

A Conceptual Model for Developing Venture Capital in Emerging Economies

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Innovation, new ventures and entrepreneurship fuel the engine of the modern economy. Venture capital (VC) has had tremendous impact on the world's economy since the end of the Second World War. It plays a pivotal role in the entrepreneurial process. It creates value by stimulating innovation in new ventures, and sustains economic growth. This paper identifies the importance of venture capital in entrepreneurship development, as a catalyst for innovation, technological and economic development. The study uses an exploratory approach to gain insight into the activities of venture capitalists in emerging economies and concludes by proposing a conceptual model for accelerating the development of their VC industry through commercialisation of patents and intellectual property (IP).

INTRODUCTION

Innovation, new ventures and entrepreneurship provide the fuel for the engine of the modern economy (Herbig, Golden & Dunphy, 1994). The importance of these three elements cannot be overemphasized, in view of the fact that small firms (new ventures) produce two-and-a-half times as many innovations as large firms per employee. In addition, small entrepreneurial ventures also bring innovation more quickly to the market place (Herbig *et al.*, 1994).

The entrepreneur is the linchpin of innovation since he or she brings know-how –the ability to leverage business and scientific knowledge in linking business resources like talents, technology and capital in order to exploit opportunities. The entrepreneur's ability to find and apply expertise in a variety of areas (involving any and all business disciplines) can make the difference between success and failure. As Herbig *et al.*, (1994) indicated, “if a society wishes to generate innovation (either low or high technology), it's in the society's best interest to create an enabling environment that is conducive to the entry and maintenance of entrepreneurs and the associated small new ventures that they produce”.

Financial support especially equity financing for starting or expanding a company is important for entrepreneurial ventures. As a result, the source of financing depends on where a start up sits on the entrepreneurship spectrum. At the bottom end of the spectrum are micro entrepreneurs usually survivalist who rely on self financing while at the top of the spectrum are the gazelles with extra ordinary opportunities who launch their business with finance from professional venture capitalists, strategic partners, business angels (Bygrave, Michael, Emily & Paul, 2002). Standeven (1993), predicted that “the availability of financing will become a more crucial issue for the success of new technology” in emerging economies, in which entrepreneurs plays a dominant role, and the venture capital industry plays a major role in the creation and development of entrepreneurial ventures that would stimulate and sustain the necessary economic growth, create needed jobs (Vanacker, 2008) and in turn reduce unemployment.

According to Bygrave and Timmons (1992), Venture capital has had tremendous impact on the world's economy since the end of the Second World War, particularly in the United States and in Europe. It also plays a catalyst role in the entrepreneurial process in terms of value creation, and which according to Bygrave and Timmons (1992) stimulate and sustains economic growth. It facilitates job creation and financing of innovative products and services, thus encouraging competition.

This paper explores the role that classic or traditional venture capital plays in entrepreneurship development via the funding of innovation and commercialization of ideas and IP. It also highlights the importance of VC as a catalyst for technological, as well as economic development, and sustainable growth in emerging economies in Central and Eastern Europe, Latin America, Asia and Africa. A very important contribution of this paper is that, it proposes a conceptual model for accelerating the development of the VC industry in emerging economies. The proposed model is currently being developed from the perspective of commercialisation of patents, IP and innovative ideas. It focuses on patent and IP generated in universities and research hubs with South African as a reference point. Although, it can be adapted in other emerging economies, with recommendation of policy changes that can make venture Capital a more viable option and alternative for financing entrepreneurial initiatives, innovation patents and IP as against traditional debt financing options from banks and or public funding.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

