Developing entrepreneurialism

The "inno-preneurship" paradigm

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Companies need to reach out for technology and use it to build new products and services to improve the lives of people. They have to be entrepreneurial in their mission and engage in "purposeful innovation". The authors propose a new paradigm, which they call "inno-preneurship" for small and medium firms in Asia to adopt a viable innovation adaptation process. They present the cases of two companies to illustrate the paradigm, which asserts that industry groups and governments must work together to build the infrastructure for innovation adaptation.

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Introduction

For companies to be innovative and able to expand into new markets, they have to reach out for technology that is currently available and use it to build new products and services to improve the lives of people. To accomplish this, companies have to be entrepreneurial in their mission and direction. They would also have to be engaged in "purposeful innovation". The authors propose a new paradigm for small and medium firms in Asia to renew their capacity for entrepreneurship through a viable innovation adaptation process.

The motivation for this paradigm comes in part from Peter Drucker's observation that small businesses are "least entrepreneurial and least innovative".[1] He meant that small firms expend most of their energy and resources on the daily operations of running the business. Little time is left for surveying the landscape for new opportunities that will bring the firm further along in building its market with new products and services that customers want. Small companies will therefore remain small, with little change and improvement in the growth of their business.

Entrepreneurship is any attempt at new business or new venture creation. This could mean self-employment, creating a new business organization or expanding an existing business by an individual, teams of individuals, or established businesses. This definition is from the Global Entrepreneurship Monitor (GEM), a consortium of scholars that measures and studies entrepreneurial activity among its 40 member countries. The French economist, J. B. Say, describes the entrepreneur as someone who "shifts economic resources out of an area of lower, and into an area of higher, productivity and greater yield". Entrepreneurship is therefore a process or ac-

tivity in whcih an individual or organization can engage. Entrepreneurial activity may not result in a new business, but entrepreneurial firms and individuals continually seek opportunities to exploit, and this is how new products and services are born.

An entrepreneurial firm is willing to use new technology and adapt it to enhance its existing products and services. It is a myth that innovation is often associated with advanced or high technology that can only be developed in research laboratories housed in large corporations. Few small and medium firms have the resources for this scale of investment in research that could be transformed into products for the market. New products accepted by the market are the engine of business growth.

Would this mean that small and medium-size firms do not have the capacity for innovation and growth? We propose a process for enabling technology adaptation in small and medium businesses. To be successfully implemented, the paradigm requires the industry and government in a country to be involved.

We believe that it is important to promote entrepreneurial activity in companies, as a major source of new products, services and business development. Small and medium firms have to be innovative and responsive to change. High-growth firms are usually firms that are entrepreneurial. To keep their talented staff, companies need to offer them an opportunity to be entrepreneurial within the organization. Efforts devoted to corporate start-ups therefore have positive impact on the growth of a company. A vigorous innovation programme is a powerful engine to drive a company to a desirable rate of growth.

The paradigm shift

It takes special effort for a business to become entrepreneurial and innovative. Yet, if it does not do so, it will inevitably decline.

The solution is a new paradigm of "inno-preneurship" that captures all aspects of innovation, adaptation and commercialization of products, service processes and management. It transcends the narrowly defined "techno-preneurship" by traversing the continuum from a level of basic applications of technology to high-technology enterprises. The shift is towards mobilizing a greater number of people to re-engineer the skills and mindsets to be entrepreneurial. Inno-preneurship embraces any and every person who is able to “do common things in new and uncommonly effective ways”.

The inno-preneurship paradigm assumes that the firm alone cannot achieve the results. It requires industry groups, the industry and the government departments responsible for industry development to become involved in building the infrastructure for innovation adaptation. Small and medium firms lack information about new technology developed in public institutions such as universities. Continually under the deluge of daily operations, they devote insufficient time for sourcing new technology that would give their products a boost in terms of performance and value-added capacity.

In most cases, they do not know where to look.

The ability to identify and act upon entrepreneurial opportunities is a critical part of the entrepreneurship process.[2] Access to information is the key to identifying these opportunities. Such access is made possible through one’s professional and social networks, as well as through participation in seminars, conferences and forums. A company’s training and development policies should enable the staff to build networks through these activities.

