

Internet Marketing Strategy for Commercialisation of Global University Research: An Exploratory Analysis

¹Wan Mohd Hirwani Wan Hussain, ^{2,3}Wan Kamal Mujani, ⁴Mohd Nizam Ab Rahman,
^{2,3}Noor Inayah Yaakub, ⁵Zinatul Ashiqin Zainol and ⁶Kamaruzaman Jusoff

¹Graduate School of Business (GSB),

²Department of Arabic Studies and Islamic Civilization, Faculty of Islamic Studies,

³Institute of West Asian Studies (IKRAB),

⁴Faculty of Engineering & Built Environment,

Universiti Kebangsaan Malaysia, 43650, Bangi, Selangor, Malaysia

⁵Faculty of Law, Universiti Kebangsaan Malaysia,

43650 UKM Bangi, Selangor, Malaysia

⁶Faculty of Forestry, Universiti Putra Malaysia, Serdang 43400 Selangor, Malaysia

Abstract: Despite the increasing importance of the Internet as a marketing tool to the SME's (Small Medium Enterprise) development and for manufacturing company, relatively few studies have been done on measuring the marketing mechanism and effectiveness of the commercialization university research and this exploratory study was designed to fill this gap. Technology transfer and commercialization from university is not one single interaction but it contains a lot of mechanism and methods that can be applied depending on the situations and geographic locations. The use of the Internet in the technology transfer process is quickly becoming one of the preferred tools for both the academic research centres and the industry leaders. This study argues that the seemingly less stringent screening criteria been discussed about the potential of internet marketing to promote commercialization university research and attract the practitioners/entrepreneur. Using the literature review this article try to give new conceptual analysis about the commercialization university research using the internet marketing strategies that can promote the collaboration with practitioner a better ways. Close interactions between university and industry is a main element in commercialization university research and the author provides experience based on Malaysia University.

Key words: Commercialization Malaysia university research • University technology transfer • Internet marketing • Interactions University and industry

INTRODUCTION

One of the striking problems in commercialization university research in Malaysia University is facing long time to introduce new inventions or services to the industry. In addition, the Malaysia University are still need time to changes their paradigms from ivory towers [1-3] to a place to generate income and revenue to the university or country. Transforming scientific and technological knowledge generated in Malaysian University research to marketable product is not effective as in United States and United Kingdom.

Commercialization university research in Malaysia university are still new and university should not be blamed entirely when fail in this process; the lack of funding, academic entrepreneurship culture and university policy are also responsible. Transforming Malaysia University to gear the economic development should be a prominent one and most university in Malaysia are not playing this role. Fundamentally change and attitude towards the commercialization university research are important to enhance this process. Malaysia University should change traditional mission and marketing techniques to making a big contribution to the

industry and one of the mechanism is using the internet/online interactions to interact with the industry to help in the commercialization process of Malaysian inventions. The internet has exploded as the powerful medium that effect our lifestyle and university/academic profession is no exception. This article explores the nature interaction, dimension and consequences of the emerging Internet and university technology are related to each other as the marketing tools to promote invention and innovation from the university to the industry and practitioners.

Using the internet, the society will get the information about new invention made by the university. As we know the importance of the internet to our lifestyle cannot be denied, this revolution started in 1999 and it is predicted that with even the most modest estimates of connectivity to the Internet reaching over one billion people world-wide by 2005 [4]. Westermeier [5] mentioned that the Internet is global in nature and website are accessible to anyone in the world with a computer and telephone line and it also cut the across all jurisdictional and geographic borders. Based from WMH W Hussain *et al.* 2009; 2010 internet marketing strategy are also still new in Malaysia and there should be a lot of developments be made to promote commercialization using the internet marketing strategies. Strauss and Frost [6] claim that such characteristics will enable the Internet to replace traditional mass media. The Internet has become established as a fully- fledged global marketing and communications channel and can deliver many aspects of any organisation's global marketing strategies ranging from branding, database building and customer acquisition to providing customer service, forming relationships, building loyalty and installing advocacy in existing customers [7].

According to the Google.com there are more than 16 million website that related to the "university technology transfer" (without quotes) and looking to the Oxford Isis Innovation (www.isis-innovation.com/) website related to the technology transfer made specifically by the Oxford University shows that most of the innovation made by the researcher at this distinguished university have the website that related to it such as OrganOx (www.organox.com), Zyoxel (www.zyoxel.com) ISE (<http://www.ise-oxford.com/>) and many more. Stanford University also using this approach to marketing and commercialize their invention. One of the greatest inventions that from this university are Google.com one of the best search engine in the world. This innovation began in March 1996 by the Larry Page and Sergey Brin

and was founded by the National Science Foundation. MIT University also have their greatest innovation that give impact to the world and using the internet as their marketing and promotion tools to show to the society. In this article we try to emphasis the important of the internet marketing as the new mechanism to promote commercialization university research and get better interactions between the practitioners.

