

FUNDING CRITERIA IN TECHNOLOGY BASED FIRMS IN MALAYSIA

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DEDICATION

To my beloved family members: my dad Inspector Akadiri Osuolale Ajagbe (late), my mum Madam Mulikatu Odunola Ajagbe (late), my first sister and her family Mr & Mrs Kolade & Abiola Arogundade, my brother and his family Mr and Mrs Kolade Ajagbe, my second sister and her family Mr & Mrs Kayode & Bola Aladeloye, my third sister and her family Mr & Mrs Bimpe Adoloro, my fourth sister and her family Mr and Mrs Bisi and Habeeb Opedemowo and finally my closest and personal family, my wife Madam Mnenna Priscila Ajagbe, our children Miss Yemisi Ajagbe, Yinka Ajagbe & Master Tunde Ajagbe Jnr., to my inlaws Mr and Mrs Joseph Kuse, above all to my one and inestimable Eri Hirohara (Japanese).

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ABSTRACT

Venture capital as a method to finance technology based firms started in America over three decades ago. Since the early 1990's, it has gained considerable attention in Malaysia when the government established agencies to promote the concept. These firms have difficulties raising enough capital to finance their businesses, thus, there is need to encourage fund managers to take up equity stakes and partake in managing these firms to enable them to become independent. Although the Malaysian government has disbursed huge amounts of capital through various support agencies, stakeholders in the industry are worried that the commercialisation rate is still low. This could be due to the lack of awareness concerning the funding criteria for technology based firms adopted by venture capital firms. Hence, the main purpose of this research is to determine the funding criteria for technology based firms in Malaysia. The qualitative methodology used multiple case studies based on 47 respondents. Semi-structured questions in interviews were used to collect the data. The recorded and transcribed data were analysed using case by case and cross case analysis. In the cross case analysis, organisational units of analysis from multiple data sources such as venture capital firm managers and technology based firms owners were combined into a single document and then grouped based on coding category into a single file. The major finding from this study is that venture capital firms consider six important criteria in the award of funds which are: returns on investment, team members, cash-out, product attraction, intellectual property and public policy in the decision making process. From the findings, this study recommends that government encourage training of more venture capital professionals to help technology based firms understand the funding criteria as well as provide government guarantee prior to sourcing external capital.

ABSTRAK

Modal teroka sebagai kaedah pembiayaan syarikat berasaskan teknologi telah bermula di Amerika lebih tiga dekad yang lalu. Sejak awal 1990-an modal teroka telah mendapat perhatian di Malaysia apabila kerajaan menubuhkan agensi-agensi untuk menggalakkan kaedah ini. Syarikat-syarikat berasaskan teknologi menghadapi kesukaran untuk menjana modal yang mencukupi untuk membiayai perniagaan mereka. Oleh itu wujud keperluan untuk menggalakkan pengurus-pengurus dana mengambil pegangan ekuiti dan mengambil bahagian dalam pengurusan syarikat bagi membolehkan syarikat-syarikat ini berdikari. Walaupun kerajaan Malaysia telah memperuntukkan sejumlah besar modal melalui pelbagai agensi sokongan namun pemegang-pemegang taruh dalam industri masih bimbang kerana kadar pengkomersilan yang masih rendah. Keadaan ini mungkin disebabkan oleh kurangnya kesedaran tentang kriteria pembiayaan untuk syarikat-syarikat berasaskan teknologi yang diguna pakai oleh syarikat-syarikat modal teroka. Oleh yang demikian tujuan utama kajian ini adalah untuk menentukan kriteria pembiayaan bagi syarikat-syarikat berasaskan teknologi di Malaysia. Kajian ini menggunakan metodologi kualitatif menggunakan kajian kes pelbagai dengan 47 orang responden. Soalan separa berstruktur dalam temu bual telah digunakan untuk mengumpulkan data. Data yang dirakam dan disalin semula dianalisis menggunakan kes demi kes dan analisis kes bersilang. Dalam analisis kes bersilang analisis unit organisasi daripada pelbagai sumber data seperti pengurus syarikat modal teroka dan pemilik syarikat berasaskan teknologi telah digabungkan dalam satu dokumen tunggal dan kemudian dikumpulkan berdasarkan pengekodan kategori dalam satu fail. Penemuan utama kajian ini ialah syarikat-syarikat modal teroka mempertimbangkan enam kriteria penting dalam penganugerahan dana, iaitu pulangan kepada pelaburan, ahli pasukan, pengeluaran tunai, tarikan produk, harta intelek dan polisi awam dalam proses membuat keputusan. Daripada penemuan ini kajian ini mencadangkan supaya kerajaan menggalakkan latihan kepada golongan profesional modal teroka untuk membantu syarikat berasaskan teknologi memahami kriteria pembiayaan dan menyediakan jaminan kerajaan sebelum mendapatkan modal luar.

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LIST OF ABBREVIATIONS

AUTM	-	Association of University Technology Managers
ARDC	-	American Research Development Corporation
AVCJ	-	American Venture Capital Journal
AT	-	Academic Entrepreneurs
BVCF	-	Bank Venture Capital Firm
BSGF	-	Business Support Growth Fund
BA	-	Business Angel
BAN	-	Business Angel Network
BIS	-	Business Innovation and Skills
BIOCORP	-	Biotechnology Corporation
CEE	-	Central and European Region
CIP	-	Cradle Investment Program
CRDF	-	Commercialisation Research and Development Fund
CEO	-	Chief Executive Officer
CTO	-	Chief Technical Officer
CVC	-	Corporate Venture Capital
EPU	-	Economic Planning Unit
ETP	-	Economic Transformation Program
EDBI	-	European Development Bank Investment
EDB	-	European Development Bank
EBRD	-	European Bank Reconstruction & Development
EVCA	-	European Venture Capital Association
FDI	-	Foreign Direct Investment
FB	-	Financial Bootstrapping

FRGS	-	Fundamental Research Grant Scheme
GDP	-	Gross Domestic Profit
GTP	-	Government Transformation Program
GVC	-	Government Venture Capital
GVCF	-	Government Venture Capital Firm
INFO	-	Information
ICC	-	Innovation and Commercialisation Centre
IP	-	Intellectual Property
IFC	-	International Finance Corporation
IPO	-	Initial Public Offering
IT	-	Information Technology
ICT	-	Information Communication Technology
IRDA	-	Iskandar Regional Development Authority
KDIC	-	Korean Development Investment Corporation
KLIF	-	Kuala Lumpur Innovation Forum
KLVC	-	Kuala Lumpur Venture Capital Conference
MAG	-	Magazine
MOSTI	-	Ministry of Science Technology & Innovation
MOHE	-	Ministry of Higher Education
MLSCF	-	Malaysia Life Science Capital Fund
MVCA	-	Malaysian Venture Capital Association
MP	-	Malaysian Plan
MTDC	-	Malaysian Technology Development Corporation
MOU	-	Memorandum of Understanding
MDEC	-	Multimedia Development Corporation
MAVCAP	-	Malaysian Venture Capital Berhad
MLSCF	-	Malaysian Life Science Fund
MOF	-	Ministry Of Finance
MBA	-	Master In Business Administration
MNC	-	Multinational Company

NVCA	-	National Venture Capital Association
NSDC	-	National SME Development Corporation
NEM	-	New Economic Model
NEP	-	National Economic Plan
NRC	-	National Research Council
NSF	-	National Science Foundation
NBFC	-	Non Banking Finance Companies
NTBF	-	New Technology Based Firm
NIE	-	Newly Industrialized Economy
NKEA	-	National Key Economic Areas
OECD	-	Organisation Of Economic Corporation & Development
OPP	-	Outsource Partners Program
PVCF	-	Private Venture Capital Firm
PTO	-	Patent Trade Office
PWC	-	Price Waterhouse Coopers
PE	-	Private Equity
PVC	-	Private Venture Capital
R&D	-	Research & Development
RMC	-	Research Management Centre
RQ	-	Research Question
RBV	-	Resource Based View
SEC	-	Security & Exchange Commission
SRI	-	Stanford Research Institute
SMI	-	Small & Medium Industry
SME	-	Small & Medium Sized Enterprise
SMIDEC	-	Small & Medium Industry Development Corporation
SPRC	-	Science Policy Research Unit
SBIC	-	Small Business Investment Company
SSBIC	-	Specialised Small Business Investment Company
SBIR	-	Small Business Innovation Research

TBF	-	Technology Based Firm
TEAM	-	Technology Entrepreneurial Association of Malaysia
TTO	-	Technology Transfer Office
TTF	-	Technology Transfer Fund
TAF	-	Technology Acquisition Fund
UVCF	-	University Venture Capital Firm
USA	-	United States Of America
UK	-	United Kingdom
USD	-	United States Dollars
UTM	-	Universiti Teknologi Malaysia
UTTO	-	University Technology Transfer Office
VC	-	Venture Capital
VCF	-	Venture Capital Firm
VCs	-	Venture Capitalist
VC2E	-	Venture Capital 2 Entrepreneur

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CHAPTER 1

INTRODUCTION

This chapter manifests the research outline and exposes the description of the background of the study, problem statement, research objectives, research outcome, and theoretical gap of knowledge, research conceptual framework and the organisation of the thesis.

1.1 Background of Study

The government provides substantial support to the technology based firms (TBFs) covering many areas of operations of such firms. Government agencies and ministries make available certain support in technical expertise, training, dissemination of information and financing for technology based firms (Gomez, 2009; SME, 2012). Meanwhile researchers emphasised that technology based firms are perceived to be a key influence in the economic development, wealth generation, employment and creation of new innovations of many nations (Massa and Testa, 2008; Granovetter, 2005). On top of this, economists have also argued that notwithstanding the heavy dominance of research and development (R & D) spending in established companies, technology based firms have consistently accounted for a vast majority of the important inventions and innovations in the economy (Khin *et al.* 2010; Bloch, 2007; Ferrary and Granovetter, 2009).

TBFs have become an integral part of the development of global and regional economy (Ni, 2006; Sun *et al.* 2007; Somsuk *et al.* 2012). They are usually characterised by the paradigms liability of newness and resource poverty (Lendner, 2007; Mason and Brown, 2010). Authors found that this group of firms often lack technical and marketing capabilities, besides they also suffer from poor management, inability to find early stage financing, and high overheads (Hackett and Dilts, 2004). In this view, technology start-ups faced the challenge of how to access the technical and financial resources and commercialisation capabilities necessary to bring their product to market (Lin *et al.* 2011; Somsuk *et al.* 2012).

Denis (2004) and Lerner (2010) have also added that, one of the main constraints encountered by technology based firms is their inability to get access to adequate funding. They argued further that technology based firms play major role in industrial development through product or service innovation (Hisrich *et al.* 2006; Armour and Cumming, 2006). In view of the foregoing, it is expedient to highlight that investment and financial decisions play an increasing vital role in economic growth and entrepreneurial new venture creation (Kortum and Lerner, 2000; Chen *et al.* 2010). The investment and financial policies are part of the main operational urgencies in emerging nations to support investment by domestic companies, particularly technology based firms, and multinational companies investing in these nations (Wonglimpiyarat, 2011; 2012).

While Rothwell and Zegveld (1982) argued that technology based firms play an important role in innovating, Thiruchelvan *et al.* (2010) pointed out the challenge of access to finance, ability to cope with government regulations and non availability of adequate professional management expertise as a few of the challenges bedevilling technology based firms all over the world. In a knowledge-driven economy such as Malaysia, economic growth is increasingly dependent upon innovation whereby access to finance is seen as a major challenge that may impede this process (Bygrave and Timmons, 1992; Wonglimpiyarat, 2011).

In Malaysia and other part of the world, venture capital (VC) was acknowledged as being among the most vital technology financing mechanism

assisting research and development activities, from encouragement of rudimentary scientific research to technology development and commercialisation (Mason, 2010; Mason and Harrison, 2008; Mason and Zhou, 2009; Mason and Pierrakis, 2011; Mason and Brown, 2011). Venture capital is defined as an independently managed, dedicated pools of capital that focus on equity and equity linked investments in privately held, high-growth firms (Lerner, 2010; 2011). They play a key role in the emergence of new sectors by creating and supporting innovative firms which later dominate these sectors. There is also an acknowledgement that venture capital investments accelerate the growth of firms, enabling them to transform ideas quickly into marketable products and become industry leaders through first-mover advantages (Mason and Pierrakis, 2011).