Large companies such as 3M, Proctor & Gamble, and Johnson & Johnson, have shown that it is possible for employees to behave and do their work in an entrepreneurial way. These companies have policies that promote and reinforce a system and environment whereby employees have the support and encouragement to develop and create new products. Each project is treated as a separate business, with a project manager and a team that stays with it until the venture is launched and operating. They are protected from the burdens of daily operation that goes on in the rest of the company and are well compensated for their work. The entrepreneurial spirit has to be fostered and celebrated in a company that chooses the path of innovation. These companies give time and resources to employees to update their knowledge and learn about current research and managerial developments. They in turn become the scouts for entrepreneurial opportunities for the companies.

Drucker[1] saw innovation as the means by which entrepreneurs exploit change as an opportunity for a different business or services (Figure1). He called for entrepreneurs to search purposefully for the sources of innovation, and the opportunities for successful innovation. Most of all, entrepreneurs need to know how to successfully apply the principles of innovation.

Creating and sustaining inno-preneurship

In approaching the transferability of inno-preneurship, we propose to set up a low-cost, 3-pronged strategy and to provide two specific examples of both ends of the continuum shown in Figure 1. "Techno-preneurship" at the right hand side is illustrated with **MatrixView**. On the left side, **Car Coop** shows us how the “Basic Level” of the technology adaptation continuum works.

The left side of the continuum holds much promise in cross-country transference of technology, because, with rapid progress in technology, it enables not only scalability to large sizes but also smaller discrete proportions in engaging transference between countries.

On the low-cost 3-prong strategy, the translation from concept to initial practical implementation does not require huge resources or technical know-how. What it does need are individuals who are passionate and who have a good level of organizational capabilities and networking skills in the business/technology scene.

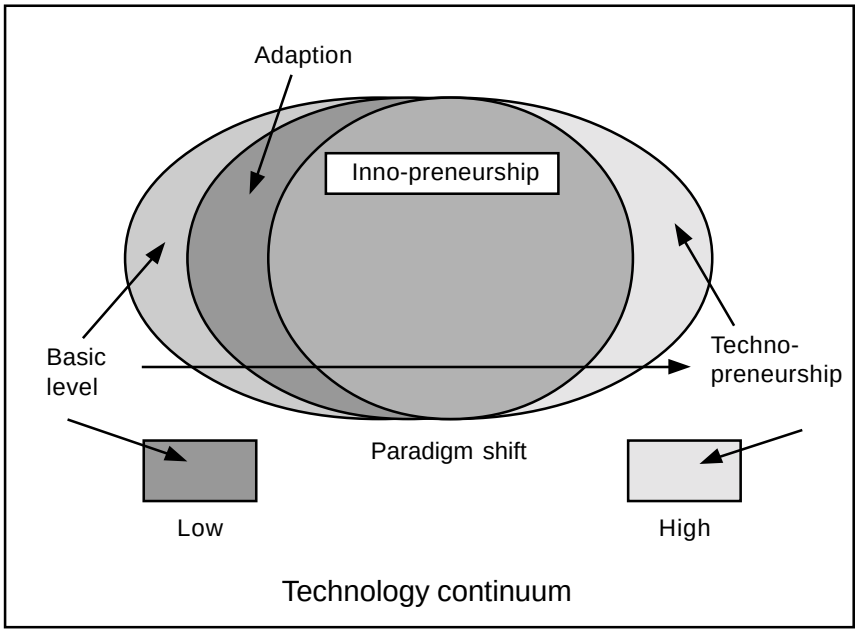
To launch and engage successful inno-preneurship, a 3-tiered Build-Operate-Transform (BOT) model is proposed:

BOT model

Build

Build and grow a basic database drawn from related organizations and resources and connected with other existing complementary databanks in

Figure 1: The paradigm shift to inno-preneurship



order to create a knowledge infrastructure of human capital for knowledge and experience sharing.