The first section of this article will look to the commercialization process that happened in Malaysia University. As we know commercialization university research started in United States since the introduction of the Bayh Dole Act 1980 and this act has made a long of changes and stimulates the commercialization process of most university in US [8]. However, there is still lack of understanding about the commercialization process happened in developing countries such as Malaysia since most of the commercialization processes of the university are focussed on the university in USA and in Europe rather in other countries [9-10].

Secondly, it will look to the current development of commercialization process in Malaysia. Third section, this article will look to the internet marketing strategy and compared with the offline strategy that can be used in commercialization university research. Fourth section will show the internet marketing strategy that can available for the commercialization university research. Then, this article will look to the legal implications and barriers that occur in internet marketing interaction for commercialization university research. Lastly, this article will give recommendations the role of internet marketing that can play in promoting sustainable development in commercialization university research.

Commercialization of University Research and Technology Transfer in Malaysia:

There a lots of definition that related to the university technology transfer [11] give the definition of university technology transfer as the transfer of knowledge and technologies from scientific institutions into the marketplace is an important factor for innovative performance at the firm-, industry- and country level. Universities have long been seen as organizations devoted to the creation and public dissemination of knowledge [12]. Today, universities hold important patents on many life-saving drugs, including the antiretroviral drugs stavudine (Yale University), abacavir (University of Minnesota), lamivudine (Emory University) and enfuvirtide (DukeUniversity). By actively engaging in technology development, universities are demonstrating ambidexterity in their ability to produce both scientific knowledge and technology outputs [13].

It appears that Bayh-Dole Act has been acknowledge to brought research universities closer to practitioners and entrepreneurs to looking commercialize university invention [14]. Many universities have formal policies for encouraging their academic staff to seek industry assignments for a specified share of their time [15]. Other policies encourage universities and firms to engage in partnerships and personnel exchange, for instance via university-industry centers or science parks [16-19]. This study argues that the seemingly less stringent research done about the commercialization of university invention based on the Malaysia University. This have been supported by Mohar Yusof [20] that mentioned that there is a paucity research done about the commercialization university research in Malaysia university. Then, WMHW. Hussain *et al.* [21] mentioned about the online legal marketing but from his research only focus on the new roles of lawyer to promote commercialization on the Internet besides filling for the IP and consulting researcher. In other words, this article will give an insight about the literature of the university commercialization invention based on Malaysia context especially in Malaysian University. Rather than concentrating on 'blue-skies' research, academics are seen increasingly to be eager to bridge the worlds of science and technology, in an entrepreneurial way, by commercializing the technologies that emerge from their research [22-23]. Issues on patenting, licensing and academic entrepreneurs are important for the commercialization university research but there is only little literature on this subject [24-27]. Furthermore, little attention has been focus to the marketing the invention using the internet as the marketing platform. This is because the nature of the commercialization university research that more focused on the start-up company, licensing joint venture collaborations need to more on the "human interactions" and don't give an understanding about internet marketing strategy. Given that the commercialization process can be done on many mechanisms, there is room for the discussion and understanding the commercialization process in university and how it should be managed [28]. By knowing this will also help eliminating boundaries between the industry and university and strengthen the interactions deeply. Overall, this study contributes to the existing literature about the commercialization university inventions and technology transfer based from university research in Malaysia scenario.

Learning is an indirect benefit in that industry projects may not lead directly to novel scientific outputs, but may lead to new research problems and

learning about new industrial applications [29]. Oakey's [30] study of technology start-ups in the United Kingdom shows that both the amount and source of initial funding vary considerably by field. However, there is unlikely to be "one best way" to manage commercialization as disciplines will differ in terms of technological opportunity and commercial potential [31].

Internet offers much opportunity and easily helps the customer to fulfil their needs. Using the internet can also be used to strengthen the relationship between the industry and university. This is because the relationship between university and industry are weak mentioned by Colyvas *et al.* [32] and using the internet is most vital element to increase this network. This has been suggested by Bell *et al* [33] that the customer needs to be attracted to an innovation and that "attraction" may be function of the seller's advertising expenditure, the effectiveness of the advertising, the price of the product, the reputation of the company, the service given during and after purchase, the location of retail stores and much more. From this statement show that internet can be used as an important medium in the innovation. University must use this "tools" in order to commercialize their invention to attract the investor and at the same time give information to the public.