Brunninge and Nordqvist (2004) investigated on the ownership structure, board composition and entrepreneurship of family firms and venture capital-backed companies. The authors used telephone interview to survey chief executive officers of 2,455 small and medium sized, private enterprises from various sectors. The findings show that small and medium enterprises are often unwilling to involve external equity financier on boards of management of family firms than non-family firms. They argue that the presence of venture capitalists increase the frequency of independent board members and that ownership has an impact on board roles. This opinion is irrespective of the contribution in areas of boosting entrepreneurial activities in the company. However, it is advised that firms with such mindset should involve external equity owners who do not insist on board representations.

1.2 Statement of Problem

Venture capital was encouraged to commence in Malaysia as a result of the rapid build-up of the national innovation policies in the country around 1990 by the Malaysian government through the Ministry of Science, Technology, and Innovation (MOSTI, 2013; Chen *et al.* 2010; Khin *et al.* 2010). The encouragement and development of innovation has passed through four phases ever since. The first phase (from 1957-1970) has been characterised by concentrating the researches on

cultivation. The second phase (1970-mid 1980s) was marked by starting to build up university research facilities. On the other hand, despite the fact that foreign direct investments (FDI) existed, there is less indication that large flows of FDI had significant impact on the development of local technological capabilities in Malaysia (Tidd and Brocklehurst, 1999; Thiruchelvan *et al.* 2010). From mid 1980s to 1990s, the third phase, the Malaysia government concentrated its effort on technology transfer by appointing the first science advisor to the prime minister and activating research within government owned universities (MOSTI, 2009; 2013).

The rapid expansion of national economies in the past few decades led to massive competition among business organisations globally (Ferrary and Granovetter, 2009; Bloch, 2007; Hisrich *et al.* 2006). This expansion and competition has forced leaders to recognise that innovation is essential to the development of national economies by concentrating on science and technology-based knowledge (Youtiea and Shapira, 2008; Thiruchelvan *et al.* 2010), because innovation was identified to be the tonic for growth in advanced nations. This recognition resulted to the acceptance that all over the world productivity, living standards and long-term economic progress can be improved through technology innovations, which is a product of new scientific and technological knowledge (Wonglimpiyarat, 2010; 2011; Khin *et al.* 2010).

Yim (2006) reported that innovation system infers many such features as; banking industry, venture capital firms, technology transfer offices, management consulting companies, small and medium sized firms, the entrepreneurs, and so on. These aforementioned variables are required to make use of the outcome of the research. On going study however, suggested that innovative ideas presumes something more such as, commercialising, marketing, financing which are needed to design high-quality science and technology authentic innovation in the universe. A significant determinant of innovation is the distribution of knowledge and was found that rate of innovation has a positive effect on the growth rate of output in all industry (Ulku, 2007; Hisrich *et al.* 2006; Khin *et al.* 2010).

Across the world, universities are believed to be the main source of innovations which has spun-off several technology based firms (Ismail *et al.* 2012; Lerner, 2010; Mason, 2010; Khin *et al.* 2010). The huge investment of capital channelled to public universities and research institutes by the Malaysian ministry of science, technology and innovations and other agencies of government was aimed to achieve three main objectives; technology transfer through research and development, promotion of entrepreneurship and commercialisation effort through the support of venture capital companies (MOSTI, 2013). The collaborations of partner agencies both public and private have a tendency to share mainly to the technology transfer matters and the resulting return chances are the commercialisation of research outputs. In the end, these technology firm generating centres spin-off young TBFs hungry for growth and expansion, hence, the urge and need to source additional funding through venture capital.

The detailed theoretical basis for this study exposes the venture capital investment process as part of the venture capital life cycle and this has not been altered ever since it was proposed by earlier authors in the early 1970's (Gompers and Lerner, 2000; Wright *et al.* 2003). Considering the venture capital cycle, they source finance (fundraising), invest those capital in an investment process (deal origination, deal screening, deal evaluation, deal structuring), manage such investment once a decision has been taken (monitoring and value contribution), and eventually realize any profits from their efforts (cash-out).

While Wells (1974) was among the pioneer researchers to extensively describe the partnership of the venture capitalist and the entrepreneur in USA. According to the findings of Wells (1974), who personally interviewed 7 venture capital firms and calculated the average weight of an adequate number of criteria. The outcome of his study produced the following rank order; management commitment (10.0); product (8.8), market (8.3), marketing skills (8.2), engineering skill (7.4), marketing plan (7.2), financial skill (6.4), manufacturing skill (6.2), references (5.9), other participants in deal (5.0), industry/technology (4.2) and cash out method (2.3).

Subsequently, authors have emphasised more on the work of Tyebjee and Bruno (1984) when conceptualising the VC investment process in United States of America. Based on their findings, the VCs invest in five unique stages. In stage one; deal origination is the main task to scout for promising deals. In the next stage, deal screening, they reduce the overabundance of investment opportunities to manageable numbers. The third stage, deal evaluation involve investors carefully analyse the potential portfolio firm. In the fourth stage, venture capitalist and entrepreneur clarify the terms of the deal between them. The last involve, the post investment activities, a combination of the activities of venture capitalist that aim at supporting the management team and ensuring future success. This initial findings have yet to be disputed, but a few researchers has suggested a more sophisticated analysis of the deal evaluation stage (Fried and Hisrich, 1994), mentioning that it could be varied into a cursory evaluation and a more formal due diligence (so-called first-phase and second phase evaluation).

Furthermore, Kollmann and Kuckertz (2009) studied the evaluation uncertainty of venture capitalist's investment criteria through a quantitative survey approach of 81 venture capital firms in German speaking Europe, which is Germany, Austria, and Switzerland. The aim of their study was to align the evaluation uncertainty in the decision criteria of venture capitalists with the progress of the process. They build their reasoning on the concept of search, experience and credence qualities. They found that in the early stages of the decision process especially, management criteria are uncertain, while at the end of the process other criteria couple with uncertainty was revealed.

Zutshi *et al.* (1999) surveyed 31 among the 58 venture capital firms in Singapore through mail questionnaire. Their intension was to find out the evaluation criteria of venture capital firms in Singapore. They study found similarities of Singapore venture capitalists with those of the developed countries of USA and Europe in areas of investment decision criteria. The limitation of the research was the methodology adopted could not allow for respondents to suggest areas of differences as listed on the questionnaire designed for the study. This limitation is similar to those of many researchers who have investigated this same subject in order countries

because most of them adopted interview protocol of renowned authors such as MacMillan et al (1985) and Tyebjee and Bruno (1984).

However, considering the ample researches that have been carried out on venture capital investment process across countries, majority of the researches have based their data collection approach on quantitative methodology. This method does not expose new themes through in-depth interview relevant to differentiate previous findings from new results that is influenced by events in different countries based on real life experiences of the respondents. Responses still revolve round earlier findings of past authors in this subject of investigation. Hence, this is what this research seeks to find out. Also, authors did not suggest the areas of improvement of technology based firms after venture capital involvement; earlier studies have emphasised so much on the importances attached to each evaluation criterion variables in their questionnaires. There is need to expose the involvement of national government in the bid to grow the technology based firms in Malaysia by contributing and encouraging the funding process particularly at the early stage of the life cycle of such firms.

Researchers such as Wells (1974), Tyebjee and Bruno (1984), Wright *et al* (2003), MacMillan *et al.* (1985) and Fried and Hisrich (1994) did not describe the performance of TBFs after VC involvement in their companies. Although the briefly mentioned the roles of venture capital firms in their study, but that was with the aim of finding out the investment decision criteria but not really to vividly describe the importance of such roles. Hence, this research tries to explain in detail the performance characteristics of TBFs after VC involvement, and also the roles of venture capital firms in nurturing technology based firms have been described in detail. What these authors have done was that they merely adopted a positivist approach to attach weight to the already existing evaluation criteria that venture capital firms use to select technology based firms in developed countries and this technique has been applied in some developing countries. They also described the activities that take place during each stage of the evaluation criteria. They failed to understand that during the venture capital investment process there are many other factors that determine the venture capitalists decision criteria apart from the already

known variables. These characteristics many researchers have ignored over the years and across countries.

In view of this, the study seeks to fill the theoretical gap of knowledge by trying to find out other important characteristics of the venture capital funding process particularly in Malaysia. In order to achieve this aim, the researcher adopts a naturalist, constructivist and realist viewpoint to research methodology because it is the most appropriate technique to find out the real life experiences of venture capitalists and technology based firm's owners or managers in their natural settings. This will help to bring out as it is other important factors that determine the funding criteria in technology based firms in Malaysia. However, specifically mentioned below are some of the reasons technology based firms find it difficult to raise adequate funding for growth and or expansion.

- Inability of technology based firms to access adequate financing for growth and or expansion (Lerner, 2010; Somsuk *et al.* 2012).
- Inexperience of most of the owners of technology based firms. Most of the world renowned innovators and inventors started at their early twenties and majority do not have a college degree to be able to manage their business most effectively (Hackett and Dilt, 2004; Mason and Brown, 2011).
- Unwillingness of commercial banks, venture capital firms and other financial institutions to fund growth in the very early stages of technology based firms because of non availability of collateral security and their perceived high risk and opportunity uncertainty nature.
- Lack of adequate government incentives to encourage technology based firms.
- In many instances, financial managers (venture capital companies, banks and financial institutions) require government guarantee as a means of securing long term capital provided to finance technology based firms at their early

stage. This is because they are investing funds that belong to various individuals and shareholders to whom proper accountability must be provided (Lin *et al.* 2011; Mason and Brown, 2011).

- Many a times, government policy such as tax requirements, legal requirements, capital market regulatory frameworks and bureaucratic tendencies discourage fund managers from investing in this sector.

1.3 Objectives of the Study

Venture capital funds are invested precisely in young technology based firms with fantastic growth and exit potential. Start-up companies depend on venture capital as one of their key source of financing (Mason and Harrison, 2008; Mason and Zhou, 2009; Lerner, 2011). The researcher aim to find out the funding criteria in technology based firms in Malaysia, how they nurture technology based firms, performance of technology based firms and how government can encourage the funding of technology based firms. This involves having a discussion with financing firms and owners of technology based firms who have gone through evaluation experience.

In line with this, the researcher critically outlines the financing activities of venture capital firms and their selection criteria, and looks at literature in various countries as compared to our real experience in Malaysia. The researcher plans to uncover if same criteria adopted in other part of the world is also applicable in Malaysia. This will be useful to professionals, academics and Malaysian government in financing technology based firms. Through this avenue potential technology based firms will have first hand information of what is required to be in their business proposal before going ahead to seek for early stage, growth and expansion financing from venture capitalists, business angels and other financial institutions.

This study is aimed at finding out the funding criteria in technology based firms in Malaysia. For this reason, the following are the specific objectives of the research:

1. To investigate how venture capital firms fund technology based firms.
2. To find out the roles of venture capital firms in funding technology based firms.
3. To evaluate the performance of technology based firms three years after venture capital involvement.
4. To investigate how government can encourage venture capital firms to fund technology based firms.

1.4 Research Questions

The research in line with exploring the different issues and aspects of this study looks at the following research questions. They will be answered in the process of the research methodology of this study.

1. How do venture capital firms fund technology based firms?
2. What are the important roles of venture capital firms in funding technology based firms?
3. How does the performance of technology based firms improve after venture capital involvement?
4. In what ways can government encourage venture capital firms to fund technology based firms?

1.5 Expected Outcome of the Research

The researchers' publication will be one of the reference points to academicians as it will help to increase the body of knowledge in the field of venture capital and technology based firms. It will also be useful to technology based firms

managers, professionals and policy makers in both governments, private agencies for decision making in Malaysia and elsewhere.

1.6 Theoretical Gap of Knowledge

- Majority of studies in this area of research have been conducted in the context of developed countries, example in UK (Mason and Harrison, 1994), USA and Europe (Tybejee and Bruno, 1984; Macmillan *et al.* 1885; Lerner, 2010), Singapore (Zutshi *et al.* 1999; Lu and Hwang, 2010) Thailand and Malaysia (Wonglimpiyarat, 2011; Aziz *et al.* 2011). The outcome in the developed countries was found not to be properly suited in the context of developing countries due to the peculiarity of the country in question and the fact that they market is still emerging. In addition, none of the authors have investigated the funding criteria in technology based firms though a few authors have written some articles on VCFs in Malaysia.
- This study will be the first of its kind in Malaysia that adopted a qualitative approach to describe the funding criteria in technology based firms. However, considering the ample researches that have been carried out on venture capital investment process across countries, majority of the researches have based their data collection approach on quantitative methodology (Wells, 1974; Mcmillan, 1985; Tyebjee and Bruno, 1984; Fried and Hisrich, 1994; Wright *et al.* 2003; Kollmann and Keckertz, 2009). This method does not allow for new themes to emerge from the interviewed participants which would have helped to differentiate previous findings from new findings based on country context and on real life experiences of the respondents. The earlier studies has mostly emphasised on the weight attached to the decision criterion of venture capitalists.
- Furthermore, no such authors have proposed a comprehensive framework that could guide future researchers and relevant parties such as public policy makers, technology based firms and venture capital firms in taking appropriate decisions on this area of study.
 - Consistent search through academic database returned insufficient literature on venture capital in Malaysia and the little knowledge or

documents (government and private sources) on venture capital available have not been properly articulated and published in widely circulated academic journals.

