R&D) support and preferences for various types of government assistance. The most favoured program of assistance by a wide margin is the R&D tax concession. Enthusiasm for Cooperative Research Centres (CRCs) was very limited and no reference at all was made to the availability of incubators. The finding confirms

previous studies and highlights the emphasis placed by management on direct financial incentives rather than on assistance with the actual process of commercialisation. It also draws attention to the difficulty of devising assistance programs that help SMEs. The report concludes that: "Future schemes should focus on support for the transfer of research results to industry and more flexible taxation arrangements" (Business/Higher Education Round Table, 1999).

Another review of research partnerships between universities and industry in Australia focused on the effectiveness of schemes funded by the Australian Research Council. While most schemes were considered to be fairly useful, the report noted concern "about the lack of understanding within universities of industry's commercialisation imperatives". Much more disturbing, however, was the lack of reference to incubators, technology parks and mechanisms for transferring university know-how to the SME sector (Department of Employment, Training and Youth Affairs, 1999).

Although Australians are extremely creative and inventive, according to a major international survey Australian industry lags behind many other developed countries when it comes to "turning sound ideas into valuable products and services". The survey, which was conducted by management consultants Droege and Comp, emphasised the importance of complementary alliances and the ability to convert innovations into business advantage as absolutely critical issues in the conversion process. It concludes that:

Successful innovators, multinationals and small and medium-sized enterprises alike, are pooling forces with partners and contracting research to Universities and research institutes but do their own development to keep core competencies (Clout, 1999).

Operationalising and marketing the products and services which embody these core competencies requires capital. Once again, compared with its major competitors, Australian spin-offs and start-ups are seriously starved of funds. It is estimated that about 1000 companies chase less than AUD\$100 million in government grants annually, with only 80 applicants actually receiving funding. Private sector support systems are equally inadequate. The CEO of an "angel network" estimates

that he deals with 150 companies per month – the majority of which are technology start-ups – with less than ten finally obtaining funds (Beer, 1999a).

Initiatives such as the establishment of Foursight have the potential to significantly improve the R&D success rate, especially in the field of biotechnology. For example, Foursight is currently working with a highly entrepreneurial scientist, Dr John Roff, who has already developed new, commercially-viable varieties of canola seeds and is now producing synthetic molecules which could improve the treatment of a number of major medical conditions. According to Dr Roff, the problem with Australian academic scientific research institutes is that they are not sufficiently oriented to practical pharmaceutical or drug applications (Gome, 1999).

Changes to the Australian tax regime will almost certainly attract increased foreign investment, however most of it will be directed to mature enterprises. Tax reform should be seen as an enabler but not as a panacea. The onus remains with technology start-ups to significantly lift their game by placing more emphasis on the quality of the management team, more reliance on strategic alliances and more effort into winning the confidence of the venture capital industry.

In the light of all these challenges, it is difficult to avoid the conclusion that technology parks, closely collaborating with associated universities, are the key to cultivating dynamic, innovative enterprises on a significant scale with minimum risk. Of course, they are not the complete answer, as the record clearly shows. The vital additional element is a creative intermediary or broker to provide planning support, access to networks and know-how, introductions to potential partners and solutions to financing and marketing requirements (Beer, 1999b).

A recent British study mission surveyed Australian technology parks and carefully examined their linkages with “associated” universities. On the whole the delegation found that the relationships were somewhat superficial. While there are certainly regular joint seminars and meetings, “Companies only tend to instigate interaction if they are seeking specific expert help from an academic”. Indeed, some technology parks have not succeeded in creating any university

spin-offs at all. The most successful appears to have been Thebarton Research Precinct where almost half of the precinct’s businesses are fully commercial spin-offs from the University of Adelaide. By contrast, only about six out of 80 companies at the Australian Technology Park in Sydney have been spun-off from the local universities (Department of Trade and Industry Overseas . . . , 1999).

One of the few detailed Australian case studies on this subject generally confirms the British study mission’s finding. While acknowledging the attraction of being located near an “associated” university, technology park companies do not appear to gain much specific benefit from it, which reinforces the urgent need to develop an integrated business model (See footnote 1). In better adapting technology parks to a strategic business model, Formica highlights the need to link them into regional and global networks sharing cutting edge ideas, information and services. They should be seen “not as property-based ventures” but rather “as a knowledge-intensive industry” (Formica, 1999). It must be acknowledged that the Australian Government has attempted, on a small scale and with a limited budget, to promote this philosophy through its Technology Diffusion Program. This scheme provides modest funding to finance research alliances, the creation of networks, the holding of conferences, the provision of demonstrations and the conducting of applied research audits. However, so far the program has done little to hook Australian technology parks into the international network.