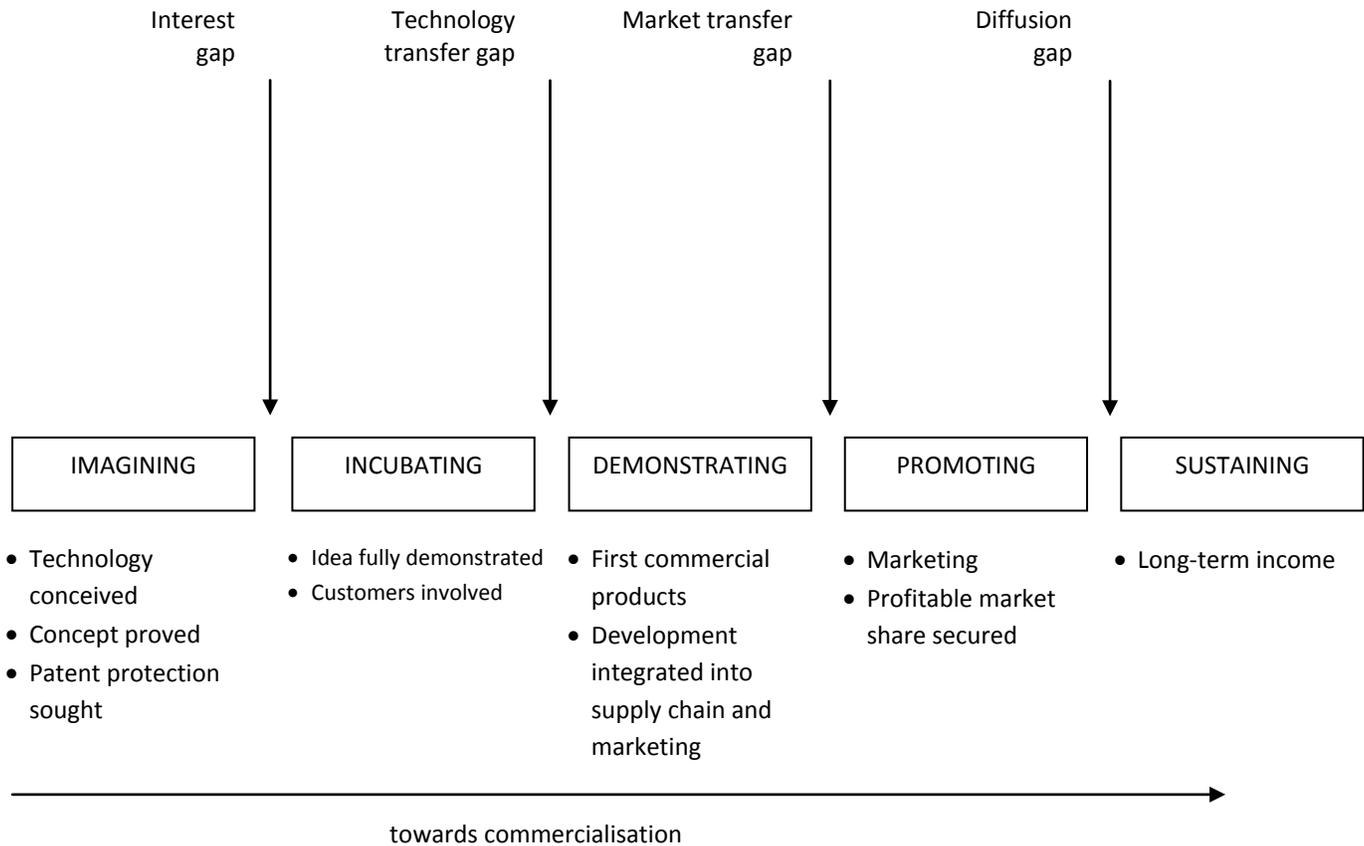
The world of business is continually transformed by science and technology, creating new forms of products, new forms of trading and new forms of business (Heap, 2008). He indicated that all "innovation nations" have a thriving small business culture, large businesses which grow from small by obviously having the right product for the right market but also by having access to VC, support, infrastructural services and so on. Furthermore, a thriving economy needs innovation and enterprise at all levels throughout all sectors which cannot be government-led, but encouraged and facilitated by government (Heap, 2008).

Commercialisation of Innovation and University Intellectual Property

According to the science as a solution report (in Wellings, 2008), in the past 60 years considerable evidence exists to support the fact that research in universities, add significant value to economy and community which underpins government and business investment in public research. In recent years, more emphasis is on market focused research as government, research councils and business community have sought to make the application of ideas a significant component of the mission of universities (Wellings, 2008). This has resulted in an increasingly sophisticated focus on the relationship between university research outputs and the creation of new products and services.