- Also in Malaysia the funding criteria in technology based firms in Malaysia have not been fully identified. Several previous studies have mostly dwel on the Western countries, China and a few other Asian countries.

1.7 Scope of the study

Inadequacy of a comprehensive and up to date data on venture capital financing is expected in this study, most especially on technology based firms in their early stage in Malaysia. In order to support this deficiency, prospective interviewee were identified from several sources such as government agencies and associations as well as trade or professional association's directories. Although the sampling frame used may not be representative enough of the population, hence, there is potential of producing a biased result. There is the possibility that some organisations have seized to exist or they may be inactive. However, respondents were drawn from registered members of Malaysian venture capital and private equity association and technology entrepreneurial association of Malaysia from two states of the federation. Majority of the technology based firms interviewed for this study were drawn from a single but renowned public entrepreneurial university based in Johor Bahru, and some from Kuala Lumpur. All these factors will definitely be taken into consideration when presenting the researcher's findings.

1.8 Organisation of the Thesis

This thesis is broken down into 6 subdivisions. The first division introduces the general proposition of the research which includes the problem statement, objective of the study, the research questions, and expected outcome, theoretical gap of knowledge, scope of the study and research conceptual framework. The literature

review is presented in Chapter 2. The general aspects of entrepreneurship and technology entrepreneurship, patenting and licensing of spin-offs, commercialisation and finally venture capital financing are discussed. The theoretical framework of the study is presented at the tail end of Chapter 2, while in Chapter 3 the research methodology, data analysis method is presented coupled with the research operational framework, in Chapter 4 is the data analysis and findings whereas Chapter 5 presents the discussions on the four research questions used for this study, and finally Chapter 6 presents the contribution, limitations, conclusions, recommendations and areas of future study for this thesis. At the end of the six chapters, the researcher presents the references and appendixes.

1.9 Conceptual Research Framework

The design of a study is as important as the analysis. A study design is the rationality that connects the data to be collected and conclusion to be drawn to answer the questions of the study. The study design is important to govern how the data are to be analysed. Figure 1.1 indicates the research conceptual framework for this study.

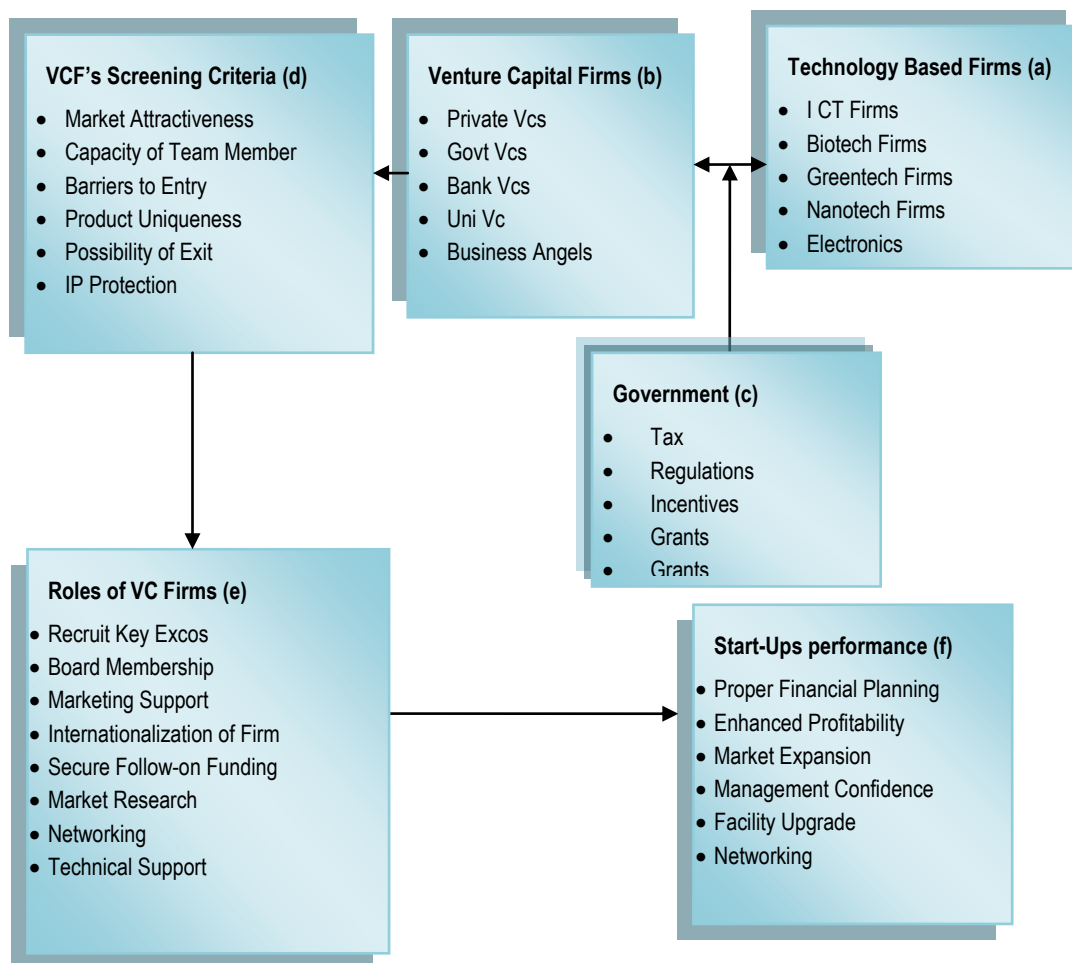


Figure 1.1 Conceptual Framework of Research (Tybjee and Bruno, 1984; McMillan *et al.* 1985; Bygrave and Timmons, 1992; Fried and Hisrich, 1994; Zutshi *et al.* 1999; Mason, 2010)

1.10 Chapter Summary

This chapter considers the essentials of venture capital financing of technology based firms. The background section briefly summarises what is presented in the literature review chapter by reviewing the general aspects of technology entrepreneurship, patenting and licensing of spin-offs, commercialisation and finally venture capital financing. On top of this, the historical development of the concept of venture capital, technology financing as a national policy encouragement

to rapidly build-up the national innovation policies in the country. The brief overview of the encouragement and development of the four innovation phases ever since. Furthermore, the effort of government and other innovation and venture capital supporting agencies were briefly understood in this chapter and are expected to be fully presented in the literature review chapter and other chapters in the thesis. Another important areas presented in this chapter is the research problem statement, the objectives of the study, research questions, the scope of this research, theoretical gap of knowledge, and finally the conceptual research framework that serves as a guide to which the researcher follows up with the thesis.

REFERENCES

- ABA (2004). "American Bar Association." Annual Year Book.
- Abell, P. and T. M. Nisar (2007). "Performance Effects of Venture Capital Networks." Management Decision **45**(5): 923-936.
- Allen, F. and Song, W. (2002). *Venture Capital and Corporate Governance*. Financial Institutions Center, Wharton.
- ACOST (1990). "Advisory Council on Science and Technology." The Enterprise Challenges: Overcoming Barriers to Growth in Small Firms. HMSO, London.
- Adams, S. (2005). "Stanford and Silicon Valley: Lessons on Becoming a High-Tech Region." California Management Review **48**(1): 29-51.
- Ahlstrom, D., Bruton, G. D. and Yeh, K. S. (2007). "Venture Capital in China: Past, Present and Future." Asia Pacific Journal of Management **24**: 247-268.
- Ajagbe, A. M., Ismail, K., Aslan, A. S., Thwala, D. W. and Choi, S. L. (2012). "Technology Based Firms Financing: An Operational Model for Malaysia" South East Asia Journal of Contemporary Business, Economics and Law **1**: 108-114.
- Ajagbe, A. M., K. Ismail, S. A. Aslan, W. D. Thwala and C. S. Long (2013). Selection Criteria for Financing Young Firms Using Debt Options. *Frontiers of Business, Management and Economics: An Interdisciplinary Collection of Managerial Research Findings and Breakthroughs*. Book Chapter Edited by Mehran Nejati, pp. 265-269.
- Armour, J. and D. J. Cumming (2006). "The legislative road to Silicon Valley." Oxford Economics Papers **58** (1007-1012).
- Athanasoglou, P. P., Brissimis, S. N. and Delis, M. D. (2008). "Bank-specific, industry-specific and macroeconomic determinants of bank profitability" International Financial Markets Institutions & Money **18**: 121-136.

- AUTM (2006). "Licensing Survey." Association of University Technology Managers.
- AVCJ (1994). "A Guide to Venture Capital in Asia 1994/1995 Hong Kong " AVCJ Holdings Limited.
- Aziz, K., Harris, H. and Norhashim, H. (2011). "University Research, Development & Commercialisation Management: A Malaysian Best Practice Case Study." World Review of Business Research **1**(2): 179-192.
- Brunninge, O. and Nordqvist, M. (2004). Ownership Structure, Board Composition and Entrepreneurship: Evidence from family and venture backed firms. International Journal of Entrepreneurial Behaviour and Research, 10(1/2), 85-105.
- Bachher, J. S., de Leh, E. D. and Guild, P. D. (1999). "Decision Criteria Used by Investors to Screen Technology-Based Ventures." Portland International Conference on Management of Engineering and Technology. IEEEExplore USA **3**(2): 269-273.
- Barreto, I. (2010). "Dynamic capabilities: A review of past research and an agenda for the future." Journal of Management **36**: 256-280.
- Barabasi, A. B., Newman, M. and Watts, D. (2006). "The Structure and Dynamics of Networks." Princeton University Press, NJ **9**: 267-289.
- Barney, J. B. (1991). "Firms Resources and Sustained Competitive Advantage." Journal of Management **17**(1): 99-120.
- Bathelt, H., Kogler, D. F. and Munro, A. K. (2010). "A knowledge-based typology of university spin-offs in the context of regional economic development." Technovation **30**(9-10): 519-532.
- Bhide, A. (2007). "The Venturesome Economy." Princeton, NJ University Press **11**: 178.
- BIS (2010). "Internalisation of Innovative and High Growth SMEs. London: Department for Business, Innovation and Skills." Bicore economics and statistics paper: 39.
- Black, B. S. and R. J. Gilson (1998). "Venture Capital and the Structure of Capital Markets: Bank versus Stock Markets." Journal of Financial Economics **47**: 243-277.

- Blind, K., Edler, J., Frietsch, R. and Frietsch, U. (2009). "The Influence of Strategic Patenting on Companies Patent Portfolios." Research Policy **38**: 428-436.
- Bloch, C. (2007). "Assessing Recent Developments in Innovation Measurement." The Third Edition of The Oslo Manual Science and Public Policy **34**: 23-34.
- Boehm, D. N. and T. Hogan (2012). "Science-to-Business collaborations: A science to-business marketing perspective on scientific knowledge commercialisation." Industrial Marketing Management **67**: 34-45.
- Boateng, A. (2000). Dimensions of International Joint Venture activity in Ghana and Nigeria. Unpublished PhD Dissertation, University of Leeds, UK.
- Bruton, D. G. and Ahlstrom, D. (2003). An Institutional View of China's Venture Capital Industry: Explaining the differences between China and the West. Journal of Business Venturing, 18: 233-259.
- Black, B. S. and R. J. Gilson (1998). "Venture Capital and the Structure of Capital Markets: Bank versus Stock Markets." Journal of Financial Economics **47**: 243-277.
- Brander, J., Du, Q. and Hellman, T. (2010) "The Effects of Government-Sponsored Venture Capital: International Evidence." National Bureau of Economic Research. NBER Working Papers Series. MA(No.16521).
- Brookfield, S. (1987). "Conducting Interviews." Unpublished Manuscript. New York: Department of Higher and Adult Education, Teachers College, Columbia University: 456.
- Bruton, G. D., Ahlstrom, D. and Li, H. L. (2010). "International Theory and Entrepreneurship: Where are we now and where do we need to move to in the Future?" Entrepreneurship Theory and Practice **7(5)**: 421-440.
- Buenstorf, G. and M. Geissler (2012). "Not invented here: technology licensing, knowledge transfer and innovation based on public research." Journal of Evolutionary Economics **22**: 481-511.
- Buenstorf, G. and A. Schacht (2013). "We need to talk – or do we? Geographic distance and the commercialisation of technologies from public research." Research Policy **42**: 465-480.