As a recent forum on emerging industries and technologies in Canberra concluded, the ability to commercialise products and products should be seen as a competence in its own right (Commonwealth Department of Industry . . . , 1999). It is both a source of competitive advantage and an additional emerging industry which requires special cultivation. University researchers put undue emphasis on invention and not enough on the really critical commercial variables such as “strategic industrial collaboration”, the adoption framework and organisational capability.

The Canberra Forum also made a number of suggestions about the contribution of governments to the innovation process. It reiterated the now entrenched free market ideology, arguing that

Government's role should be seen largely in terms of "social and environmental outputs", not picking so-called "winners", but rather providing "strengthened institutional frameworks that foster innovative growth business with world-wide market opportunities". These frameworks clearly include support for technology parks, R and D alliances, leveraging technology and finance, judicious use of government purchasing and leadership in stimulating "action agendas".

However, without the involvement of a facilitating intermediary, development will be very slow. Both the technopreneurs and the academic researchers lack the time and the expertise to manage the risks and complexities of the commercialisation process. On the university side, well meaning initiatives such as *Univation*, a publication produced by the Australian Vice-Chancellors' Committee (AVCC), attempt "to bridge the communication gap between universities, business, industry and government" by showcasing the depth and variety of university research. However, as the case of *Univation* clearly demonstrates, the emphasis tends to be more on public relations than upon commercial development. For example, a recent issue of *Univation* devoted to environmental research managed to present nearly 60 case studies without any reference to the incubation of new enterprises or the financing of the spin-off process (AVCC, 1999).

Both universities and technology parks need to pay greater attention to managing their linkages during the critical stages of business incubation. From the perspective of a strategic business model, an intermediary such as Zernike, Yisum or Foursight may well be the most cost-effective way to achieve this. Currently, it is a function which is either ignored or taken for granted. For example, a recent advertisement for a Director of a Technology Incubator in Brisbane states that the incubator's purpose "will be to grow technology businesses through the education of entrepreneurs and the provision of high quality programs and support networks". There is no reference to working in a close strategic alliance with an "associated" university. Furthermore, according to the same advertisement, the main thrusts of the Director's job will include recruiting "local individuals and small businesses with innovative technologies and inventions" and developing and

maintaining "the provision of a support network of professional advisers and mentors". The unique but highly complex possibilities of a university partnership are completely overlooked (Editorial, 1999).

3. The wider regional experience

While this discussion will focus on the experience of Singapore, Taiwan, Indonesia and Malaysia, it is acknowledged that significant new developments are now taking place in other regional countries such as Japan, China and South Korea. However, in the case of the three latter countries the primary emphasis, until recently, has been upon the creation of large-scale industrial groupings, reinforced by heavy bureaucratic regulation and control.²

Whereas Singapore Government leadership and strategy has transformed Singapore itself into a brilliant business model, it is important to distinguish it from the Silicon Valley model. Singapore does not cultivate its own technopreneurs but it encourages them to establish a regional base in Singapore, once they are established and successful elsewhere. This lack of an indigenous capability is a serious medium-term risk factor, given the lower cost structures and rapid industrial advances of neighbouring countries. It is also a partial explanation for the slow progress of Suzhou, Singapore's attempt to create a high technology development zone near Shanghai in China.

Despite committing a huge budget, and an impressive flurry of special initiatives, the Singapore Government has found it difficult to stimulate the growth of innovative, internationally-oriented SMEs, despite establishment of both international business and science parks which have been reinforced by incubator programs, generous grants, education initiatives and public awareness campaigns. Recently, the Government announced a major program to promote "technopreneurship", with a view to promoting high technology development and the creation of a knowledge-based economy. According to Singapore's Deputy Prime Minister, "Technopreneurs serve as the critical interface between ideas and markets, transforming creative ideas into vehicles to serve market demand" (Dana, 1999).

A recent profile of some of Singapore's most

successful technopreneurs reveals that none of them was a product or a spin-off from a science or technology park. In fact, all originally graduated from an Institute of Technology and few are university graduates. However, Mr Roger Lee, who subsequently obtained an American MBA degree, spent five years working in Silicon Valley. Based upon his experience and contacts there, he returned to Singapore and established Innotech Electronics, distributing electronic components in Singapore, Malaysia and Indonesia. Mr Lee's success has hinged around his expertise in leveraging academic networks.

By contrast with Lee, and given the extremely practical background of many fledgling technopreneurs, most would be uncomfortable working directly with university research institutes or even with university facilities associated with an adjoining or associated technology park. Therefore, there is a clear need for a proactive, user-friendly intermediary such as Zernike, to establish the essential links, develop the partnerships and open up the market opportunities.