Internet Marketing vs Offline Marketing: According to Bozeman [34], the effectiveness of knowledge transfer depends upon five broad dimensions: the transfer agent, the transfer media, the transfer object, the demand environment and the transfer recipient. Marketing invention from university to industry is the crucial element in commercialization university research. Most of the commercialization university research starts after the IP's protection has been made. Then, after that the university will analyse the appropriate mechanism to transfer and commercialize that invention to the industry. At this stage, the university will focus what are the best techniques whether want to do licensing agreement, university based start-up of joint venture collaborations. The marketing potential of the Internet has been realised by organisations over the past few years, with its popularity as a medium to target consumers increasing and many academics predict it will increase in the future [35-37]. As being said by Mohar Yusof [38] that marketing activities for universities technology transfer as still lack and need a lot improvement in Malaysia. By using the internet marketing strategies help the university in Malaysia focus on this technique to try penetrated and interact with the industry.

Table 1: Comparison between Internet Marketing and Offline/Traditional Marketing

Mechanism	Internet Marketing Strategy	Offline/Traditional Marketing
Money	Require less money and get more exposure about the invention or services that have been advertised.	Required more money to put the advertisement at the newspaper, radio or television. Most of the inventions are still on infancy state and need money for the development purpose.
Targeted Customer	Using internet marketing helps the university/researcher to target the customer based on that invention. It very easy for the inventor to market the product to the industry. This will help the university know about the market and understand what industry needs.	Offline advertising cannot specify and categories the potential customer. Return of Investment (ROI) from this marketing cannot be measured.
International Interactions	Using internet marketing helps to commercialize inventions to market the potential invention to international level. It will also attract venture capital that interested to invest on that invention.	This type of marketing only focused on the geographic locations and take time to scale up to international level. If the inventions need more money it takes time to find potential and reliable venture capital.
Time 24/7	Internet marketing provide 24 hour a day and 7 day a week to help the researcher promoting their invention. By establishing a website that inventions will stay on the internet and help promote the invention to the industry/entrepreneur.	Only limited to the 8 hour per day and depends on the budget and size of the campaign.

Table 2: Trade Offs Associated with the increase in University-Industry Partnership [83]

Benefits	Drawbacks
Additional income for university	Negative impact on culture of Open Science
More Rapid Technological Emphasis	Negative Impact on Student/Adviser Relations
Choices Regarding Technological Emphasis	Could reduce the Quantity of Basic Research
Positive Effects on Curriculum	Could Reduce the Quality of Basic Research
Local/Regional Economic Development	Could Affect Types of Research Question Addressed
Two-Way Knowledge Transfer	Academics Could Spend Less Time on Teaching

Internet Defined: There have much been said about the important and impact of the internet to our lifestyle. The internet is collection of networked computers that currently are the playground of the universities and government agencies. It then uses to transmit the knowledge and share the knowledge within the network.

“The development of browsers and the World Wide Web removed these limitations. Web sites containing text, graphics, audio and video could be accessed simply with the click of a mouse. The browser based web grew exceptionally quickly from its beginnings in 1991, allowing it to become a significant development in Western Society. By 1998 25 percent of America’s households had Internet access [39]. Current figures suggest 50% of New Zealanders have access to the internet at home or at work [40].”

Internet Marketing for Commercialization University Research: In this article, we compare the internet marketing and the offline advertising principle to give more understanding about this topic. Based from the table 1, show the comparison made by us to show the

internet marketing strategy and offline marketing strategy. Using the internet is less expensive and gives value to the money rather than offline marketing. Supported by projections from Forrester Research which indicate that by 2004 companies will be allocating a median of \$720,000 to their online marketing budgets, compared with the \$240,000 spent in 1999 [41]. Advertising on a web site might cost \$5 for each 1,000 individuals who view it, while direct mail could cost \$50 to reach the same 1,000 people [42]. Internet marketing also help to create the relationship and improve the network within the university and industry and practitioners, for example, when future customers visit web sites on the internet, they will leave their information that includes email addresses and clues about their lifestyle and interests this can be to enhance the future collaborations [43].

Types of Internet Marketing Strategies : The use of internet for marketing is growing at rapid rate and it very hard to slow it down. On 2000, a survey of U.S online households found that 47 percent had made online purchases and this number are increased every year [44]

and furthermore more than \$ 2.3 billion U.S consumers spent over the internet during Christmas season on 1998 [45]. Comparison with Moore's Law, that mentioned about where computer speed and capacity double every 18 months, the Internet seems to double in capacity (if not speed) every 18 week [46]. With the growth of the Internet, electronic peer-to-peer communication has become an important phenomenon [47]; e-communication enables people to share information and opinions with other people [48] more easily than ever before. By using the internet as the marketing strategy for commercialization university invention will help Malaysian university increase the time production and introduce new invention to the market or industry. This type of technique also help to reduce the connectivity and improve between the university and industry [49] also help to increase the social integration within the university to the market [50].

It is widely accepted; at least at the United States that collaboration university-industry are most important for the strategic response to global competition. By using the internet as the platform for collaboration and commercialization purposes, the university can enhance the relationship with the industry. There are many types of internet marketing strategy that can be implemented to promote university research.