- Bulsara, H. P., Gandhi, S. and Porey, P. D. (2010). "Commercialisation of Technology Innovations and Patents; Issues and Challenges." Journal of Technology Monitor **47**(6): 12-18.
- Bulut, H. and G. Moschini (2009). "US Universities Net Returns from Patenting and Licensing: A Quantile Regression Analysis." Economics of Innovation and New Technology **18**(2): 123-137.
- Business Times (2011). "Malaysia Business Environment " Times Daily Newspapers **20th May**(B7): 7.
- Bygrave, W. D. and J. A. Timmons (1992). "Venture Capital at Crossroads." Harvard Business School Press Boston, MA **49**: 214-235.
- Cannon, M. (1998). "Yozma 11 Reaches Initial Close on \$70M, Anticipates Final Cassell, C., and Symon, G. (2004). Essential Guide to Qualitative Methods in Organisational Research." London: Sage Publications Ltd 251-256.
- Coast, J., H. Al-Janabi, E. J. Sutton, S. A. Horrocks, A. J. Vosper, D. R. Swancutt and Flynn, N. T. (2012). Using Qualitative Methods for Attribute Development for Discrete Choice Experiments: Issues and Recommendations Health Economics, 21: 730–741.
- Coast, J and Horrocks, S. (2007). Developing attributes and levels for discrete choice experiments using qualitative methods. Journal of Health Services Research & Policy 12: 25–30.
- Coast, J., McDonald, R. and Baker, R. (2004). Issues arising from the use of qualitative methods in health economics. Journal of Health Services Research & Policy 9: 171–176.
- Coast, J., Salisbury, C., de Berker, D., Noble, A., Horrocks, S., Peters, T. J. and Flynn T. N. (2006). Preferences for aspects of a dermatology consultation. The British Journal of Dermatology 155: 387–392.
- Chan, Y. K., Moon-ho, R. H., Oleksandr, S., Chernyshenko, O. B., Marilyn, A. U., David, G., Sam, Y. L. and Phan, W. (2012). "Entrepreneurship, professionalism, leadership: A framework and measure for understanding boundaryless careers." Journal of Vocational Behavior **81**: 73-88.
- Chemmanur, T., Krishnan, K. and Nandy, D. (2009). "How does venture capital financing improve efficiency in private firms? A look beneath the surface." Unpublished working paper, Boston College: 241.

- Chemmanur, T. J. (2010). "Venture Capital, Private Equity, IPOs, and Banking: An Introduction and Agenda for Future Research." Journal of Economics and Business **62**(7): 471-476.
- Chemmanur, T. J., Krishnan, K. and Nandy, D. (2010). "How Does Venture Capital Financing Improve Efficiency in Private Firms? A Look Beneath the Surface." Working Paper, Boston College, New York University, and Northeastern University: 87.
- Cradle Fund (2013). Technology Funds Programme in Malaysia: The Cradle Investment Programme. Retrieved from the official Website of the Malaysian Venture Capital Berhad on the 30th August, 2013.
- Chen, H., Gompers, P., Kovner, A. and Lerner, L. (2010). "Buy local? The geography of venture capital " Journal of Urban Economics **67**(8): 90-102.
- Chin, W. W., Junglas, I. and Roldan, J. L. (2012). "Some Considerations for Articles Introducing New and/or Novel Quantitative Methods to IS Researchers." European Journal of Information Systems **21**(5): 1-5.
- Chugh, H., Nicolaou, N. and Barnes, S. (2011). "How VC Feedback Does Affects Start-Ups? Venture Capital." An International Journal of Entrepreneurial Finance **13**(3): 243-265.
- Coad, A. (2009). "The Growth of Firms: A Survey of Theories and Empirical Evidence." Cheltenham: Edward Elgar **15**: 79.
- Cooper, B. (2011). "The End of the Startup World as we know it: In The Entrepreneurship's Guide to Customer Development " Kuala Lumpur International Venture Capital Symposium 9-12th Oct. at KLCC: 1-35.
- Cooper, G. (2008). "The Origin of Financial Crises: Central Banks, Credit Bubbles and the Efficient Market Fallacy." Vintage Books, New York, NY: 160.
- Coviello, N. E. (2006). "The Network Dynamics of International New Ventures." Journal of International Business Studies **37**(9): 713-731.
- Creswell, J. W. (2007). "Qualitative inquiry and research design: Choosing among five approaches" 2nd ed. Thousand Oaks: Sage Publications 127-147.
- Creswell, J. W. (2012). "Educational Research. Planning, Conducting and Evaluating Quantitive and Qualitative Research." Pearson Publishers, 4th edition Australia: 239.

- Cumming, D. (2011). "Public Policy and the Creation of Active Venture Capital Markets. Venture Capital." An International Journal of Entrepreneurial Finance **13**(1): 75-94.
- Cumming, D. and N. Dai (2010). "Local Bias in Venture Capital Investments." Journal of Empirical Finance **17**(2): 362-380.
- Cumming, D. J. and J. G. MacIntosh (2007). "Mutual funds that invest in private equity? An analysis of labour sponsored investment funds." Cambridge Journal of Economics **31**(11): 445-487.
- Dahl, M. S. and O. Sorenson (2011). "Home sweet home: entrepreneurs' location choices and the performance of their ventures." Mimeo **29**: 87.
- Dana, P. L. and Dana, E. T. (2005). Expanding the Scope of Methodologies used in Entrepreneurship Research. International Journal of Entrepreneurship and Small Business, 2(1): 79-88.
- Denzin, N. (1978). The Research Act: A Theoretical Introduction to Sociological Methods, McGraw Hill, New York.
- Damianakis, T. and M. R. Woodford (2012). "Qualitative Research with Small Connected Communities: Generating New knowledge while Upholding Research Ethics." Qualitative Research, London, Sage Publishers: 1-11.
- David, F. P. (2002). "Understanding and Doing Research." A Handbook for Begginers. Iloilo City: Central Philippine University-Social Science Research Institute **78**: 69.
- DeBettignies, J. E. (2008). "Financing the Entrepreneurial Venture." Management Science **54**(1): 151-166.
- DeCarvalho, A. G., Gallucci, N. H. and Sampaio, J. O. (2012). "Private Equity and Venture Capital in Brazil: an Analysis of its Recent Evolution." Abstracts Collections available at SSRN: <http://ssrn.com/abstract=1996729>: 237.
- Denis, D. J. (2004). "Entrepreneurial Finance: An Overview of the Issues and Evidence." Journal of Corporate Finance **10**(4): 304-326.
- Desai, V. (2001). "Dynamics of Entrepreneurial Development and Management." Himalaya Publishing House, Mumbai.: 235.
- DGE (2009). "Venture Capital in Europe." Directorate of General Environment, European Commission.

- Dimov, D. and G. C. Murray (2008). "Determinants of the Incidence and Scale of Seed Capital Investments by Venture Capital Firms." Small Business Economics **30**(7): 127-152.
- Dollinger, M. (2003). "Entrepreneurship; Strategies and Resources " 3rd. ed. Prentice hall: 45.
- Dorf, R. C. and T. H. Byers (2008). "Technology Ventures; From Ideas to Enterprise." 2nd ed., McGraw Hill: 176.
- Dossani, R. and M. Kenney (2007). "The Next Wave of Globalization: Relocating Service Provision to India" World Development **35**: 772-791.
- EDB (1997). "Singapore's Business Climate." Economic Development Board.
- Eisenhardt, K. M. and F. M. Santos (2001). "Knowledge Based View; a New Theory of Strategy?" Handbook of Strategy and Management, Thousand Oaks; Sage Publications: 3-30.
- Elenurm, T. (2012). "Entrepreneurial orientations of business students and Entrepreneurs." Baltic Journal of Management, Emerald Group Publishing Limited. **7**(2): 217-231.
- European Union Commission. (1998). "Risk Capital Action Plan" The Commission of the European Communities, Brussels.
- EVCA (1996). "European Private Equity and Venture Capital Association." 1996 Year Book, Bruges: EVCA: 234.
- EVCA (2009). "European Private and Venture Capital Association." 2009 Year Book, Bruges: EVCA.
- EVCA (2011). "European Private Equity and Venture Capital Association." 2011 Year Book. Bruges: 128.
- Fabowale, L., Orser, B. and Riding, A. (1995). "Gender, Structural Factors, and Credit Terms between Canadian Small Business and Financial Institutions." Entrepreneurship Theory and Practice **19**(4): 41-65.
- Farhan, M., Raza, A., Khan, A. J. and Akram, M. (2011). "Venture Capital Sector in Pakistan: Ratio Analysis Approach for Financial Performance Assessment." Information Management and Business Review **2**(6): 287-292.
- Farrell, C. and J. Doutriaux (1994). "Collaborative Strategies or Internal Development; When are they Most Appropriate for Small Canadian High-

- Tech Firms and Why?" Paper Presented at the Babson Entrepreneurship Research Conference, Babson College, Boston, MA.
- Ferrary, M. and M. Granovetter (2009). "The Role of Venture Capital Firms in Silicon Valley's Complex Innovation Network." Economy and Society **38**(2): 326-359.
- Franklin, R., Holi, M. and Lapinski, J. (2007). "Spinning Out Quality: University Spin-Out Companies in the UK." Cambridge, UK: Library House.
- Fricke, U. W. (2011). "A Global Perspective on European Venture Capital." A Paper Presented at the Kuala Lumpur International Venture Capital Symposium (KLVC 9-12th Oct).
- Fried, V. H. and R. D. Hisrich (1994). "Towards a Model of Venture Capital Investment Decision Making." Journal of Financial Management **23**(3): 28-37.
- Fuller, D. B. (2010). "How Law, Politics and Transnational Networks Affect Technology Entrepreneurship: Explaining Divergent Venture Capital Investing Strategies in China." Asia Pacific Journal of Management **27**: 445-459.
- García-Villaverde, P. M. (2012). "Entrepreneurial orientation and the threat of imitation: The influence of upstream and downstream capabilities." European Management Journal **34**(3): 234-244.
- García-Villaverde, P. M., Parra-Requena, G. and Ruiz Ortega, M. J. (2010). "Capital social y comportamiento pionero: El papel mediador de las capacidades tecnológicas y de marketing." Cuadernos de Economía y Dirección de la Empresa **45**: 9-42.
- George, F. S., Thomas, K. and Lawrence, S. J. (2007). "A Valley of Death in the Innovation Sequence: An Economic Investigation." Phoenix Center for Advanced Legal and Economic Public Policy Studies.
- George, T., Karippa, C., Fatemeh, N., Markde, R. and Harry, B. (2013). "Serving the poor: Multisided mobile service platforms, openness, competition, collaboration and the struggle for leadership." Telecommunications Policy **37**: 24-34.
- Garson, R. J. (2004). "Engineering a venture capital market: lessons from the American experience" Stanford Law Review **55**: 1067-1103.