One Singapore technopreneur who would clearly benefit from Zernike's expertise is Mr Gan Chiu Liang, who is clearly in need of "business angel" and marketing assistance. In 1994 he obtained a S\$40,000 grant from the National Science and Technology Board under the Innovator's Assistance Scheme. With help from local polytechnic lecturers, he developed software to design and print photo-namecards that are as cheap as normal namecards and can be printed quickly at any express photo-laboratory. However, Mr Gan has had great difficulty finding investors to help market "Visualcard" as a franchise operation (Milton-Smith et al., 1999).

If Singapore represents a successful business model based upon government initiative, Taiwan is an example of one which is based upon a vibrant SME sector. In many ways Taiwan is Asia's equivalent to Silicon Valley. Its remarkable growth and extraordinary resilience during the recent economic meltdown is powerful evidence of a winning formula. One of the critical elements in this formula, is the Taiwan Government's encouragement of a local venture capital industry. Another is the strong emphasis on technology. Hsinchu Science Park is an impressive illustration of this policy working in practice. Working closely

with the adjoining university of technology, and taking full advantage of generous tax breaks provided by the Government, the Park boasts a large number of vigorous, high technology spin-offs.

Acer, which is now the world's largest manufacturer of computers, is the most stunning endorsement of the Taiwan business model. It is currently moving to a new level of creativity by establishing Aspire Park. This will be the ultimate Technology Park, taking Acer upstream and moving innovation clustering to a new level. Aspire Park will be a software village, complete with houses, offices and nature reserve – an environment designed to attract both software specialists and creative people from other fields – with the focus on applied research and innovation (Kraar, 1998).

Before it sank into political chaos, Indonesia attempted to build its high technology capability around the aircraft industry. By establishing a large factory near the leading Institute of Technology in Bandung, and by importing know-how from the United States and Germany, it was assumed that Indonesia could not only become a leader in a highly strategic industry but also that a new breed of home-grown technological innovators could be developed as a basis for transforming the economy more broadly. However, despite great perseverance and investment over many years, the Indonesian aircraft industry failed to spawn an entrepreneurial SME sector based on technology transfer and product innovation. It was based, not so much upon a business model, but rather upon a system of government initiative and patronage which neglected to provide the much needed educational, infrastructure, and marketing support.

There has been some overlap between the experiences of Indonesia and Malaysia. In the earlier years of Mahathir's government, Malaysia became a major centre for manufacturing and assembling electronic components at the lower end of the high technology spectrum. At the same time emphasis was placed upon the development of an icon industry based upon technology transfer from Japan. While Malaysia has been quite successful in building and even exporting a national car – the Proton Saga – this did not lead to the rapid dissemination of technological know-how or

to the rapid growth of other high technology industries.

More recently, despite Mahathir's long-standing "Look East" philosophy, Malaysia has turned increasingly to the Silicon Valley model. Under direct prime ministerial leadership, the concept of a high technology "Multimedia Super Corridor" has been created. Drawing upon a team of extremely high profile advisers such as Kenichi Ohmae, Bill Gates and Stan Shih, the Malaysian Government has invited leading information technology and communications companies from around the world to become involved. Attractive incentive packages have been offered including:

- unrestricted employment of foreign knowledge workers;
- freedom to source funds globally for investment;
- income tax exemption for 5–10 years, as well as exemption from duties on the importation of multimedia equipment;
- protection of intellectual property laws and cyberlaws;
- no censorship on the Internet; and
- access to a wide variety of university and professional education providers

The promising feature of the Multimedia Super Corridor is that it is clearly seeking to emulate the Silicon Valley business model. Its main weakness is that it is being developed on an unrealistically grand scale, especially in the wake of the recent financial crisis, and is not being coherently linked to other initiatives in Malaysia.

A parallel development to the Multimedia Super Corridor is the promotion of Penang as Malaysia's Silicon Valley. Somewhat more advanced, and skilfully leveraging industrial parks and free industrial zones for export-oriented industries, the Penang Development Corporation has concentrated heavily upon building "smart partnerships" as a strategy for high technology advancement (Feature, 1999). As a result, Penang has already moved from being a cheap assembly centre for American electronics to becoming a sophisticated regional hub for advanced and high precision electronic items. Given its long-established status as a resort island, Penang is already seen as an attractive, cost-effective alternative to Singapore. Indeed, it is difficult to see the ratio-

nale – other than in terms of the politics of federal-state relations – for not concentrating government effort and investment on the development of Penang as Malaysia's Silicon Island. After all, Penang is geographically well-defined, economically self-contained and already well-established as a high-technology innovation centre.