Social Networking: Social networking is new trends and has grown tremendously over the past several years. Nowadays, people use it to connect with friends and create new relationship from all over the world. Social networkings also help to gain popularity and many celebrities use this to connect with their fans and friends. The popularity of the social networking can be use in commercialization university research to the industry. Because of the working environment within university and industry that is different by using social networking can help to accelerate this process. The researchers can used the social sites such as Facebook, LinkedIn, Myspace, Friendster and the latest social networking sites Twitter to get attention from the industry and to promote their invention. Using social networking also can create relationship and make the industry interested to invest money for that invention.

The social network then facilitates online interactions and connections among people [51]. Friend-networking sites, such as MySpace and Facebook, are a specific type of Social Networking Sites (SNS) that have grown rapidly in popularity over the past few years [52]. The social

networking site MySpace ranks sixth in overall web traffic, with over 47 million unique US visitors each month [53]. The web traffic data for Facebook, a social networking site oriented towards college students, shows more than 120 million unique US visitors a month [54]. By implemented social networking with the commercialization university will help the university remove the barriers and interact more deep to collaborate in the future. Total facebook user in Asia is more than 60 millions [55] and more than 5 millions users are from Malaysia. Social Networking sites can be used as the bridge to connect the university and industry by promoting university invention. Using the social networking online also can create word of mouth marketing activities. Organizations recognize that this word-of-mouth exchange exists and deliberately employ strategies to turn communication among consumers into "word-of-mouth marketing" [56]. We will elaborate on the next section about the word of mouth marketing technique.

WOM (Word of Mouth Marketing): Another mechanism that can be implemented to commercialization activity university invention is the word of mouth marketing. Word-of-mouth communication has received extensive attention from both academics and practitioners for decades [57]. This types of communications plays and integrate an important role in shaping consumer's attitude and behaviours [58] and also using the word of mouth marketing provide a better influence on consumer behaviour rather than print ads, personal selling and radio advertising in certain circumstances [59-60]. Commercialization university invention using this mechanism help the researcher promotes their invention, plus also help the invention receive an attention from the industry. Using word of mouth marketing also can be implemented using the internet. It has been said that the new communication structure is an amorphous web of connections [61]. Word-of-mouth has been shown to have a substantial impact on product choice [62], as well as in choosing services [63-64]. Research done by Katz and Lazarsfeld [65] show that using word of mouth was the important sources to influence the purchase of good and food products. Their research give an important contribution about the effectiveness of the word of mouth advertising, however word-of-mouth is gaining new significance by the unique properties of information and communication technologies, like the Internet [66] and thus it is important to explore how the electronic environment may affect word-of-mouth behaviour.

The internet helps to market and transfer the technology from university effectively and using the “word of mouth” made the researcher connect with the industry easily. Dellarocas [67] describes the phenomenon as follows: “word-of-mouth is being given new significance by the unique property of the Internet” (p. 1407). Using word of mouth will generate the industry attention about the invention from the university. This also increases the confidence from industry about the capabilities of Malaysian researchers.

Viral Marketing: Viral marketing happened after the word of mouth marketing. Viral marketing occurs when a message spreads among individuals online quickly and exponentially [68-69]. The concept of viral marketing can also be used in promoting health and disease prevention topics, it already been applied in promoting public health to limited extent [70]. Phelps *et al.* [71] have defined viral marketing as “the process of encouraging honest communication among consumer networks” (p. 334). Based from the Montgomery [72] mentioned that viral marketing is “a type of marketing that infects its customers with an advertising message, which passes from one customer to the next like a rampant flu virus” (p. 93).

Commercialization university invention using these types of internet marketing can also help in promoting university invention. However we feel that this technique needs a proper strategy to make it become viral and give infection to the surrounding environment. This technique also been known as the buzz marketing technique and it help to create the potential for exponential growth in the message's exposure and influence [73]. The key characteristic of this influence is that it is interpersonal and informal and takes place between two or more people, none of whom represent a commercial selling source that would gain financially from the exchange of information [74].

Video Advertising: Another internet marketing strategy that can be used is the video advertising. With internet as the platform the online video advertising gains a wide attention and becoming increasingly pervasive. Unlike other internet marketing strategy, this types of marketing using the video to promote university inventions. The researcher needs to create a video that describe their invention and put it on the video sharing site such as [75-77] and many more in the internet. Using this technique can help the researcher save time, money and

increase the commercialization activity. Because of the commercialization involve other agent such as venture capital, entrepreneur and practitioners, this technique important to help and create attention from them. This is because nowadays the people love to see 20 minutes video rather than read the 10 pages article. By transforming the university invention as the video will help the entrepreneur to watch it and contact the researcher to know about that invention. The potential of the video marketing has been accepted by the Google.com when they buying website Youtube.com in 2006 for \$1.65 billion [78] and become one of the biggest deal in the history. Google.com know that this marketing will affect the future, the university and researcher should tapped into this marketing techniques.