- Glassmeyer, E. F. (1991). "Venture Financing Techniques, in S. E. Pratt (ED), Guide to Venture Capital Sources." Capital Publishing Corp., Wellesley, Mass: 64-66.
- Golden, S. C. (1981). "Structuring and Pricing the Financing, in S. E. Pratt (Ed.), Guide to Venture Capital Sources." Capital Publishing Corp., Wellesley, Mass: 67-76.
- Gomez, E. T. (2009). "The Rise and Fall of Capital: Corporate Malaysia in Historical Perspective." Journal of Contemporary Asia **39**(3): 345-381.
- Gompers, P. A. and L. Lerner (2001). "The Venture Capital Revolution." Journal of Economic Perspectives **15**(2): 145-168.
- Goodstein, J., Gautum, K. and Boeker, W. (1994). "The Effect of Board Size and Diversity on Strategic Change " Strategic Management Journal **15**: 241-250.
- Granovetter, M. (2005). "The Impact of Social Structure on Economic Outcomes." Journal of Economic Perspectives **19**(1): 33-50.
- Greenstein, S. (2010). "Open platform development and the commercial Internet Platforms." Markets and innovation: 219-248.
- Groh, A. P. and H. Liechtenstein (2009). "How attractive is Central Eastern Europe for Risk Capital Investors?" Journal of International Money and Finance **28**(7): 625-647.
- Groh, A. P. and H. Liechtenstein (2011). "Determinants for Allocations to Central Eastern Europe Venture Capital and Private Equity Limited Partnerships, Venture Capital." An international Journal of Entrepreneurial Finance **13**(2): 175-194.
- Groh, A. P., Liechtenstein, H. and Lieser, K. (2010). "The European Venture Capital and Private Equity Country Attractiveness Indices." Journal of Corporate Finance **16**: 205-224.
- Gu, S. (1999). "China's Industrial Technology: Market Reform and Organisational Change." Routledge, London.
- Hackett, S. M. and D. M. Dilts (2004). "A Systematic Review of Business Incubation Research." Journal of Technology Transfer **29**: 55-82.
- Hagedoorn, J. and G. Duysters (2002). "External Sources of Innovative Capabilities: the Preferences for Strategic Alliances or Mergers and Acquisitions." Journal of Management Studies **39**: 167-188.

- Hall, B., Thomas, G. and Tomasi, S. (2007). "The Market Value of Patents and R and D: Evidence from European Firms " NBER Working Paper. National Bureau of Economic Research.1050 Massachusetts Avenue, Cambridge, MA 02138.
- Hall, J. and C. W. Hofer (1993). "Venture Capitalists Decision Criteria in New Venture Evaluation." Journal of Business Venturing **24**: 25-42.
- Harrison, R., Mason, C. and Robson, P. (2010). "Determinants of Long Distance Investing by Business Angels in the UK, Entrepreneurship and Regional Development." An International Journal **22**(2): 113-137.
- Hasegawa, H. (2004). "Bencha Kyapitaru Bencha Kigyo no Baryueshon (Venture Capitalist's Valuation of Ventures)." Business Insight: 8-25.
- Helleboogh, D., Laveren, E. and Lybaert, N. (2010). "Financial Bootstrapping Use in New Family Ventures and the Impact on Ventures Growth-in: Long Term Perspectives on Family Business: Theory, Practice, Policy." 10th Annual IFERA World Family Business Research Conference, Lancaster, UK. (6-9 July 2010): 112-113.
- Hellmann, T. and M. Puri (2002). "Venture Capital and Professionalization of Start Up Firms; Empirical Evidence." Journal of Finance **57**: 169-197.
- Hisrich, R., Peters, M. P. and Shepherd, D. A. (2006). "Entrepreneurship." (7th ed), McGraw-Hill/Irwin.
- Hisrich, R. D., Peters, M. P. and Shepherd, D. A. (2008). "Entrepreneurship (7th ed)." McGraw Hill International Asia 7edition: Chapter 1-3, 7-21.
- Hochberg, Y., Lyungqvist, A. and Lu, Y. (2007). "Venture Capital Networks and Investments Performance " Journal of Finance **62**: 251-301.
- INSEAD (2011). "The global innovation index 2011." Fontainebleau: INSEAD.
- Ismail, K. (2007). "The Commercialisation of University Patents; A Case Study." PHD Thesis.University of Strathclyde.
- Ismail, K. (2009). "Technology Entrepreneurship." Prentice Hall.
- Ismail, K., Aslan, A. S. and Ajagbe, A. M. (2011). "An Investment Framework to Help Equity Financiers Select Tech SMEs in Malaysia." Interdisciplinary Journal of Contemporary Research in Business **3**(5): 966-983.

- Ismail, K., Aslan, A. S., Soong, W. M., Wong, S. C. and Ajagbe, A. M. (2012). "Decision Making Process in the Commercialisation of University Patent in Malaysia." *African Journal of Business Management* **6**(2): 681-689.
- Ismail, K., (2008). "The Actors Involved and the Decision Making Process Used In the Exploitation of University Patents." *International Journal of Business and Information* **3**(2): 165-192.
- Irish Examiners Publications (2010). "City Quarter Lapps Quay ,Cork Ltd. Jones, S. (1985). Depth Interviewing, in R. Walker (Ed.) *Applied Qualitative Research*." Brookfield, Vermont: Gower Publishing Co.
- Janssen, M. and M. H. E. Moors (2013). "Caring for healthcare entrepreneurs — Towards successful entrepreneurial strategies for sustainable." *Technological Forecasting & Social Change* **23**(4): 231-239.
- Jeng, L. A. and P. H. C. Wells (2000). "The determinants of venture capital funding: evidence across countries." *Journal of Corporate Finance* **6**(3): 241-289.
- Joubish, M. F., Khurram, M. A., Ahmed, A., syeda, T. F. and Haider, K. (2011). "Paradigms and Characteristics of a Good Qualitative Research." *World Applied Sciences Journal* **12**(11): 2082-2087.
- Jung, S., Koch, G. and Rauch, M. G. (2011). "Decoding VCs Decision Making Behavior in Biotechnology: The Relative Importance of Established Decision Criteria and the Role of Start-Ups' Knowledge Networks (September 13, 2011)." *Social Science Research Electronic Library*.
- Kamarulzaman, A., Hezlin, H. and Mariati, N. (2011). "University Research, Development & Commercialisation Management: A Malaysian Best Practice Case Study." *World Review of Business Research* **1**(2): 179-192.
- Kaplan, S. and P. Stromberg (2003). "Financial Contracting Meets the Real World; An Empirical Analysis of Venture Capital Contracts." *Review of Economics Studies* **70**(2): 281-316.
- Karsai, J., Wright, M. and Filatotchev, I. (1997). "Venture Capital in Transition Economies; The Case of Hungary." *Entrepreneurship Theory and Practice* **21**(4): 93-110.
- Kenney, M., Han, K. and Tanaka, S. (2012). "Scattering Geese: Venture Capital Industries in East Asia " *Report to the World Bank*: Accessed 23 Feb.2012.

- Kenney, M. and D. Patton (2011). "Does inventor ownership encourage university research-derived entrepreneurship? A six university comparison " Research Policy **40**: 1100-1112.
- Kenney, M. and D. Patton (2012). "Knowledge Perspectives of New Product Development." Innovation, Technology, and Knowledge Management **56**: 253-268.
- Khin, S., Ahmad, N. H. and Ramayah, T. (2010). "Product Innovation among ICT Technopreneurs in Malaysia." Journal of Business Venturing **11**(6): 397-406.
- Kim, J. (2012). "Study of the Performance and Characteristics of U.S. Academic Research Institution Technology Commercialisation (ARITC)." Portland State University.
- Kim, Y. J. and G. Clarke (2013). "Determinants of Inter-Firm Technology Licensing in the EU." Applied Economics **45**(5): 651-661.
- Kirihata, T. (2008). "Venture Capitalist's Investment Decision Making in The New Technology Based Firms (NTBFs) in Japan." Kurenai, Kyoto University Research Information Repository. Working Paper **93**: 2-11.
- Kirihata, T. (2010). "The Formation Process and Characteristics of the Japanese Venture Capital Industry." KURENAI: Kyoto University Research Information Repository. Working Paper **113**: 2-13.
- Kollmann, T. and Kuckertz, A. (2009). Evaluation Uncertainty of Venture Capitalist's Investment Criteria. Journal of Business Research, **63**: 741-747.
- Klonowski, D. (2006). "Venture Capital as a Method of Financing Enterprise Development in Central and Eastern Europe." International Journal of Emerging Markets **1**(2): 165-175.
- Kortum, S. and J. Lerner (2000). "Assessing the Contribution of Venture Capital to Innovation." Rand Journal of Economics **31**(4): 674-692.
- Krathwohl, D. (1998). "Methods of educational and social science research." (2nd edition). New York: Longman
- Kropp, F. and R. Zolin (2005). "Technological Entrepreneurship and Small Business Innovation Research Programs." Academic Marketing Science Review **7**: 1-14.
- Kumar, A. V. and N. M. Kaura (2033). "Venture Capitalists Screening Criteria." Journal of Research **28**(2): 49-59.

- Kumar, R. (2005). "Research Methodology. A Step by Step Guide for Beginners." (2nded) Australia, Pearson Education.
- Kumar, V. and P. K. Jain (2003). "Commercialisation of New Technologies in India: An Empirical Study of Perceptions of Technology Institutions." Technovation **23**: 113-120.
- Lam, W. (2010). "Funding Gap, What is Funding Gap? Financial Bootstrapping; Supply, Demand and Creation of Entrepreneurial Finance." International Journal of Entrepreneurial Behaviour and Research **16**(4): 268-295.
- Lee, G. K. (2009). "Understanding the Timing of, Fast-Second" Entry and the Relevance of Capabilities in Invention vs. Commercialisation." Research Policy **38**(1): 86-95.
- Lendner, C. (2007). "University Technology Transfer through University Business Incubators and how they help Start-Ups." in Therin, F. (Ed.), Handbook of Research on Techno-Entrepreneurship, Edward Elgar, Cheltenham, UK: 163-169.
- Lerner, J. (1999). "The Government as Venture Capitalist: The Long-Run Impact of the SBIR Program." The Journal of Business **72**(3): 285-318.
- Lerner, J. (2009). "Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital have Failed-And what to do about It." Princeton NJ University Press.
- Lerner, J. (2010). "The Future of Public Efforts to Boost Entrepreneurship and Venture Capital." Small Business Economics **35**(255-264).
- Lerner, J. (2011). "Risk-Taking: Catalyzing a Paradigm Shift " A Paper Presented at the Kuala Lumpur International Venture Capital Symposium(9-12 Oct.).
- Lerner, J. and A. Leamon (2011). "Microsoft's IP Ventures." Harvard Business School Entrepreneurial Management Case Studies Case Collections: Case number. 810-096.
- Lerner, J. and J. Tag (2012). "Institutions and Venture Capital." IFN Working Abstract collections(Paper number 897).
- Leukel, J., Fernandes, J., Heidebrecht, A. and Schillings, S. (2012). "Agency Theory in E-Healthcare and Telemedicine: A Literature Study." Healthcare Delivery in the Information Age **4**: 313-330.

- Li, C. Y. (2012). "The Influence of Entrepreneurial Orientation on Technology Commercialisation: The Moderating Roles of Technological Turbulence and Integration." *African Journal of Business Management* **6**(1): 370-387.
- Li, Y. (2008). "Duration Analysis of Venture Capital Staging: a Real Options Perspective." *Journal of Business Venturing* **23**(5): 497-512.
- Li, Y., Guo, H., Liu, Y. and Li, M. (2008). "Incentive Mechanisms, Entrepreneurial Orientation and Technology Commercialisation: Evidence from China's Transitional Economy." *Journal of Product Innovation and Management* **25**: 63-78.
- Li, Y. and S. A. Zahra (2012). "Formal Institutions, Culture, and Venture Capital Activity; A Cross-Country Analysis." *Journal of Business Venturing* **27**: 95-111.
- Lichtenthaler, U., Ernst, H. and Hoegl, M. (2010). "Not-Sold Here: How Attitudes Influence External Knowledge Exploitation." *Organisation Science* **21**: 1054-1071.
- Lichtenthaler, U. and M. Muethel (2012). "The Role of Deliberate and Experiential Learning in Developing Capabilities: Insights from Technology Licensing." *Journal of Engineering and Technology Management* **29**: 187-209.
- Liedtke, M. (2003). "Venture Capital Fund Raising Falls to 21-year low " *washingtonpost portal*(Feb.11).
- Lin, C., Jiang, J. L., Wu, Y. J. and Chang, C. C. (2011). "Assessment of Commercialisation Strategy using R&D Capability." *Industrial Management & Data Systems* **111**(3): 341-369.
- Lincoln, Y. S. and E. G. Guba (1985). "Naturalistic Inquiry." *Beverly Hills, CA: Sage Publications, Inc.*
- Lindsey, L. (2007). "Strategies experienced instructional designers use to obtain stakeholder buy-in." *Proceedings from the 2007 Association of Educational Communications and Technologies Conference.*
- Liu, Y., Zeng, L., Wang, D., Sun, F. and Feng, L. (2012). "An Empirical Study on Governance Characteristics and Performance of High-Tech Corporations." *Advances in Intelligent and Soft Computing* **129**: 301-307.