The first step is to broaden and create a database of people who are experienced in research and technology development in the country and the region. This can be accomplished with the help of organizations such as consulates-general, chambers of commerce, universities, research institutes that focus on technology application, incubators operated by governments, and corporations with research laboratories. The database can help to track technology currently being developed and to match the work of researchers with entrepreneurs, investors, and businesses that may find the technology applicable to their own products. The database will become a powerful network and knowledge infrastructure for stimulating inno-preneurial activity in the country and region. It will also foster a vibrant spirit of sharing information and building networks of contacts.

Operate

Operate a few “demonstration effect” networks of socially well-connected individuals to create an "inno-preneurship resource panel" (IRP) to provide the beginnings of strategic advice to corporations that seek to venture into new markets, and to oversee the "Inno-preneurship Mentoring Programme" (IMP) (Figure 2).

The database will throw up eminent individuals with valuable knowledge about how to transform research into viable products. These individuals will be invited to serve on an IRP. The IRP can provide much needed strategic advice to the company venturing into a new market, and IRP members can be engaged as advisors or as joint-venture partners.

Entrepreneurs venturing into a new market can enjoy the benefit of contacts and potential partners who can help speed up their business progress and orientation. A win-win situation emerges when large companies partner with successful SMEs in the target country to ease entry into the local market. In return, the SMEs can benefit from the marketing, networking and financial resources of the larger companies.

Communication and information vehicles such as newsletters, forums, briefings, internet exchange programmes and networking meetings can provide continuing vibrancy in this engagement.

It should also be possible for any government to promote inno-preneurship among the youth in its country over three stages of the education system. This will inculcate among the young a spirit of venturing and self-reliance. The aim is also to increase their exposure to Asian markets, culture and businesses early in their school life.

Promising high-school candidates could be attached to selected inno-preneurs on short- or long-term working project assignments or internships.

Polytechnics and universities are hotbeds of experimentation and innovation. The students are the potential innovators, who will benefit from the exposure through attachments with inno-preneurs. Their mentors could consider giving them “seed” or other capital, and give them the opportunity to bring their innovations into the company.

The *Inno-preneurship Award (IPA)* recognizes outstanding young entrepreneurs who follow a different path by striking out on their own, and who thus serve as role models to all who have risked financial security for uncertain but potential rewards.

Transform

Transform the value of the IRP into business actions by establishing platforms to transform the latest developments in innovation and technology into commercially viable products and services.

Inno-preneurship venture funds, joint ventures, partnerships - these are platforms aimed to transform innovations into commercially viable products and services. The funds should be managed by proven inno-preneurs rather than fund managers, and must have strong corporate partners. The implementation will capitalize on the latest developments and the commercialization of innovation and technology. The payoffs include the following:

- Enabling a country’s transition to a knowledge-based economy;
- Strengthening the country’s venture capital market; and
- Enhancing the country’s position as a leading R&D centre for innovation and technology in the region.

The high end of the continuum

Inter-country co-operation can be made between “inventors” on one side and “individual venturers” and “financiers” on the other. In particular, an example is that of MatrixView. The inventor is

Arvind Thiagarajan, co-founder and CTO. Asia is a fertile ground for transnational collaboration because of the rich cross-cultural ties. This is definitely so in the case of MatrixView, as seen in the relationship between Arvind Thiagarajan from India and Ravindran Govindan, a Singapore-based "individual venturer and financier."