Other Types of Internet Marketing Techniques: There are also internet marketing techniques that can be implemented to promote commercialization activity such as Search Engine Optimization (SEO), Keyword Advertising, Banner Advertising, Email Marketing and Forum Marketing. Internet marketing strategies are only tools to help the commercialization university and to prevent bottlenecks technology transfer activity Swamidass [79]. We feel that in the future SMS advertising also can help in the commercialization activity university invention. There is still little attention been discussed using these types of marketing in technology transfer and commercialization activity especially in Malaysia University.

Effect of the Internet Marketing and Legal Implications: Rules and regulations in Malaysia about the commercialization university invention still need and need further development. As been mentioned by Yusof [80] the commercialization university research in Malaysia are still at paucity level and it more research been done about these. By implementing internet marketing strategy for commercialization university inventions will help the university promote university invention but there are also drawbacks that university must know. This is because the internet is just like “double edge swords” and university must it wisely to maximise the profit and reduce the risk.

In social networking online, it is generally accepted that social network analysis is intolerant to missing or incomplete data research done by [81]. Borgatti, Carley and Krackhardt [82] have shown that lower response rates are detrimental for the calculation of certain network analysis measures, especially degree centrality.

In this article, we put the benefit and drawbacks of the collaboration University and industry [84]. The benefits of the commercialization activity help the university gain additional income promote two way knowledge transfers and give impact to the economic development. However, some of the negative drawbacks from this activity is the impact on the student relationship and the academics spend less time on teaching.

Future Research: The Internet has fundamentally changed our economic, political and cultural life [84]. Statistics (InternetWorldStats.com 2010) [85] show that the internet users in Malaysia increased from millions in 2000 to more than 16 millions users in 2010 and totals populations in Malaysia is about 26 millions. This number shows that more than half of the Malaysian populations exposed to the internet everyday to communicate and interact online. Malaysian government also have put a lot of initiatives to increase the ICT development and facilities in Malaysia. National Broadband Initiatives (NBI) is one of the national strategies to introduce the broadband in Malaysian. The Malaysian Government has already set the target to achieve 50% of household broadband penetration in 2010. In commercialization university research perspective, this is the opportunity that must be used to promote the invention to the market.

“ People Invest in People, Not Ideas”: This is the famous quote for the entrepreneur when want to attract venture capital to invest money for their business. Venture capital will invest their money for the people not their project or ideas [86], as for the commercialization university research internet marketing is about networking and relationship. If the researcher knows how to show and attract the venture capital or entrepreneur to invest into their invention they can commercialize their inventions to the market [87-90]. Thus, further research should be done to compare the commercialization university invention using online or offline are more suitable for the technology transfer in university or not. Additionally by providing case study for the internet marketing strategy will give an overview about the best mechanism that can applied in promoting technology transfer using the internet marketing and how the entrepreneur or industry interact with this types of internet marketing strategy.

REFERENCES

1. Bok, D., 1982. *Beyond the Ivory Tower: Social Responsibilities of the Modern University*. Harvard Univ. Press, Cambridge, MA.,
2. Thursby, J.G. and M.C. Thursby, 2002. Who is selling the ivory tower? Sources of growth in university licensing. *Management Sci.*, 48(1): 90-104.
3. Markman, G.D., P.T. Gianiodis, P.H. Phan. and D.B. Balkin, 2004. Entrepreneurship from the ivory tower: Do incentive Systems Matter?. *The Journal of Technology Transfer*, 29(3/4): 353-364.
4. Evans, P. and T. Wurster, 2000. *Blown to bits: How the new economics of Information transforms strategy*. Harvard Business School Press.
5. Westermeier, J.T., 2004. *Key New Developments and Lessons Learned, Virginia Information Technology Legal Institute*. Virginia CLE. September 29.
6. Strauss, J. and R. Frost, 1999. *Marketing on the Internet*.
7. Czinkota, M.R. and I.A. Ronkainen, 1990. *International Marketing*, 2nd ed. The Dryden Press, Chicago, I.L.,
8. Rasmussen, E., 2008. Government instruments to support the commercialization of university research: lessons from Canada. *Technovation*, 28(8): 506-517.
9. Rothaermel, F.T., S.D. Agung. and L. Jiang, 2007. University entrepreneurship: A taxonomy of the literature. *Industrial and Corporate Change*, 16(4): 691-791.
10. Jain, K.K. and M. Yusof, 2007. Leadership challenges in developing an entrepreneurial university. *Proceedings of the International Conference on Leadership in a Changing Landscape*, Tun Abdul Razak University, Hotel Holiday Villa, Subang, Malaysia, pp: 7-8.
11. Arvanitis, S., N. Sydow. and M. Woerter, 2008. Is there any Impact of University-Industry Knowledge Transfer on Innovation and Productivity? An Empirical Analysis Based on Swiss Firm Data, in: *Review of Industrial Organization*. 32(2): 77-94.
12. Bush, V., 1945. *Science: The Endless Frontier*. Government Printing Office, Washington, D.C.,
13. Ambos, T.C., K. Makela, J. Birkinshaw. and P. D’Este, 2008. When does university research get commercialized? Creating ambidexterity in research institutions. *J. Management Studies*, 45(8): 1424-1447.
14. Jensen, R. and M. Thursby, 2001. Proofs and prototypes for sale: The licensing of University inventions. *The American Economic Rev.*, 91: 240-259.
15. Perkmann, M. and K. Walsh, 2008. Engaging the scholar: Three forms of academic consulting and their impact on universities and industry. *Research Policy*. 37(10): 1884-1891.