Also, many studies have presented data on the number of people involved in commercialisation, the levels of IP activity, licensing activity, start-up company activity, the volume of research contracts and consultancy, and skills development and transfer activity. Data show very rapid change in research commercialisation activity in universities in developed countries (Wellings, 2008) indicating that government and funding organizations, policies encouraging greater levels of commercialisation is taking effect (Wellings, 2008). Between 2000 and 2004, external investments funds were used in the formation of about one-third of spinout companies in the UK for instance.

**FIGURE 1
STAGES IN COMMERCIALISING TECHNOLOGY**



Source of figure: Adapted from Jolly, and Dodgson (in Wellings, 2008).

Universities play a major role in the national innovation system through the production of skilled graduates and new knowledge and research applications. The outputs from most universities in terms of commercialization projects have global applications in addition to other areas of knowledge transfer which have local applications since many universities have excellent links with several regional SMEs through consultancy and graduate placement initiatives (Wellings, 2008). According to him, there exist a complex relationship between regional innovation performance and the use of IP from universities.

Recent research on the supply of entrepreneurial finance for business growth has focused on the venture capital industry (de Bruin & Flint-Hartle, 2005; Zacharakis & Shepherd, 2001). According to Hudson (1995) the definition of venture capital has changed over the years and even varies from firm to firm, and country to country, but it is generally understood to be capital provided to new ventures.

Defining Venture Capital and the Venture Capitalist

According to Helen Soussou (in Timmons, Spinelli & Zacharakis, 2004; Timmons & Spinelli 2003) “the venture capital industry supplies capital and other resources to entrepreneurs in business with high growth potential in hopes of achieving a high rate of return on invested funds.”

The KPMG and Southern African Venture Capital and Private equity Association’s (SAVCA) Venture Capital and Private Equity Industry performance Report of 2005 indicates that “private equity provides equity capital to enterprises that are generally not quoted on a public stock exchange.” It further

classified private equity into three broad categories, namely, venture capital, development capital and buy-out funding. Venture capital includes seed capital, startup capital and early stage capital.

Venture capitalist take equity participation through stocks, warrants, and/or convertible securities and has an active involvement in the monitoring of each portfolio company (PFC) bringing investment, financial planning, and business skills to the firm (Hisrich, Peters & Shepherd, 2004).

The 1990 European Venture Capital Association (EVCA) year book (in Bygrave & Timmons 1992) defines venture capitalists as organizational units or persons who can prove substantial activity in the management of equity or quasi-equity financing for the start up and /or development of small and medium-sized unquoted enterprises that have significant growth potential in terms of products, technology, business concepts and services; whose main objective is long-term capital gains to remunerate risks and who can provide active management support to investees.

Since venture capital resources are not easy to secure by entrepreneurial ideas, and most often, exciting innovations and ideas are lost to overseas bidders from advanced industrialized nations like the US, UK, Germany, Canada, Australia, to mention a few. This can restrict business growth in emerging economies and prevent them from becoming a world “super power” in business, science and technology.

In response to the above challenge facing innovative entrepreneurial ventures in emerging economies, seed venture capital could be provided in order to keep ideas in the country and promote a platform for fresh and new entrepreneurial ideas.

Patents, Intellectual Property Rights (IPRs) and Venture Capital Financing

Previous study by Haussler, Harhoff, and Muller (2008) examined the role of patent for VC financing, Baum and Silverman (2004); Mann and Sager (2007); Hsu and Zeidonis (2007) also showed a positive impact of patent stock of high-technology companies on the amount of VC financing, on valuation, and on the likelihood of attracting VC investor.

Haussler *et al.* (2008) concluded that, there is, consistent and cogent effects of companies patenting activities on the timing of VC financing. The authors found out that, ventures with higher patent qualities received VC faster and that patents are also important for the general VC investment decision. Furthermore patent provide incentives for innovation while an import effect in facilitating entry. It also conveys important information about a PFC that deserves considerable attention in the due diligence process by venture capitalists.