- Lockett, A. and M. Wright (2005). "Resources, Capabilities, Risk Capital and the Creation of University Spin-Out Companies." Research Policy **34**(7): 1043-1057.
- Lockett, A., Wright, M., Burows, A., Scholes, L. and Patton, D. (2008). "The Export Intensity of Venture Capital Backed Companies." Small Business Economics **31**: 39-58.
- Lu, Q. and P. Hwang (2010). "The Impact of Liability of Foreigners on International Venture Capital Firms in Singapore." Asia Pacific Journal of Management **27**: 81-97.
- MacMillan, I. C., Kulow, D. M. and Khoylian, L. (1989). "Venture Capitalists Involvement in their Investments; Extent and Performance." Journal of Business Venturing **4**: 27-47.
- MacMillan, I. C., Siegel, R. and Narasimha, P. N. S. (1985). "Criteria Used by Venture Capitalists to Evaluate New Venture Proposals." Journal of Business Venturing **1**: 119-128.
- MacMillan, I. C., Zemann, L. and Subbaranasimha, P. N. (1987). "Criteria Distinguishing Successful from Unsuccessful Ventures in the Venture Screening Process." Journal of Business Venturing: 123-137.
- Manigart, S., Koen, D. W., Wright, M., Robbie, K., Philippe, D., Sapienza, H. J. and Beckman, A. (2000). "Venture capitalists Investment Appraisal and Accounting Information. Comparative Study of the USA, UK, France, Belgium and Holland " European Financial Management **6**(3): 389-403.
- Markman, G. D., Gianiodis, P. T. and Phan, P. H. (2009). "Supply Side Innovation and Technology Commercialisation." Journal of Management Studies **46**: 625-649.
- Markusen, A., Hall, P. and Glasmeyer, A. (1986). "High Tech America; The What, How, Where, and Why of The Sunrise Industriess." Boston.
- Mason, C. (2010). "Entrepreneurial Finance in a Regional Economy, Venture Capital." An Internationaal Journal of Entrepreneurial Finance **12**(3): 167-172.
- Mason, C. and R. Brown (2010). "High Growth Firms in Scotland." Final Report for Scottish Enterprise. Glasgow.
- Mason, C. and R. Brown (2011). "Creating Good Public Policy to Support High-Growth Firms." Small Business Economics **15**(3): 114-121.

- Mason, C. and Y. Pierrakis (2011). "Venture Capital, the Regions and Public Policy: The United Kingdom since the Post-2000 Technology Crash." Regional Studies: 1-16.
- Mason, C. and J. Zhou (2009). "The Growth of Venture Capital in China: The Role of the New Argonauts." Working Paper, Hunter Centre for Entrepreneurship, University of Strathclyde.
- Mason, C. M. (2007). "Venture Capital: A Geographical Perspective. In Handbook of Research on Venture Capital. ed. H. Landstrom." Cheltenham: Edward Elgar: 86-112.
- Mason, C. M. (2009). "Public Policy Support for the Informal Venture Capital Market in Europe: A Critical Review." International Small Business Journal **27**(5): 536-556.
- Mason, C. M. and R. T. Harrison (1994). "The Informal Venture Capital Market in the UK; in Hughes, A. and Storey, D. J. (ed)." Financing Small Firms, Routledge, London: 64-111.
- Mason, C. M. and R. T. Harrison (2008). "Measuring Business Angel Investment Activity in the United Kingdom: A Review of Potential Data Sources." Venture Capital **10**(4): 309-330.
- Mason, C. M. and R. T. Harrison (2010). "Annual Reports on the Business Angel Market in the United Kingdom 2008/2009. Department for Business, Innovation and Skills(BIS),London." Department for Business, Innovation and Skills(BIS),London.
- Mason, G., Bishop, K. and Robinson, C. (2009). "Business Growth and Innovation: The wider impact of rapidly growing firms in UK city-regions." London: NESTA.
- Massa, S. and S. Testa (2008). "Innovation and SMEs: Misaligned Perspectives and Goals Among Entrepreneurs, Academics and Policy Makers" Technovation **28**(7): 393-407.
- Muala, M., Autio, E. and Murray, G. (2005). "Corporate Venture Capitalists and Independent Venture Capitalists: What do they know, Who do they know and Should Entrepreneurs Care?" Venture Capital Journal **7**(1): 3-21.

- Maula, M. V. J. (2001). "Corporate Venture Capital and the Value-Added for Technology-Based New Firms " Doctoral Dissertation, Helsinki University of Technology, Institute of Strategy and International Business.
- MAVCAP (2013). "Funding for Commercialisation in Malaysia " Official Website of the Malaysian Venture Capital Management Berhad(30th January).
- McDonald, S. L. (1988). "High Technology Industry in Australia; A Matter of Policy, in Breheny, M. J. and McQuaid, R. (ed), The Development of High Technology Industries" An International Survey, Routledge, London
- McNally, K. (1995). "Corporate Venture Capital: Financing of Technology Businesses." International Journal of Entrepreneurship Behaviour and Research 1(3): 9-43.
- Megginson, W. (2002). "Towards a Global Model of Venture Capital." L. Megginson global.
- Merriam, S. B. and E. L. Simpson (1984). "A Guide for Research for Educators and Trainers of Adults." Malabar, Florida: Robert F. Krieger Publishing Co
- Merrill, S. A. and A. M. Wazza (2010). "Managing University Intellectual Property in the Public Interest." National Research Council, Washington, DC.
- Miles, M. B. and A. M. Huberman (1994). "Qualitative Data Analysis." Beverly Hills CA: Sage Publications.
- Misra, S. and K. E. Sendi (2000). "Resourcefulness: A Proximal Conceptualisation of Entrepreneurial Behaviour." The Journal of Entrepreneurship, New Delhi/Thousand Oaks/London Sage Publications Ltd.
- Montgomery, D. B. and G. L. Urban (1969). "Management Science in Marketing." Prentice Hall, Englewood Cliffs. N. J: 303-312.
- Moore, B. (1994). "Financial Constraints to the Growth and Development of Small High Technology Firms; in Hughes, A. and Storey, D. J. (eds)." Finance and the Small Firm, Routledge, London, 112-144.
- MOSTI (2009). "Intellectual Property Commercialisation Policy for Research and Development Projects Funded by MOSTI." Ministry of Science, Technology and Innovation(June 27).
- MOSTI (2013). "Industrial Technology Development: A National Plan of Action." Kuala Lumpur, Malaysia; Ministry of Science, Technology and Innovation.

- Mowery, D., Nelson, R., Sampat, B. and Ziedonis, A. (2004). "Ivory Tower and Industrial Innovation: University-Industry Technology Transfer Before and After the Bayh-Dole Act." Stanford University Press, Stanford: Stanford Business Books.
- MTDC (2013). "Funding for Innovations in Malaysia " Official Website of Malaysian Technology Development Corporation(26th January).
- Mullen, J. S., D. R. Bagby and L. E. Palich (2008). "Economic Freedom and the Motivation to Engage in Entrepreneurial Action." Entrepreneurship Theory and Practice: 875-895.
- Murray, G. (1993). "Third Party Equity Support for New Technology Based Firms in the UK and Continental Europe " Paper Presented at the Institute for Management, Innovation and Technology Seminar; France for Small Firms, Brussels(29 November).
- Murray, G. C. (2007). "Venture Capital and Government Policy, in Landstrom (eds). Handbook of Research on Venture Capital." Cheltenham; Edward Elgar: 113-151.
- MVCA (2013). "Technology Funding Schemes in Malaysia." Official website of the Malaysian Venture Capital and Private Equity Association(30th January).
- Nahata, R. (2008). "Venture Capital Reputation and Investment Performance." Journal of Financial Economics 19(2): 26-36.
- Najib, R. (2010). "Invest in Malaysia 2010 " The Prime Minister of Malaysia, Inaugural Speech, Kuala Lumpur(20th June).
- Nelson, T., Maxfield, S. and Kolb, D. (2009). "Women Entrepreneurs and Venture Capital: Managing the Shadow Negotiation." International Journal of Gender and Entrepreneurship 1(1): 57-76.
- Nerkar, A. and S. Shane (2007). "Determinants of Invention Commercialisation: an Empirical Examination of Academically Sourced Inventions." Strategic Management Journal 28: 1155-1166.
- News, S. N. (2011). "Government Release Allocation to SMEs." Star Nation News, Malaysian Daily Newspaper(5th October): 5.
- Ni, W. (2006). "Success Criteria of Technological Incubation in China: Case study in Hong Kong and Hangzhou." Proceedings of the 2006 International Conference

- on Management Science & Engineering (13th), Lille, France(5-7th October: 1978-1983).
- Nicholas, S. P. and N. E. Armstrong (2003). "Engineering Entrepreneurship: Does Entrepreneurship Have a Role in Engineering Education" IEEE Antennas and Propagation Magazine **45**(1): 23-27.
- Nicolaou, N. and S. Birley (2003). "Academic Networks in a Trichotomous Categorisation of University Spin-Outs." Journal of Business Venturing **18**(3): 333-359.
- Nofsinger, J. R. and W. Wang (2011). "Determinants of Start Up Firm External Financing Worldwide." Journal of Banking and Finance **4**(1): 1-13.
- NRC (2010). " A Data-Based Assessment of Research-Doctorate Programs in the United States" National Research Council; The National Academies Press, Washington, D.C.
- NSDC (2005). "National Small and and Medium Industry Development Corporation." Official Portal of NSDC(17th Febuary).
- NSF (2009). "Survey of Research and Development Expenditures at Universities and Colleges." National Science Foundation(14 Febuary).
- NVCA (2009). "National Venture Capital Association: The Annual Economic Impact of Venture Capital Study: A Study Conducted on Silicon Valley." Venture Capital Year Book. CA.
- O'Shea, R., Chugh, H. and Allen, T. J. (2008). "Determinants and Consequencies of University Spin-Off Activity: A Conceptual Framework." Journal of Technology Transfer **33**(6): 635-666.
- O'Meara, J. O. (1961). "Selecting Profitable Products." Harvard Business Review **39**: 84-85.
- OECD (2003). "Turning Science into Business; Patenting and Licensing at Public Research Organisations." Organisation for Economic Corporation and Development Publications.
- OECD (2010). "High-Growth Enterprises: What Governments can do to make a Difference. OECD Studies on SMEs and Entrepreneurship." Organisation for Economic Co-operation and Development.

- Oehler, A., Pukthuanthong, K., Rummer, M. and Walker, T. (2006). "Venture Capital in Europe, Closing the Gap to the US" in Gregoriou, G., Kooli, M. and Kraussl, R. (ed.). Venture Capital in Europe, Elsevier, Amsterdam.
- Olsson, N. O. E., Frydenberg, S., Jakobsen, E. W. and Jessen, S. A. (2010). "In Search of Project Substance: How Do Private Investors Evaluate Projects? ." International Journal of Managing Projects in Business 3(2): 257-274.
- Omar, A. R. C., Ishak, S. and Rashid, M. R. (2010) "Consultation-Based Entrepreneurial/Business Learning: Malaysia Experience." African Journal of Business Management 4(12): 2508-2513.
- Onorato, N. R. (1997). "Trends in Venture Capital Funding in the 1990s." U.S. Small Business Administration, Office of Advocacy, Washington, D. C(August, 23rd).
- Ortin-Angel, P. and F. Vendrell-Herrero (2010). "Why Do University Spin-Offs Attract More Venture Capitalists? ." Venture Capital 12(4): 285-306.
- Papadimitriou, S. and P. Mourdoukoutas (2002). " Bridging the Start-Up Equity Financing Gap; Three Policy Models." European Business Review 14(2): 104-110.
- Pual, S., Whittam, G. and J. Wyper (2007). The Pecking Order Hypothesis: does it apply to start-up firms? Journal of Small Business and Enterprise Development, 14(1): 8-21.
- Parsley, C. and D. Halabisky (2008). " Profile of Growth Firms: A Summary of Industry Canada Research." Ottawa: Industry Canada.
- Patricof, A. (1989). "The Internalisation of Venture Capital." Journal of Business Venturing 1: 227-230.
- PWC report. (2003). "PWC Report .Venture Capital Investing Flat in Q4 2002." National Venture Capital Association (NVCA).
- Patton, M. Q. (1990). "Qualitative Evaluation and Research Methods." (2nd ed). Newbury Park, California: Sage Publication.
- Patton, M. Q. (2002). "Qualitative research and evaluation methods " (3rd ed.). Newbury Park, CA: Sage.
- Peneder, M. (2010). "The Impact of Venture Capital on Innovation Behaviour and Firm Growth.Venture Capital." International Journal of Entrepreneurial Finance 12(2): 83-107.