16. Adams, J.D., 2001. Comparative Localisation of Academic and Industrial Spillovers, NBER Working Paper Series 8292, National Bureau of Economic Research, Cambridge, MA Agrawal, A., 21: 1227-1253.
17. Donald, S. Siegel. and Vasilis Zervos, 2002. "Strategic Research Partnerships and Economic Performance: Empirical Issues," *Science and Public Policy*, 29(5): 331-343.
18. Hall, B.H., A. Link. and J.T. Scott, 2000. Barriers inhibiting industry from partnering with universities: evidence from the advanced technology program. *J. Technology Transfer*, 26: 87-98.
19. Siegel, D.S., D.A. Waldman, E.L. Atwater. and A.N. Link, 2003. Commercial knowledge transfers from universities to firms: Improving the effectiveness of university-industry collaboration. *J. High Technology Res.*, 14: 111-133.
20. Mohar Yusof, Mohammad Saeed Siddiq and Leilanie Mohd, 2009. An Integrated Model of a University's Entrepreneurial Ecosystem. *J. Asia Entrepreneurship and Sustainability*, 5(1): 57-77.
21. Hussain, W.M.H.W., M.N.A. Yaakub, A. Rahman, Z. Ashiqin Zainol and W.K. Mujani, 2010. Online Legal Marketing: How Lawyer assists in commercialization university research. *Proceeding ICEMT*, Cairo, Egypt,
22. Clark, B.R., 1998. Creating entrepreneurial universities: Organizational pathways of transformation. Pergamon, New York.
23. Etzkowitz, H., 2003. Research groups as 'Quasi-Firms': The invention of the Entrepreneurial University. *Research Policy*. 32: 109-121.
24. Meyer-Krahmer, F. and U. Schmoch, 1998. Science-based technologies: University-industry interactions in four fields. *Research Policy*, 27(8): 835-851.
25. Ponomariov, B.L., 2008. Effects of university characteristics on scientists' interactions with the private sector: An exploratory assessment. In *Journal of Technology Transfer*, 33(5): 485-503.
26. Perkmann, M. and K. Walsh, 2007. University-industry relationships and open innovation: Towards a research agenda, In *International J. Management Rev.*, 9(4): 259-280.
27. Martinelli, A., M. Meyer. and N. Von Tunzelmann, 2008. Becoming an entrepreneurial university? A case study of knowledge exchange relationships and faculty attitudes in a medium-sized, research-oriented university. In *J. Technology Transfer*, 33(3): 259-283.
28. Siegel, D.S., D.A. Waldman, E.L. Atwater. and A.N. Link, 2003. Commercial knowledge transfers from universities to firms: Improving the effectiveness of university-industry collaboration. In *J. High Technology Res.*, 14: 111-133.
29. Perkmann, M. and K. Walsh, 2009. The two faces of collaboration: impacts of university-industry relations on public research. In *Industrial and Corporate Change.*, 18(6): 1033-1065.
30. Oakey, R., 1995. *High-technology New Firms: Variable Barriers to Growth*. Paul Chapman, London.
31. Tidd, J., J. Bessant. and K. Pavitt, 1997. *Managing Innovation: Integrating Technological, Organizational and Market Change*. John Wiley and Sons, Chichester.
32. Colyvas, J., M. Crow, A. Gelijns, R. Mazzoleni, R.R. Nelson. and N. Rosenberg, 2002. How do university inventions get into practice? *Management Sci.*, 48(1): 61-72.
33. Bell D.E., R.L. Keeney. and J.D.C. Little 1975. 'A Market Share Theorem', *J. Marketing Research*. May. pp: 136-141.
34. Bozeman, B., 2000. Technology Transfer and Public Policy: A Review of Research and Theory', *Research Policy*. 29: 627-655.
35. Hamill, J., 1997. The Internet and International Marketing. *International Marketing Review*, 14(5): 300-23.
36. Hoffman, D.L., 2000. The Revolution Will Not Be Televised. *Editorial, Marketing Science*, Winter, 19(1): 1.
37. Melewar, T.C. and Nichola Smith, 2003. The Internet revolution: some global marketing implications. *Marketing Intelligence and Planning*, 21(6): 363 - 369.
38. Mohar Yusof, Prof. Dr. Mohammad Saeed Siddiq and Leilanie Mohd, 2009. An Integrated Model of a University's Entrepreneurial Ecosystem. *Journal of Asia Entrepreneurship and Sustainability*. 5: 57-77.
39. Abrahamson, T., 2000. Life and death on the internet: To web or not to web is no longer a question *J. College Admission*, 168: 6.
40. Ministry of Economic Development. 2000. June. *Statistics on information technology in New Zealand*
41. Richardson, P., 2001. *Internet Marketing: Readings and Online Resources*, McGraw-Hill, New York.
42. Mack, T., 2000. Mar/Apr. *Electronic marketing: What you can expect The Futurist*, 34(2): 40-44.
43. Bush, V., B. Venable. and A. Bush, 2000. Ethics and marketing on the Internet: Practitioners' perceptions of societal, industry and company concerns *Journal of Business Ethics*, 23(3): 237-248.