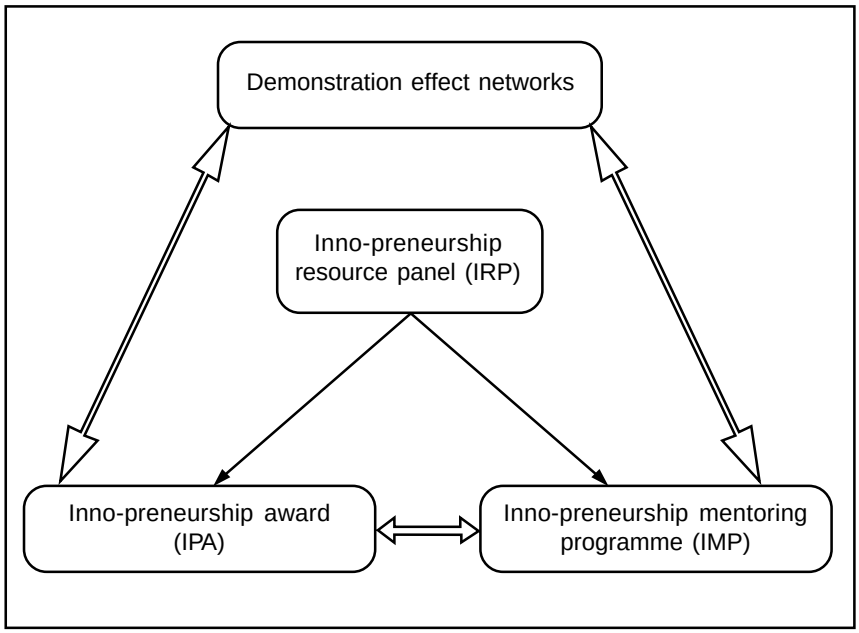
Govindan is a seasoned entrepreneur with a solid business track record and long experience of venture searching in India. He is currently the Executive Chairman of a successful and profitable biotechnology company, Agenix Limited, listed on the Australia Stock Exchange. In Singapore, he was the co-founder of Horizon Education and Technologies Limited, listed on the Singapore Stock Exchange. He is also director of several listed companies in Singapore and Australia.

Mr Thiagarajan specializes in signal processing and is responsible for developing MatrixView's Adaptive Binary Optimization (ABO) or core optimization algorithm, creating a new basis for the transference of data and images without any loss or "mathematically loss-less quality and high compression ratios". This technology challenges existing standards, which accommodate some degree of loss, like JPEG and MPEG. ABO enables images to be optimized for mathematically loss-less or visually loss-less quality at much higher compression ratios. It also ensures, higher speeds of encoding/decoding, transmission and retrieval and, higher security. MatrixView delivers solutions for all forms of digital content.

Mr. Thiagarajan was an Electronics and Communications engineer from the College of Engineering, Guindy, India. He was awarded the "Junior Scientist 2001" by Dr A.P.J. Abdul Kalam, then Scientific Advisor to the Government of India and currently President of India, for a paper he presented on "Role of Multimedia PCs in Healthcare" .

He holds numerous patents and has published numerous white papers for which he has received awards. In short, Mr. Thiagarajan comes with a substantial scientific background and accomplishment, and his tie-up and relationship with Singapore-based compatriot Ravindran Govindan is a win-win situation in transnational co-operation and commercialization. These have targeted aerospace companies like Boeing, media and entertainment companies like Time Warner, medical process specialists like GE Medical, and leading hospitals like Singapore's KK Women's and Children's Hospital.

Figure 2: Creation of inno-preneurship resource panel (IRP)



The first product based on the new technology developed is EchoView, a solution for the medical industry that enables ultrasound images to be compressed by a factor of over 30 without any loss of data. According to MatrixView's associate director Soh Cheong Hian, pilot testing of the product has been done at the KKK Women's and Children's Hospital.

"With EchoView, it is now possible for doctors to store, retrieve and transmit 'diagnostic quality' images to anywhere in the world," Mr Soh said. Trial runs are currently on. In addition, Mr Thiagarajan was also the Inventor of "Heartcard", a non-invasive cardiac diagnostic device, in which investments were made by Temasek Holdings, an investment arm of the Singapore Government.

The low end of the continuum

Car Coop illustrates innovation adaptation as an entrepreneurial pursuit. Car-sharing originated in Europe and one of the earliest experiences with car-sharing can be traced to a cooperative, known as "Sefage", which originated in Zurich, Switzerland, in 1948. The second generation car-sharing cooperative was set up in May 1997 in Singapore with second generation technology from Germany and commercialized on a car-sharing cooperative along the lines of those found in Germany, Switzerland and Britain.

Automobile ownership is expensive for Singaporeans. Car Coop is a venture started by an insurance company (NTUC Income Insurance Cooperative Limited) in Singapore. It provides its customers, who are subscribers to the service, with easy access to a fleet of cars located throughout Singapore at any time of the day or week. Customers pay only when they use the car and is quite appropriate for people who do not need to drive daily and would like the use of a car occasionally.