- Pessemier, E. A. (1882). "Product Management; Strategy and Organisation" NY John Wiley 347-351.
- Poindexter, J. B. (1976). "The Efficiency of Financial Markets: The Venture Capital Case." Unpublished Doctoral Dissertation, New York University, New York.
- Porter, M. E. (1990). "The Competitive Advantage of Nations." Macmillan, London.
- Powell, J. F. (2010). "The Impact of Mentoring and Social Networks on the Entrepreneurial Leadership Characteristics, Entrepreneurial Self-Efficacy and Overall Business Success of Woman Who Own Small Government Contracting Business." Regent University.
- Price, R. A. (2006). "Financing New Venture Creation." 5th edition, McGraw Hill Duskin Dubugue.
- Price, R. W. (2004). "Roadmap to Entrepreneurial Success; Powerful Strategies for Building a High-Profit Business " (1sted), AMACOM.
- Pukthuanthong, K. and T. Walker (2007). "Venture Capital in China; A Culture Shock for Western Investors." Management Decision **45**(4): 708-731.
- Ray, D. M. and D. V. Turpin (1993). "Venture Capital in Japan." International Journal of Small Business **11**(4): 39-56.
- Reid, S. and E. Garnsey (1996). "High Technology-High Risk? High Tech Firms are Not Risky and Need More Funding, Cambridge University Engineering Department Ritchie, J. and Lewis, J. (Ed.). Qualitative Research Practice: A Guide for Social Science Students and Researchers." California: SAGE Publication, Inc 2003.
- Roberts, E. B. (1991). "Entrepreneurs in High Technology; Lessons from MIT and Beyond." NY Oxford University Press.
- Ross, S. A. (1973). "The Economic Theory of Agency: The Principal's Problem." The American Economic Review **63**(2): 134-139.
- Rothaermel, F. T., Agung, S. D. and Jiang, L. (2007). "University Entrepreneurship: A Taxonomy of the Literature." Industrial and Corporate Change **16**(4): 691-791.
- Rothwell, R. and W. Zegveld (1982). "Innovation and the Small and Medium Sized Firm." London: Printer Publisher.
- Siegel, R. (2013). "Qualitative Research." Gifted Educational Publications.

- Saisana, M., d'Hombres, B. and Saltelli, A. (2011). "Rickety numbers: volatility of university rankings and policy implications." Research Policy **40**(1): 165-177.
- Salter, B. (2009). "China, Globalization and Health Biotechnology Innovation: Venture Capital and the Adaptive State." East Asian Science, Technology and Society: an International Journal **3**: 401-420.
- Sampat, B. N. (2006). "Patenting and US Academic Research in the 20th Century: The World Before and After Bayh-Dole." Research Policy **35**(6): 772-789.
- Sandberg, W. R., Schweiger, D. M. and Hofer, C. W. (1988). "The Use of Verbal Protocols in Determining Venture Capitalists Decision Processes." Entrepreneurship Theory and Practice: 8-20.
- Saunders, M., Lewis, P. and Thornhill, A. (2007). "Research Methods for Business Students." (4thed.). Harlow, England: Pearson Education.
- Schacht, P. and H. Wendy (2009). "The Bayh-Dole Act: Selected Issues in Patent Policy and the Commercialisation of Technology." Library of Congress Washinton DC Congressional Research Service.
- Shane, S. (2008). "The Illusion of Entrepreneurship: The Costly Myths That Entrepreneurs, Investors, and Policy Makers Live By New Haven." Yale University Press.
- Shuttleworth, M. (2008). "Pilot Study, from Experiment Resource " Experiement resources on pilot study survey.
- Siskos, J. and C. Zopounidis (1987). "The Evaluation Criteria of the Venture Capital Investment Activity: An Interactive Assessment." European Journal of Operational Research **31**: 304-313.
- Smith, D. J., Harrison, R. T. and Mason, C. M. (2010). "Experience, Heuristics and Learning: The Angel Investment Process." Frontiers of Entrepreneurship Research **30**(2): 1-13.
- Smith, S. W. (2010). "Beg, Borrow, And Deal? Entrepreneurship and Financing in New Firm Innovation." Federal Reserve Bank of Cleverland-Kauffman Foundation Conference on Entrepreneurial Finance(12-14th March): 1-34.
- Smith, A. J. (2005). Empirical Study of a Venture Capital Relationship. Accounting, Auditing and Accountability Journal, 18(6): 756-783.

- Smolarski, J. (2007). "Investment Analysis in the Private Equity Industry: A study of La - Porta's Argument." International Journal of Emerging Markets **2**(4): 335-347.
- Somsuk, N., Wonglimpiyarat, J. and Laosirihongthong, T. (2012). "Technology Business Incubators and Industrial Development: Resource-Based View." Industrial Management and Data Systems **112**(2): 23-32.
- Spathis, C., Koasmidou, K. and Doumpos, M. (2002). "Assessing Profitability Factors in the Greek Banking System: A multicriteria methodology." International Transactions in Operational Research **9**: 517-530.
- SRI (2012). "Entrepreneurship Training for University Inventors in University Technology Malaysia " Stanford Research Institute Consulting Group, California, USA.
- SMEs (2012). "Financing your Business." Official portal of SMIs SMEs Business Directory(29th January).
- Sauermann, H. (2008). "Individual Incentives as Drivers of Innovative Processes and Performance" Ph.D. Thesis Durham, USA: DukeUniversity.
- Standeven, P. (1993). "Financing the Early Stage Technology Firms 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, Montreal.
- Sufian, F. (2009). "Determinants of bank efficiency during unstable macroeconomic environment: Empirical evidence from Malaysia " Research in International Business and Finance **23**: 54-77.
- Sun, H., Ni, W. and Leung, J. (2007). "Critical Success Factors for Technological Incubation: Case Study of Hong Kong Science and Technology Parks." International Journal of Management **24**(2): 346-363.
- Tarawneh, M. (2006). "A comparison of financial performance in the banking sector: Some Evidence from Omani Commercial Banks." International Research Journal of Finance and Economics **3**: 101-112.
- Taylor, B., Sinha, G. and Ghoshal, T. (2006). "Research Methodology: A Guide for Researchers in Management and Social Sciences." (Eastern Economy Ed), New Delhi: Prentice-Hall.

- Tesch, R. (1990). "Qualitative Research: Analysis Types and Software Tools"
Bristol, PA: Falmer Press.
- Thiruchelvam, K., Chandran, V. G. R., Kwee, N. B., Yaun, W. C. and Sam, C. K.
(2010). "Towards Effective Policies for Innovation Financing in Asia-
Financing Innovation, the Experience of Malaysia." Working Paper Report
Submitted to the IDRC Project.
- Thompson, G. (2004). "Getting to know the knowledge Economy: ICTs, Networks
and Governance." Economy and Society **33**(4): 562-581.
- Thomas, R. D. (2006). "A General Inductive Approach for Qualitative Data
Analysis". American Journal of Evaluation, 27(2): 237-246.
- Tidd, J. and M. Brocklehurst (1999). "Routes to Technological Learning and
Development; An Assessment of Malaysia's Innovation Policy and
Performance." Technological Forecasting and Social Change **62**(3): 239-257.
- Times, N. S. (2011). "Malaysian Government Allocation for Technology
Development " Malaysian New Straits Times Daily Newspapers(20th May):
TP-9.
- Trochim, W. and P. D. James (2006). "Research Methods Knowledge Base. (3rd
Ed).Mason." Ohio: Thomson Custom Publication.
- Truxillo, D. M. and F. Fraccaroli (2011). "A person-centered work psychology:
Changing paradigms by broadening horizons " Industrial and Organisational
Psychology **4**: 102-104.
- Tyebjee, T. T. and A. V. Bruno (1981). "Venture Capital Decision Making, in
Frontiers of Entrepreneurship Research, K. H. Vesper (ed), Babson
College,Wellesley, Mass, 281-320.Taylor, P. and Houlder,V. (1995). Donkey
Kong Proves King of the Games." Financial Times(19th April): 10.
- Tyebjee, T. T. and A. V. Bruno (1984). "A Model of Venture Capitalist Investment
Activity." Journal of Management Science **30**(9): 1051-1066.
- UK Patent Office, U. P. (2013). "UK Patent Laws." The Patenting Office of the
United Kingdom, London.
- UCD (2011). "Lecture Series by Professor Roche CDI(2011) Centre for
Entrepreneurial Studies." Department of Entrepreneurial Studies,Professor
Roche CDI(2011) Centre for Entrepreneurial Studies.

- Ulku, H. (2007). "R and D, Innovation, and Growth; Evidence from Four Manufacturing Sectors in OECD Countries." Oxford Economics Papers **59**: 513-535.
- Van Maanen, M. (1990). "Researching lived Experience: Human Science for an action Sensitive Pedagogy." London, Canada: The University of Western Ontario.
- Vanacker, T., Manigart, S., Mueleman, M. and Sels, L. (2011). "A Longitudinal Study on the Relationship between Financial Bootstrapping and New Venture Growth." Entrepreneurship and Regional Development: An International Journal **23**(9): 681-705.
- Von Proff, S., Buenstorf, G. and Hummel, M. (2012). "University patenting in Germany before and after 2002: what role did the professors' privilege play? ." Industry and Innovation **19**: 24-44.
- Vos, E., Yeh, A. J., Carter, S. and Tagg, S. (2007). "The Happy Story of Small Business Financing." Journal of Banking and Finance **31**: 2648-2672.
- Wang, S. and H. Zhou (2004). "Staged financing venture capital: moral hazard and risks." Journal of Corporate Finance **10**: 131-155.
- Wasilewski, S. M. (2010). "Model-Based Management in Start-Ups: A Retrospective on the Role of Models in Building New Financial Businesses." Journal of Kybernetes **39**(9/10): 1659-1677.
- Weiss, H. M. and D. E. Rupp (2011). "Envisioning a person-centric work psychology." Industrial and Organisational Psychology **4**: 138-143.
- Wells, W. (1974). "Venture Capital Decision Making" Unpublished Doctoral Dissertation, Carnegie Mellon University.
- Wetzel, W. E. and J. Freear (1996). "Promoting Informal Venture Capital in the United States; Reflections on the History of the Venture Capital Network, in Harrison, R. T. and Mason, C. M. (eds). *Informal Venture Capital; Evaluating the Impact of Business Introduction Services*." Woodhead-Faulkner, Hemel Hempstead: 61-74.
- White, S., Gao, J. and Zhang, W. (2005). "Financing New Ventures in China: System Antecedents and Institutionalization." Research Policy **34**: 894-913.

- Wiltbank, R., Read, S., Dew, N. and Sarasvathy, S. D. (2009). "Prediction and Control under Uncertainty; Outcomes in Angel Investing." Journal of Business Venturing **24**: 116-133.
- Winton, A. and V. Yerramilli (2008). "Entrepreneurial Finance; Banks Versus Venture Capital." Journal of Financial Economics **88**: 51-79.
- Wong, A., Bhatia, M. and Freeman, Z. (2009). "Angel Finance; The other Venture Capital" Strategic Change **18**: 221-230.
- Wonglimpiyarat, J. (2010). "Commercialisation Strategies of Technology: Lessons from Silicon Valley." Journal of Technology Transfer **35**(2): 225-236.
- Wonglimpiyarat, J. (2011). "Government Programmes in Financing Innovations: Comparative Innovation System Cases of Malaysia and Thailand." Technology and Society **33**: 156-164.
- Wright, M., Karsai, J., Dudzinski, Z. and Marovic, J. (2006). "University Spin-Out Companies and Venture Capital." Research Policy **35**(4): 481-501.
- Yim, D. S. (2006). "Concept of National Innovation System. Enhancing the Competitiveness of SMEs." Sub National Innovation Systems and Technological Capacity-Building Policies. Seoul.
- Yin, R. K. (1994). "Case Study Research: Design and Method, (2nd Ed.)." London: Sage Publications Ltd.
- Yin, K. R. (2003). "Case Study Research: Design and Methods, (3rd Ed.)." Applied Social Research Methods Series, vol. 5. sage publications ltd. califonia.
- Yin, K. R. (2009). "Case Study Research: Design and Methods, (4th Ed.)." Applied Social Research Methods Series, vol. 5, Sage publications Ltd, California.
- Yin, K. R. (2012). "Applications of Case Study Research". Sage Publications Ltd. California.
- Yip, Y., Su, Y. and Ang, H. (2009). "Effects of Underwriters, Venture Capital and Industry on Long Term Initial Public Offering Performance." Managerial Finance **35**(8): 700-715.
- Youtiea, J. and P. Shapira (2008). "Building an Innovation Hub; A Case Study of the Transformation of University Roles to Regional Technological and Economic Development." Research Policy **37**: 1188-1204.
- Zahra, S. A. and A. P. Nielsen (2002). "Sources of Capabilities, Integration and Technology Commercialisation." Strategic Management Journal **22**: 377-398.