44. Abrahamson, T., 2000. Life and death on the internet: To web or not to web is no longer a question *J. College Admission*, 168: 6.
45. Mack, T., 2000. Mar/Apr. Electronic marketing: What you can expect *The Futurist*, 34(2): 40-44
46. Mack, T., 2000. Mar/Apr. Electronic marketing: What you can expect *The Futurist*, 34(2): 40-44.
47. De Bruyn, Arnaud and Gary L. Lilien, 2004. A Multi-Stage Model of Word of Mouth Through Electronic Referrals. *eBusiness Research Center Working Paper*. February.
48. Hennig-Thurau, T., K.P. Gwinner, G. Walsh and D.D. Gremler 2004. Electronic Word-of-Mouth via Consumer-Opinion Platforms: What Motivates Consumers to Articulate. Themselves on the Internet? In *J. Interactive Marketing*, 18(1): 38-52.
49. D'este, P. and P. Patel, 2007. University-industry linkages in the UK: What are the factors underlying the variety of interactions with industry? In *Research Policy*, 36(9): 1295-1313.
50. Donald, S., Siegel, Paul Westhead and Mike Wright, 2003. "Science Parks and the Performance of New Technology-Based Firms: A Review of Recent U.K. Evidence and an Agenda for Future Research," In *Small Business Economics*, 20(2): 177-184.
51. Seeman, N., 2008. Web 2.0 and Chronic Illness: New horizons, new opportunities. *Electronic Healthcare*, 6(3). Retrieved from <http://www.electronichealthcare.net>
52. Raacke, J. and J. Bonds-Raacke, 2008. MySpace and Facebook: Applying the uses and gratifications theory to exploring friend-networking sites. *CyberPsychology and Behavior*, 11: 169-174.
53. Quant Cast, 2011. "Profile for MySpace.com," Quantcast, <http://www.quantcast.com/myspace.com>, (accessed on January 1, 2011).
54. Quant Cast, 2011. "Profile for Facebook.com," Quantcast, <http://www.quantcast.com/facebook.com>, (accessed on January 1, 2011).
55. <http://www.greyreview.com/2010/03/02/facebook-in-asia-total-users-and-age-groups-latest-stats/>
56. Freeman, B. and S. Chapman, 2008. Gone viral? Heard the buzz? A guide for public health practitioners and researchers on how Web 2.0 can subvert advertising restrictions and spread health information. In *Journal of Epidemiology and Community Health*, 62: 778-782.
57. De Bruyn, Arnaud and Gary L. Lilien, 2004. A Multi-Stage Model of Word of Mouth Through Electronic Referrals. *eBusiness Research Center Working Paper*, February.
58. Brown, Jacqueline Johnson and Peter H. Reingen. 1987, Social Ties and Word-of-Mouth Referral Behavior. *J. Consumer Res.*, 14(3): 350-362.
59. Engel, E. James, Roger D. Blackwell and Robert, J. Kegerreis, 1969. How Information is used to adopt an Innovation. In *J. Advertising Res.*, 9: 3-8.
60. Katz, Elihu and Paul F. Lazarsfeld, 1955. Personal Influence: The Part Played by People in the Flow of Mass Communications, New York: Free Press.
61. Ahuja, Manju K. and Kathleen M. Carley, 1999. Network Structure in Virtual Organizations. In *Organization Sci.*, 10(6): 741-757.
62. Kiel, Geoffrey C. and Roger A. Layton, 1981. Dimensions of Consumer Information Seeking Behaviour. In *J. Marketing Res.*, 18(2): 233-239.
63. Ennew, T. Christine, Ashish K. Banerjee. and Derek Li, 2000. Managing Word of Mouth Communication: Empirical Evidence from India. In *International J. Bank Marketing*, 18(2): 75-83.
64. Keaveney, Susan M., 1995. Customer Switching Behaviour in Service Industries: An Exploratory Study. In *J. Marketing*, 59(2): 71-82.
65. Katz, Elihu and Paul F. Lazarsfeld, 1955. Personal Influence: The Part Played by People in the Flow of Mass Communications. Free Press, New York.
66. Dellarocas. and Chrysanthos, 2003. The Digitalization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms. In *Management Sci.*, 49(10): 1407-1424.
67. Dellarocas. and Chrysanthos, 2003. The Digitalization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms. In *Management Sci.*, 49(10): 1407-1424.
68. Balter, D. and J. Butman, 2006. Clutter cutter. In *Marketing Manage.*, 15: 49-50.
69. Porter, L. and G.J. Golan, 2006. From subservient chickens to brawny men: A comparison of viral advertising to television advertising. In *J. Interactive Advertising*, 6: 30-38.
70. Huhman, M., 2008. New media and the VERB Campaign: Tools to motivate tweens to be physically active. *Cases in Public Health Communication and Marketing*, 2: 126-139. Retrieved from <http://www.casesjournal.org=volume2>
71. Phelps, Joseph E. Regina Lewis, Lynne Mobilio, David Perry and Niranjana Raman, 2004. Viral Marketing or Electronic Word-of-Mouth Advertising: Examining Consumer Responses and Motivations to Pass Along Email. In *J. Advertising Res.*, 44(4): 333-348.