Innovation Funding in Emerging Economies: The South African Experience

In most, if not all emerging economies a funding gap usually exists in respect of developing technological innovations, from ‘proof-of-concept’ state to actual product or service stage that will attract industrial co-development, or venture capital resources or investment. This may result in IP either not receiving its full potential or being lost overseas which has consequences on employment (loss) in such countries. In response to this gap, South Africa, a classic example of an emerging economy, set up The Innovation Fund (IF), an initiative of the Department of Science and Technology (DST), in 1999. Managed by the National Research Foundation (NRF), it provides ‘proof-of-concept’ funding primarily via its Technology Advancement Programme (TAP), which provides Seed fund to support technology base projects and start-up opportunities that meet prescribed quality criteria.

The IF has existed to promote the economic competitiveness of South Africa. This is undertaken by investing in technological innovations and providing support to South Africans seeking intellectual property protection with the aim of establishing new enterprises and the expansion of existing industrial sectors to the benefit of all South Africans.

Specialist business units manage the main funding investments of the Innovation Fund. These units service the needs of the inventors, innovators and business start-ups. They include the Research and Development unit; Commercialisation office; and the Intellectual Property Management office (IP support).

Also, the Innovation Fund’s Seed Fund is often used to reduce the barriers experienced by other early stage funds to invest, especially in high risk early stage opportunities that have to do with innovation,

technology, patents and IP projects with commercialisation potentials. Thus, co-investment or syndication through VC is strongly preferred. This should however, not compete with government initiative, but rather, act in a synergistic way to facilitate early stage commercial take-off of projects.

Some Previous Venture Capital Models

Previous literature on VC is quite diverse and numerous but very few of them have proposed specific models for developing the VC industry. Majority of the existing models have focused on the VC investments process in relation to PFCs (Tyebjee & Bruno 1985; Bygrave & Timmons 1985; Fried & Hisrich 1994; Pandey 1998, Klonowski 2007). These models addressed VC relationship with PFC on a micro (firm) level. Only one, Pandey (1998) sought to address the VC industry on a macro level.

Tyebjee and Bruno (1985) proposed a five-stage model of VC investing, encompassing deal origination; screening; evaluation; deal structuring; and post investment activities. The model explains the complete investing process with highlights of major venture capital activities at every stage. Fried and Hirsch (1994) extended specific activities of the earlier model by Tyebjee and Bruno (1985) by providing more detailed description of the screening and evaluation stages.

Two relevant VC models, with particular emphasis on emerging markets were proposed by Pandey (1998) and Klonowski (2007). While Pandey proposed a four-step (non-diagrammatic) model for the process of developing venture capital in India namely, impetus; internal context; external context; and sustainability, Klonowski's model defined the venture capital process in emerging economies in terms of three basic channels of activity: document channel, information channel, and decision channel.

Present in table 1 below, is a list of some previous venture capital models.

TABLE 1
VENTURE CAPITAL MODELS

Author	Model	Year
Tyebjee, T. T. & Bruno, A. V.	A model of venture capitalist investment activity.	1984
Bygrave, W. D. & Timmons J.	An empirical model for the flow of venture capital.	1985
Fried, V. H. & Hisrich,	Towards a model of Venture capital investment decision making.	1994
Pandey, I. M.	A venture capital development model	1998
Klonowski, D.	The venture capital investment process in emerging markets: evidence from Central and Eastern Europe	2007

Source of Data: Compiled From Various Journal Articles

Models for Emerging Economies versus Developed Economies

According to Klonowski (2007) emerging economies particularly Central and Eastern Europe region (CEE) are more dynamic than Western countries as business plans, which form the basis of the venture capitalists' initial assessment of the investments are often re-written, as new opportunities appear. Thus accepting other models would effectively omit an important part of the decision-making process within emerging markets. Also, Hudson (1995) agreed that venture capital industry vary around the world with each industry at different stage of their life cycle, as such, a generic model for emerging markets that may be adapted to different countries may be relevant than those models developed for the developed

countries. For instance, studies by Klonowski (2007), and, Karsai, Wright, Dudzinski and Morovic (1998) concluded that some differences exist in the way local venture capitalists evaluate deals across the CEE region. Karsai *et al.* (1998) suggested that Venture Capitalists in Hungary and Slovakia focus more on evaluation of market opportunities while entrepreneurial skills and a strong track record are the key focus areas for Venture Capitalists in Poland.