- Zeng, S. X., Tam, C. M., Tong, T. K. L. and Sun, P. M. (2010). "Creating Synergy for Cross-Cultural Teams in International R&D Projects." African Journal of Business Management **4**(13): 2625-2633.
- Zhang, Y., Yang, J., Au, K. and Reynolds, P. D. (2011). "Anatomy of Business Creation in China: Initial Assessment of the Chinese Panel Study of Entrepreneurial Dynamics. New Business Creation " International Studies in Entrepreneurship **27**: 95-121.
- Zutshi, R. K., Tan, W. L., Allampalli, D. G. and Gibbons, P. G. (1999). "Singapore Venture Capitalists (VCs) Investment Evaluation Criteria; A Re; Examination." Small Business Economics **13**: 9-26.

APPENDIX A: Consent Letter

 UTM <small>UNIVERSITI TEKNOLOGI MALAYSIA</small> RESEARCH UNIVERSITY	Faculty of Management and Human Resource Development	Faculty of Management and Human Resource Development Universiti Teknologi Malaysia 81310 UTM Johor Bahru Johor Darul Ta'zim Malaysia															
Tel: +6(0)7-5531839 Fax: +6(0)7-5566911 http://www.fppsm.utm.my Email: inquiry@fppsm.utm.my																	
OUR REF : YOUR REF :	UTMJ.29.03/14.15/10/1 [ld. 7 (162)	25 October 2011 27 Zulkaedah 1432															
TO WHOM IT MAY CONCERN																	
Dear Sir/Madam																	
<u>PHD's Project</u>																	
This is to certify that the bearer of this letter is a student at Faculty of Management and Human Resource Development, UTM who is currently pursuing a Doctor of Philosophy in Management - PHM. It would be greatly appreciated if you could assist his in his field work in order to complete his thesis.																	
<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Name</td> <td style="width: 10%;">:</td> <td>AJAGBE AKINTUNDE MUSIBAU</td> </tr> <tr> <td>I/C No</td> <td>:</td> <td>A 00656182</td> </tr> <tr> <td>Title of Project</td> <td>:</td> <td>How Venture Capitalists in Malaysia Evaluate Technology Based SMEs They Fund</td> </tr> <tr> <td>Supervisor's</td> <td>:</td> <td>Dr. Kamariah Bte Ismail/Dr. Aslan Amat Senin</td> </tr> <tr> <td>Telephone No</td> <td>:</td> <td>019-7726991/019-7102357</td> </tr> </table>	Name	:	AJAGBE AKINTUNDE MUSIBAU	I/C No	:	A 00656182	Title of Project	:	How Venture Capitalists in Malaysia Evaluate Technology Based SMEs They Fund	Supervisor's	:	Dr. Kamariah Bte Ismail/Dr. Aslan Amat Senin	Telephone No	:	019-7726991/019-7102357		
Name	:	AJAGBE AKINTUNDE MUSIBAU															
I/C No	:	A 00656182															
Title of Project	:	How Venture Capitalists in Malaysia Evaluate Technology Based SMEs They Fund															
Supervisor's	:	Dr. Kamariah Bte Ismail/Dr. Aslan Amat Senin															
Telephone No	:	019-7726991/019-7102357															
Please do not hesitate to contact the supervisor above for further information.																	
Thanking you in anticipation for your kind help.																	
"INSPIRING CREATIVE AND INNOVATIVE MINDS"																	
Yours sincerely,																	
																	
DR. AHMAD BIN JUSOH Deputy Dean (Postgraduate Studies and Research) Faculty of Management and Human Resource Development For Vice Chancellor UTM, Johor Bahru. Tel: 07-5531900 ✉ ahmadj@fppsm.utm.my																	
cc : amajagbe2@live.utm.my XCI - KDOJ - 519 Universiti Teknologi Malaysia 81310 Skudai Johor																	
  																	
www.utm.my																	
Inspiring Creative and Innovative Minds																	

APPENDIX B: Interview Schedule for Venture Capital Firms in Malaysia

How Venture Capitalists Evaluate Technology SMEs they Finance in Malaysia

Introduction

Section A: Demographics of Respondents

First of all, please tell me about your personal background:

- Your length of relevant work experience
- Educational qualification
- Professional qualification
- Job position/title

Also about your company background:

- Date of establishment
- Management structure
- Staff strength
- Roles and objectives

First Question is about the funding of VCF

- 1.1 From what sources does your VCF obtain its capital?
- 1.2 What is the total capital under management of your VCF?
Question number 2 is about the financing of technology small and medium sized enterprises
- 1.3 How does VCFs finance nascent high technology ventures?
- 1.4 From what sources do you source business proposals you screen for funding?
- 1.5 What are your preferred investment stages and why?
- 1.6 What is your investment size by stage of development?
- 1.7 What are your investment preferences?
- 1.8 What are the difficulties you encounter in financing technology businesses?
- 1.9 What other financing options are available to TBFs?
- 2.0 How can government help bridge the early staged financing gap?
- 2.1 How do you plan to cash-out your investment?

2.2 What is your average length of investment per stage of growth?

What steps are involved in your investment decision process? (Sequential order)

- 2.3 Can you please list the steps you follow when screening several proposals on your table?
- 2.4 What are those things you look out for in each proposal?
- 2.5 What determines if a particular proposal will scale through to the next level of screen?

Third question is on venture capital evaluation criteria

2.6 What were the important factors you consider significant while evaluating potential Investee Company's business proposal prior to funding?

Fourth question is on the value added contribution of VCF to investee companies

- 2.7 Do you offer any other service to the company you finance?
- 2.8 Please elaborate on what other value-added services you provide to investee companies?
- 2.9 How do you monitor your investment?
- 3.0 How do the add-on services enhance performance of start ups?

Fifth question is about the commercialisation process of innovative products

- 3.1 Has your VCF been involved in the commercialisation of some start ups?
- 3.2 What steps are involved in Commercialising a new product (sequential order)?
- 3.3 What problems do you encounter during the commercialisation process?
- 3.4 How can government help in enhancing commercialisation of more innovative products?

Sixth question is on entrepreneurial intentions/motivations of technology entrepreneurs

- 3.5 What are those characteristics you perceive may encourage entrepreneurial intentions/motivations and how?
- 3.6 Do you think demographic characteristics of an individual influence ability to become an entrepreneur?

Seventh question is on the performance of funded firms

3.7 On what important criteria can you rate the performance of funded firms?

Eight questions is on the technology stage of nascent ventures you fund (early, prototype and later stage)

- 3.8 What factors determine what stage to invest in?
- 3.9 What factors determine how much to invest per stage?
- 4.0 How do you encourage Death Valley financing?
- 4.1 How do you encourage early stage financing?
- 4.2 How do you determine firms suitable for funding?

Ninth question talks about the equity involved in investee funding-

- 4.3 Does VCFs own equity in companies they fund?
- 4.4 How much do you invest per stage?
- 4.5 How much equity do you normally take?
- 4.6 How do you determine stake- holding?
- 4.7 Does VCFs invest alone or co-invest with other private investors (VC syndication).

APPENDIX C: Interview Schedule for Technology Entrepreneurs

How Venture Capitalists Evaluate Technology TBFs in Malaysia

Introduction

Section A: Demographics of Respondents

First of all, please tell me about your personal background:

- How old are you now?
- How old were you when you established this company?
- How old were you when you got this innovative idea?
- What was your length of relevant work experience before setting up your own company?
- What is your Educational qualification?
- What is your Professional qualification?
- What is your marital status?
- What is your position in this company?
- Can you tell me about your family background?
- Who is your role model? Who influenced you most in setting up this company?
- What other characteristics would you say motivated you most in setting up your own company?

Also about your company background:

- What year did you set up your company?
- How many staff do you have?
- What industry/product does your innovation belong? High tech or low tech
- Can you tell me about the management structure of your firm?
- What stage of growth does your firm belong right now?

Section B

The first question is about the funding structure of your company (Friends, family, personal savings, government, venture capital, bank loans?)

- 1.1 From what sources did you raise your initial capital when you commenced business?
- 1.2 How many round of funding have you received so far?
- 1.3 What are the sources of fund invested in your company?
- 1.4 What is the investment size you received at each stage of growth?
- 1.5 What difficulties did you encounter in trying to raise growth/expansion finance?
- 1.6 What other capital sources are available to fund your business?
- 1.7 How much is the total equity invested so far in your firm from various sources?
- 1.8 What percentage equity have you given out so far?
- 1.9 How do you negotiate percentage of equity to relinquish?
- 2.0 Are you still considering receiving further round of financing?
- 2.1 If yes, for what purpose do you wish to raise additional capital and what source?
- 2.2 In what ways can government help to encourage the financing of more tech products?
- 2.3 From what sources did you source potential investors before approaching them with your business proposal?

The second question is about the exit options for your company that is, Do you plan to grow your company to IPO or sell out to established firm?

- 2.4 How do you wish your equity investors to cash-out their investment from your company?

The third question is on Venture capital investment decision process

2.5 What was your experience like when you submitted your business proposal to venture capitalist for screening? What steps were adopted during this process?

The fourth question is on Venture capital evaluation criteria.

2.6 What important factors do venture capitalists considered significant in your business plan when evaluating your business proposal? (Selection criteria)

The fifth question is about the Value added from equity investor after venture capital involvement

- 2.7 Please elaborate on the added value equity investor have contributed to the growth of your company?
- 2.8 What other form of support do you expect from equity investors that are currently not being offered?

The sixth question is on the Performance of Investee Company after venture capital infusion.

2.9 Can you highlight in details what areas your company performance has improved significantly two years after equity investor's involvement?

The seventh question is on Motivations to innovate/ Opportunity recognition of technology

- 3.0 What are those factors that motivated you to develop entrepreneurial tendencies?
- 3.1 How did you identify the opportunity that you innovated

The eight questions is on the Commercialisation process of your company

- 3.2 What happened during the commercialisation of your product?
- 3.3 What steps where involved in the commercialisation process of your venture?
- 3.4 In what ways where you involved during this process?
- 3.5 What problems where encountered during that process?
- 3.6 In what ways can government help to encourage the commercialisation of more tech products?

APPENDIX D1: Emerging Attributes of Funding Structure for TBFs

No	Categories	Sub-categories	Attributes
	Funding structure	Initial sources	<ul style="list-style-type: none"> • Government sources, • Personal sources, • Family sources, • Friends, • Private agencies, • Awards, • Suppliers, • Financial bootstrapping, • Bank loans
		Rounds of funding	<ul style="list-style-type: none"> • Depend on nature of innovation, • Depend on funding agencies, • Depend on stage of growth: • It can be; first round of funding, • Second round of funding, • Third round of funding, etc...
		Investment size & stages	<ul style="list-style-type: none"> • Depend on industry of technology, • Depend on stage of innovation: • It can be; short term innovation contract, or • Long term innovation contract.
		Problems in funding TBFs	<ul style="list-style-type: none"> • Preparing the business proposal, • Pitching innovation to potential investors, • Access to potential investors, • Skeptical view of Malaysian innovation, • Lack of trust for university researchers by industry, Must develop good networking, • Negotiation with industry, • Low investment in R n D by industry, • Lack of information on how to get fund, • Problem of identifying the right funding agency, • Securing guarantors for fund, • Securing permission to use company facilities, • Convincing funders to understand commercial sustainability of innovation, • Public acceptance, • Inadequate facilities in public universities to aid research, • Amount allocated per stage is sometimes not enough, • Criteria for selection has gradually become more stringent, • Lack of expertise to sustain the R and D stages,
		Ownership structure	<ul style="list-style-type: none"> • Inventor: • CEO: • University at ratio 4:3:3, • Inventor or CEO takes the larger stake other partners share based on contribution, • At initial stage; • University- 90%, • Academic inventor-5%, • CEO-5%, • At the middle stage; • University-85%, • Academic inventor-5%, • CEO-10%, • At later stage; • University-40%, • Academic inventor-30%, • CEO-30%, • Vesting schedule, • Active and passive investors