72. Montgomery. and L. Alan, 2001. Applying Quantitative Marketing Techniques to the Internet. In *Interfaces*, 31(2): 90-108.
73. Wilson, R.F., 2000. February 1, The six simple principles of viral marketing. *Web Marketing Today*, Retrieved from <http://www.wilsonweb.com/wmt5/viralprinciples.htm>.
74. Schiffman, L.G. and L.L. Kanuk, 2007. *Consumer behavior*. New York: Pearson.
75. <http://www.youtube.com/>
76. <http://www.metacafe.com/>
77. <http://video.google.com/>
78. <http://www.msnbc.msn.com/id/15196982/>
79. Swamidass, P.M. and V. Vulasa, 2008. Why university inventions rarely produce income? Bottlenecks in university technology transfer. In *The J. Technology Transfer*, 34(4): 343-363. doi: 10.1007/s10961-008-9097-8.
80. Mohar Yusof, Prof. Dr. Mohammad Saeed Siddiq and Leilanie Mohd, 2009. An Integrated Model of a University's Entrepreneurial Ecosystem. In *J. Asia Entrepreneurship and Sustainability*, 5(1): 57-77.
81. Borgatti, S.P., K. Carley. and D. Krackhardt, 2006. Robustness of Centrality Measures under Conditions of Imperfect Data. *Social Networks*. 28: 124-136.
82. Borgatti, S.P., K. Carley. and D. Krackhardt, 2006. Robustness of Centrality Measures under Conditions of Imperfect Data. *Social Networks*. 28: 124-136.
83. Poyago-Theotoky, J., J. Beath. and Donald Siegel. *Universities and Fundamental Research: Reflections on the Growth of University-Industry Partnership*. *Oxford Review of Economic Policy*, Spring, 2002, 18, 1; *ABI/INFORM Global* pg. 10.
84. Abrahamson, T., 2000. Life and death on the internet: To web or not to web is no longer a question *J. College Admission*, 168: 6.
85. <http://www.internetworldstats.com/asia/my.htm>
86. Guru Prakash Prabhakar, 2010. When in India do as the...: An insight into an Italian automotive company's experiences in India", In *Management Decision*, 48(6): 1010-1022.
87. Wan Mohd Hirwani, W.H., R. Mohd Nizam, Y. Noor Inayah, Z. Zinatul Ashiqin. and M. Wan Kamal, 2010. *Internet Marketing Strategies for Lawyers in Malaysia: Read it and Do it to Skyrocket Your Business*. *International Review of Business Research Papers*, 6(6): 201-215.
88. Wan Mohd Hirwani, W.H., Y. Noor Inayah. and Z. Zinatul Ashiqin, 2010. Internet legal service marketing: are Malaysian lawyers getting left behind? *International J. Liability and Scientific Enquiry*, 3(1and2): 155-164.
89. Salehi., M. and K. Azari, 2010. A Short Review on Entrepreneurship in the Field of Evolving Nanotechnology. *Middle-East J. Scientific Res.*, 6(4): 412-417.
90. Noor Inayah, Y., Wan WH. Mohd Hirwani, AR. Mohd Nizam, Z. Zinatul Ashiqin, M. Wan Kamal, J. Ezad Azraai, S. Adibah. and J. Kamaruzam, 2011. Challenges for Commercialisation of University Research for Agricultural Based Invention. *World Applied Sci. J.*, 12(2):132-138.