Car Coop's champion is Mr. Lai Meng, who oversees a large fleet of taxis belonging to the NTUC (National Trade Union Congress) Comfort Taxi Cooperative. His entrepreneurial vision is to provide new alternatives for mobility in an expensive marketplace for motor cars. His missionary zeal matches that of an NGO. For inno-preneurship to happen, entrepreneurs

like him are essential for one's network of experts. Lai has indeed gone on and transitioned to the next level to spread the technology-driven business further, through implementers like Lewis Chan, a general manager who is skilled in business development and operation, both critical for exporting the adaptation entrepreneurship model.

Successful in Singapore, it has chosen Hong Kong as the next potential market. The twin cities have similar geography, vehicular intensity, well developed financial institutions and, most importantly, the English system of laws and regulations as it directly impacts on motor and transportation regulations. It is targeting a "one-stop shop" automotive company with operations in Singapore and Hong Kong and a diversifying company with a large car-parking business.

Importantly, it has a full menu of how to operate this business from a micro fleet of a couple of cars to larger fleets of about 100. The menu includes how the technology works, where it's doing business successfully, in the comparable locales of Singapore and Hong Kong.

Empirical Global Entrepreneurship Monitor (GEM)

The GEM 2003 study presents findings that support the Inno-Preneurship paradigm. GEM 2003 surveyed existing companies for entrepreneurial behaviour – that is, those that are creating new innovations and anticipating growth. There are five times as many individuals working to start new firms as there are owners of existing companies pursuing entrepreneurial strategies. The study shows that the overwhelming majority of existing firms continue to replicate existing activity and are not very entrepreneurial. Implications are that governments and industry support agencies could do more to provide infrastructure support to encourage established firms to be more entrepreneurial. The study also reports that people who are confident of their abilities to start and manage a firm are four to six times more likely to be engaged in entrepreneurship as those who do not think they have the skills. Those who know someone who started a business in the past six months are also more likely to engage in entrepreneurial activity. This finding establishes the importance of networks and databases of inno-preneurs. Entrepreneurial skills and attitudes are essential for self-efficacy, which is a belief in one's entrepreneurial ability. Hence the active cultivation of the inno-preneurial mindset must be promoted to spark off the challenge.

The inno-preneurial mindset

Finally, all of the above would only be possible if inno-preneurs possess a set of skills, behaviours and attitudes. Two features are important in ensuring the Paradigm Shift: the 3 NEWs (New ways of Thinking, New ways of Doing, and New ways of Networking); and the 3 I's (Imagination, IP Protection, Infrastructure, and Industriousness). The following "inno-preneurship mix" captures the spirit of the inno-preneur, whom we must quickly find and nurture.

I Imagination (imagine and imagine big, "paradigm" of the 3 I's)
N New ways of *Thinking* (paradigm shift of the 3 NEWs)
N New ways of *Doing*
O Opportunity (seizing or creating market opportunities or dominance)
P Passion
R Responsibility
E Execution (execution, execution)
N New ways of *Networking* (although time consuming, it is imperative)
E Evolving Iteration
U "U" and Us (team)
R Risks in Renaissance (in being new or revolutionary, one risks rejection)
S Scalability
H Honesty (integrity, deliver value)
I IP protection
P Preparedness
M Mastery (decathlon-range of business skills)
I Industriousness (hard, hard work)
X "Thinking out of the bo**X**"

Conclusion

The trans-national transference of technology can be more comprehensively captured in the inno-preneurship model. Governments and policy makers should focus not only on the right-side high-tech techno-preneurship end of the continuum but also towards the more basic level on the left of the continuum. Complementarily, inno-preneurship will be advanced by the soft approach, through a low cost inno-preneurship promotion programme by a 3-tier Build-Operate-Transfer Model.

The case of Car Coop shows us how technology can be adapted and transferred to another market - in this case, a similarly comparable Hong Kong market - with high assurance of success. In the databasing and networking development, it is critical that we identify and embrace inno-preneurship agents like Thiagarajan, Govindan, Soh, Lai and Chan, who are willing to share the lessons of their difficulties and successes.

Nonetheless, the challenges of inno-preneurship for a country as well as for transnational opportunities calls for a set of qualities that are needed more for a steeplechase rather than a marathon race.

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