4. Conclusion

It is clear that, as Gary Hamel points out, highly innovative SMEs are the main generators of international competitiveness in a global knowledge economy. This is persuasively demonstrated by the stunning performance of the American economy in recent years. Again, as Hamel argues, "Silicon Valley companies are challenging the industrial aristocracy in fields as diverse as automobile retailing, insurance, book selling and broadcast media". Underpinning this transformation is the business paradigm driving the success of Silicon Valley – "the circulation of ideas, capital and talent". The ability to attract these resources and to make them commercially synergistic is a capability which has been difficult to reproduce in other parts of the world. Furthermore, most of the successful high technology spin-offs in the United States have spun-off from large industry leaders such as Microsoft and IBM rather than from science park incubators.

Efforts to replicate Silicon Valley in the Asia-Pacific have fallen far short. The regional experience has been characterised by government-driven initiatives which, with the notable exception of Taiwan, have proved inimical to the growth of innovative, export-oriented SMEs. Whether one focuses on the Special Economic Zones of China and the Philippines (Tan, 1997), the technology transfer growth engine projects of Singapore, Malaysia and Indonesia, or the peer-reviewed research grant programs emphasised in Australia, none of these approaches have led so far to the elusive synergy between "ideas, capital and talent", which world-class business innovation increasingly demands.

Notes

¹ Institute for Research into International Competitiveness, 1999, *Report: Contributing to the Community through*

Education and Research. Quantifying the Economic Impact of Curtin University of Technology on the WA Economy, June, Curtin University of Technology, Perth, p. 66.

² See, for example: Sorenson, R.Z. 1997, 'What the Japanese Can Learn from Entrepreneurship in America', *The Asian Manager*, July–October, pp. 81–83; Fielden, J. 1998, 'Enter the Dragon: Changes in University Management in China', *The ACU Bulletin of Current Documentation*, December, pp. 4–6; Lee, C.S. 1999, 'Size Doesn't Matter', *Far Eastern Economic Review*, 4 March, pp. 52–53.

References

- AVCC, 1999, *Univation* 14(1), May, 77.
- Beer, S., 1999a, 'Start-ups Could Miss New Tide of Venture Capital', *Australian Financial Review*, October 6, 36.
- Beer, S., 1999b, 'Technology "Crazies" Must Lift Their Game', *Australian Financial Review*, September 1, 36.
- Business/Higher Education Round Table, 1999, *Survey of Benefits from Commonwealth Government Business Programs*, Melbourne, September, 2–5.
- Clout, J., 1999, 'Time to Develop our Bright Ideas', *Australian Financial Review*, October 12, 28.
- Commonwealth Department of Industry, Science and Resources and the CSIRO, 1999, 'Forum: Emerging Industries and Technologies', 17 August, Canberra.
- Dana, L. P., 1999, *Entrepreneurship in Pacific Asia. Past, Present and Future*, Singapore: World Scientific, p. 149.
- Department of Employment, Training and Youth Affairs, 1999, *University and Industry Research Partnerships in Australia. An Evaluation of ARC/DETYA Industry-Linked Research Schemes*, Canberra: DETYA.
- Department of Trade and Industry Overseas Study Mission to Australia, 1999, *Science, Technology, Innovation and Enterprise. Sharing the Australian Experience of Science Parks and Economic Regeneration*, Birmingham: University of Central England Business Schools.
- Editorial, 1999, *Australian Financial Review*, October 15, 16.
- Feature article, 1999, 'Silicon Island', *Asia Inc.*, September.
- Formica, P., 1998, 'Indigenous and Exogenous Economic Development – A Voyage to Innoland', *Public Sector Research Unit Discussion Paper Series*, No. 2, Perth: Curtin University of Technology, 9.
- Gome, A., 1999, 'The Good Oil on Science Growing a New Business', *Business Review Weekly*, November 12, 177.
- Hamel, G., 1999, 'Bringing Silicon Valley Inside', *Harvard Business Review*, September–October, 71–84.
- Kraar, L., 1998, 'Taiwan Does it Right', *Fortune*, August 17, 38.
- Milton-Smith, J., R. Lee, Y. L. Chan and K. F. Tang, 1999, *The Making of a Technopreneur*, Singapore: ITE Alumni, 59, p. 161.
- Report, 1999, 'Business Incubators to be Reviewed', *R&D Review*, August, 6.
- Tan, Q. G., 1997, 'Growing Pains of SMEs in the Philippines', *The Asian Manager*, July–August, 86–87.

Copyright of Small Business Economics is the property of Springer Science & Business Media B.V. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.