METHODOLOGY

The research design is exploratory and involves an extensive literature review of past articles on venture capital published in international journals, like the Journal of Business Venturing, Journal of Emerging Markets, past conference papers, textbooks. Data was collected using secondary sources of data collection.

DISCUSSION

The discussion in this paper proposes a conceptual model (which is currently in its empirical testing phase) for VC development in emerging economies and it follows from the theoretical framework discussed above. A diagram of the proposed model is depicted in figure 2 (Appendix A) below.

A Model for Venture Capital Development in Emerging Economies.

This model for venture capital development in emerging economies suggests the various components and variables that should interact in any emerging economy, and must therefore evaluate the influence of the various variables in the context of the environment in which it operates with possible adaptations from one country to the other. This model has its theoretical framework derived from various definitions of venture capital and the activities of venture capitalists, and the commercialisation of patents and IP generated from universities and research centre. Important elements that play major roles in the development of venture capital in an emerging economy are depicted in figure 2 (Appendix A) and discussed below.

Components of the Model

The components in the model are: Venture capital firms, Portfolio companies, Banks, insurance and other financial institutions and funds suppliers, Universities and research centres, and, Government and its support agencies.

Variables in the Model

Among the variables are: research funds, shares, deposits and investment, taxes, operating guidelines, research, education, training and development.

Venture Capital Firms (VCFs)

Venture capital firms are at the heart of the VC development model and directly interact with other components in the model. They source funds from banks, pension funds, individuals, insurance and other financial institutions, including capital and stock market (Timmons, Spinelli & Zacharakis, 2004). They provide needed funds and value-added services such as management skills development and monitoring to portfolio companies. They in turn, take shares or other forms of equity participation in the portfolio companies and deposit monies and have other forms of investments in banks, and financial institutions. On the other hand, the VC firms provide research funding to universities and research centre for VC research (into their activities) while the universities and research centre undertake and publish research findings into VC activities in addition to providing education, training and development for them. Finally, VCFs pay taxes and other forms of levy to government and its agencies, as well as meeting other statutory

obligations while policies that guide the operating environment and other support framework is provided by the government and its agencies to the VC firms.

Portfolio Companies (PFCs)

Portfolio companies or investee companies are very critical elements in this model. They provide investment platforms for the VC firms who in addition to supplying funds to the Portfolio firms as mentioned earlier, also provide management and marketing skills and development as well as monitoring the portfolio companies. The portfolio companies in return, provide share ownership opportunities and other equity participation to the VC firms. The PFCs seldom interact with universities of technology, and other research centre and institutions of higher learning in order to commercialise inventions, ideas and innovative products developed in such institutions. Also, they should fund research in such institutions. Institutions of higher learning should provide platforms for research into various activities such as product, marketing, in addition to education, training and development for human resource capacity building in various fields of study to support PFCs. In addition, there should be an interaction between the PFCs, and the government and its agencies to provide them with support framework, policies and guidelines for operating within the micro and macro environment in return for tax payments and other statutory obligations rendered by the PFCs to the government. It is pertinent to note that the PFCs also interact directly with banks in order to source short and medium term debt funding to complement the VCFs financial support and engage in other banking transactions as well as with insurance and other financial institutions for needed financial services.

Banks and Other Financial Institutions and Funds Suppliers

Banks and other financial institutions and funds suppliers are also, very critical and important components of this model since VCFs often act as financial intermediaries who source funds from them (banks) in order to invest in PFCs. They most often, provide the funds to the VCFs which are in turn invested in the PFCs in addition to other banking and financial services. Examples are commercial banks, merchant banks, capital and securities market. The VCFs in turn have deposits and other forms of short-term investments in the banks and financial institutions. The banks also, should interact with the government on one hand by paying taxes and other levies and complying with other statutory regulations of the government while the government, provide support framework, policies and guidelines for operating within the micro and macro environment. On the other hand, the banks and other financial institution and funds suppliers interact with the universities and research centre to provide funds for research into their activities and the universities provide research outputs for them in addition to providing education, training and development for human resources capacity building.

Universities of Technology, Research Centre and Institutions of Higher Learning

Universities of technology, research centres and institutions of higher learning provide the needed research, education, training and development and strengthen capacity building in the VCFs, PFCs, Banks, and in Government institutions. But most importantly for this model, there should be collaborative effort between them (universities where ideas, patents and IP are generated) and PFCs who should commercialise the innovative ideas and products/services developed in various universities across the country and elsewhere in the world since the PFCs are better positioned to take such inventions and innovations to the market place. In addition, the PFCs can support the research and training & development efforts of the universities by providing research funding to generate novel ideas, since universities are also better placed to undertake research and publish their findings which the PFCs can take to the market place through such, joint collaborative efforts. It is important to note that there is a direct and indirect relationship existing between the government and universities in terms of funding from the government who formulate policies and establish institutional framework within which the universities and research centres, also operate.

Government and Its Support Agencies

Government and its support agencies such as department of education, department of trade and industry, department of finance, central bank, development banks, etc. provide support framework and other institutional support mechanisms for all the various components in the model and formulate regulatory policies that should guide the operations of these components and set micro and macro economic variables within the boundaries of the economy.

Communication

In concluding this model, it is of paramount importance to note that communication is an essential and an integral part of the model as it constantly takes place within the model and facilitates interaction between the various components and variables.

CONCLUSIONS AND IMPLICATIONS

The challenges confronting emerging economies as they move from state-controlled to capitalist economies are obvious and quite numerous. The impact of entrepreneurial initiatives and ventures as the engine for economic growth in any country cannot be over-emphasized. Venture capitalists act not only as financiers, but also as business partners by lending management and marketing skills to portfolio companies. Likewise, the positive impact of venture capital as an alternative financing option for starting and expanding these ventures has been critical and received considerable attention in recent years. The potential and actual impact of a healthy, well developed venture capital sub-sector of the financial services industry, as an alternative source of fund, in emerging economies cannot be overemphasized.

This paper has examined the importance of venture capital in financing innovation, patents, IP and entrepreneurial initiatives and economic development in emerging economies which include countries in Central and Eastern Europe region (CEE), Asia, Latin America and Africa. It has also proposed a model for developing venture capital in such economies despite the obstacles or challenges faced by them. The contribution is important for at least three reasons.

First, it focuses on developing the entire VC industry within a country, by taking a holistic view of all the key actors or players within and outside the industry and bringing them together for sustainable development of the industry. This is contrary to other previous models which have focused on specific aspects of the Venture Capital process or industry.

Second, and most importantly, the model and this paper highlights the connection (the missing link) between universities and research centers where ideas, innovation, patents and IP are generated and Venture Capitalists who finance such innovation, patents and IP projects. The missing link (Portfolio companies) could be more effective and efficient in facilitating the commercialisation of such technological innovation and IP through licensing, or joint venture.

Third, it could serve as a springboard or the point of departure for subsequent and further venture capital research into the commercialisation rate of university patents and IP projects through licensing or spinouts. Since technology transfer and innovation are very important tools for technological development which in turn is critical for sustainable economic growth and development. Long-term economic growth can be enhanced by strengthening the link between technology transfer stations, research hubs (universities) and portfolio companies (for commercialisation) and Venture Capitalists who finance such PFCs.

Finally, Adongo (2006) indicated that seed capital should be channeled by venture capital firms to PFCs in order to convert academic ideas into commercial ventures.

REFERENCES

Adongo, J. (2006). Venture Capital Firms in Africa and Their Investees. *Namibian Economic Policy Research Unit, NEPRU, Policy Brief 16.*

Baum, J. A. & Silverman, B. S. (2004). Picking Winners or Building Them? Alliance, Intellectual, and Human Capital As Selection Criteria in Venture Financing and Performance of Biotechnology Startups. *Journal of Business Venturing*, 19, 411-436.

Bygrave, W. D., Michael, H., Emily, N. G. & Paul, R. (2002). A Study of Informal Investing in 29 Nations Comprising The Global Entrepreneurship Monitor. *Babson College Frontiers for Entrepreneurship Research Conference Proceedings*, Babson College, MA., USA.

Bygrave, W. D. & Timmons, J. A. (1985). An Empirical Model for The Flows of Venture Capital. *Babson College Entrepreneurship Conference Proceedings*, Babson College, MA., USA.

Bygrave, W. D. & Timmons, J. A. (1992). *Venture Capital at The Crossroads*. Harvard Business School Press, Boston.

de Bruin, A. & Flint-Hartle, S. (2005). Entrepreneurial Women and Private Capital: The New Zealand Perspective. *International Journal of Entrepreneurial Behaviour & Research*, 11, (2), 108-128.

Fried, V. & Hisrich, R. (1994). "Towards A Model of Venture Capital Investment Decision-making". *Financial Management*, 23, 28-37.

Hausler, C., Harhoff, D. & Muller, E. (2008). The Role of Patents for VC Financing. *Babson College Frontiers for Entrepreneurship Research Conference Proceedings*, Babson College, MA., USA.

Heap, J. (2008). Innovation and Enterprise: The Foundations of Developing Productivity. *International Journal of Productivity and Performance Management*. 57, (6), 435- 439.

Herbig, P., Golden, J. E. & Dunphy, S. (1994). The Relationship of Structure To Entrepreneurial and Innovative Success. *Marketing Intelligence & Planning*, 12, (9), 34- 48.

Hisrich, R. D., Peters, M. P. & Shepherd, D. (2004). *Entrepreneurship* 6th ed. Irwin /McGraw-Hill Boston.

Hsu, D. & Zeidonis, R. H. (2007). Patents as Quality Signals for Entrepreneurial Ventures. Mimeo.

<http://www.innovationfund.ac.za/whoweare> (accessed on 01 April 2010)

<http://www.innovationfund.ac.za/seedfunds/seedfunds> (assessed on 01 April 2010)

Hudson, T. B. (1995). Venture Capital in the Restaurant Industry. *Cornell Hotel and Restaurant Administration Quarterly*, June, 50-61.

Karsai, J., Wright, M., Dudzinski, Z. & Morovic, J. (1998). "Screening and Valuing Venture Capital Investments: Evidence From Hungary, Poland and Slovakia". *Entrepreneurship & Regional Development*, 10, 203-24.

Klonowski, D. (2007). The Venture Capital Investment Process In Emerging Markets: Evidence From Central and Eastern Europe. *International Journal of Emerging Markets*, 2, (4), 361-382.

Mann, R. J. & Sager, T. W. (2007). Patents, Venture Capital, and Software Start-ups. *Research Policy*, 36, 193-208.

Pandey, I. M. (1998). The Process of Developing Venture Capital in India. *Technovation*, 18, (4), 253-261.

Standeven, P. (1993). Financing The Early Stage Technology Firm in The 1990s: An International Perspective. *Discussion Paper Prepared For The Six Countries Programme Conference on Financing The Early Stage Technology Company in the 1990s: An International Perspective, Montreal.*

Timmons, J. A. & Spinelli, S. (2003). *New Venture Creation: Entrepreneurship for the 21st Century.* Irwin/McGraw-Hill, Burr Ridge.

Timmons, J. A., Spinelli, S. & Zacharakis, A. (2004). *How To Raise Capital: Techniques and Strategies for Financing and Valuing Your Small Business.* McGraw-Hill, Burr Ridge.

Tyejee, T. & Bruno, A. (1985). "The Entrepreneurs' Search for Capital". *Journal of Business Venturing*, 1, 61- 64.

Vanacker, T. (2008). Venture Capital Firm Experience and Company Growth. *Babson College Frontiers For Entrepreneurship Research Conference Proceedings*, Babson College, MA., USA.

Wellings, P. (2008). Intellectual Property and Research Benefits. *A Report Prepared for The Rt. Hon. John Denham, MP, Secretary of State for Innovation, Universities and Skills.*

Zacharakis, A. L. & Shepherd, D. A. (2001). "The Nature of Information and Over-confidence on Venture Capitalists' Decision Making". *Journal of Business Venturing*, 16, (4), 311-332.

APPENDIX A

FIGURE 2: A PROPOSED MODEL FOR VENTURE CAPITAL DEVELOPMENT IN EMERGING ECONOMIES

