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Product Innovation Decision Support Based on On-line Patent Database

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Abstract

This research proposes a model of decision support in product innovation, especially during idea generation phase. The proposed model uses two types of knowledge: tacit knowledge which is gathered from expert opinions and explicit knowledge which is gathered from on-line patent database. Cathecin (green tea) is used for the case study in this research. The proposed model is based on combination of data mining model and Analytic Hierarchy Process (AHP). This model represents the data mining process from on-line patent database and then analyzes them as a resource for product innovation during product’s idea generation. This process allows generating product mapping and technology mapping. After the patent analysis, some product and process alternatives can be generated. Selection process for the best alternative uses AHP model. The AHP model used in this research is modified from Chiu (2003) AHP model in patent valuation. This model supports to select the best alternative for cathechin’s product.

Keywords: product innovation, catechin, data mining, decision support, patent analysis
1. Background

In order to increase competitive advantages, a number of companies in Indonesia have set funding targets and are vigorously pouring funds into research and development (R&D) to promote innovation. In line with this, the government is currently strengthening R&D environments, offering incentives, encouraging enterprises to invest in R&D, and participating in international cooperation to stimulate domestic science and technology development. To accelerate innovation, many companies attempt to promote innovation; such as benchmarking, knowledge accumulation, providing technology and infrastructures, creating integrated mechanisms by linking industry, government, academia and research communities.

In this new information era, the facility of telecommunication develops tremendously, causing fast changes in consumers, company, technology and products. This condition implies the company to keep adapting with those changes to be able to survive in the world of competition.

The fast development of telecommunication will provide a better access for data and information. However, the problem still remains. How to find and to interpret data validly?. In this paper, the patent analysis is used as the basic for product innovation. In addition to protecting the inventor’s rights, patent can also be used as the think tank for the invention of the new ideas (Dou, 2004).

1 Patent Analysis

Patent can be defined as a document issued by the government which states the belonging right of an instrument, product or new technology (SOOS Steunpunt O&O Statistieken, 2005). The purpose of the patent system is to protect the inventor’s rights. The competitors cannot use a product or technology with registered patent without the inventor’s permission.

Patent is a wide field, where techniques, products, applications and legal considerations are strongly mixed. Patents are a unique source of information since most of the data and information published in patents is not published elsewhere. Managing a set of patents is rather complicated because most of tools available today are either expensive and complicated or necessitate a strong culture in the field of intellectual property. The cost of patent databases is very high, for example,
if people want to perform a complete search or to get automatically relationships between cited and citing patents.

Today, various patent databases are available freely. This is very important since commercial databases which are more complete and sophisticated are very expensive. Even if patents are available through the internet, it is obvious that to perform one by one the retrieval of hundreds of patents is rather difficult and time consuming. This is the reason why people used software which provides database and all facilities to perform automatic patent searches, automatic downloading, automatic analysis as well as automatic reporting becomes important.

At the same time, patents are a typical output of application-oriented types of R&D, formal and informal, i.e. applied research and experimental development, and sometimes oriented basic research as well. Inventions are often generated in the context of industrial and design engineering, while some come about by accident. The legal requirement to show potential industrial applications, and the high cost of patenting, indicate a close link to industrial innovation activities, but it is not the sole link. (Patent Manual, 1994).

A patent is consists of different fields such as inventors, patents assignees, dates, IPC, claims, etc. These fields are useful since they help the reader to obtain a precise information easily, since all the data are introduced upstream by information scientists and patent analysts. Moreover, many fields can be mapped in various correlations such as a simple one like histogram or matrices and networks (mapping) for the most complicated.

Patent can be documented with several ways. Generally, patent document consisting of the following three elements:

1) Title page with the bibliographical information
2) Text in which the invention, examples and detailed explanation in the form of pictures, diagram and flowchart is described.
3) Proof of belonging

There are two primary ways of analyzing patent information: qualitative and quantitative. The qualitative method shows more closely the content of the individual patent documents. The quantitative method results in statistical processing. These two methods have quite different objectives and different ranges of applications. Patent analysis can be displayed by visual
representation using bar graphs, polygonal line graphs, pie charts, radar charts and other charts/graphs, which are called ‘Patent Maps’. Visualization is especially an effective way of representing the results of this type of analysis (WIPO).

Patent data can be aggregated and analyzed in a number of ways, including (Patent Manual, 1994):

1. patenting by type of inventor, by firms or groups of firms;
2. filings in one or more fields of technology;
3. the patenting activity of a country or a region;
4. patenting patterns over time.

Those four basic modes can be variously combined, depending on the purpose of research needs, but they call for different approaches, and caution in using and interpreting the results. The simplest type of analysis is the one that calculate the total of patents that present in any criteria. The comparison of patents amount between countries, industries or companies will provide the basic viewpoint concerning the difference of technology development. In methodological terms, there is a considerable difference between analysis of patenting at country level and at firm level. These two aspects will be examined separately at some length.

Patent information can also be used to create the technology maps. In order to create them, we have to obtain not only the inventor’s data, the invention’s characteristics data, but also the information of relevant preceding patents. With the use of technology maps, the technology development and the interconnection between technologies can be discovered. Patent data can be combined with several other indicators, including indicators for R&D spending (as defined in the Frascati Manual, OECD 1992a-C), indicators for innovation (as defined in the Oslo Manual, OECD 1992b-C) and indicators for technology flows, (as defined in the TBP Manual, OECD 1990-C). (Patent Manual, 1994)

There are other analyses can be made from the patent data, but in general, the advantages of the patent analysis are:

- to compare our patent asset with the other companies’;
- to identify the gap between research and development,
- to establish the priority of product development and R&D much better,
• to be familiar with the other institutions (university, research institution, etc) that connected with the technologies used in the development of the new product,
• to identify which technology is developed and patented the most,
• to identify the new competitors in the business area or the company’s technology,
• to monitor the patent activity in certain market.

In this research, the patent data will be used to identify the potential concept of cathecin’s products development to be marketed in Indonesia. When developing new products, understanding the latest technology can play a crucial role. In fact, comparative technology information may determine the success-or failure-of a new product and, in turn, the success or failure of the company itself. Therefore, the patent analysis in the cathecin’s products will be conducted.

2 Proposed Model

This research consists of the following steps:
1. Tea product/process mapping in Indonesia
2. Related patent data mining
3. Product/process state of the art analysis
4. Product/process alternative’s identification using panel of expert
5. Selection of product/process alternative
Panel of Experts
Future views are based on judgments from a representative group of experts, considering information that they believe will influence subject of interest and combine their conclusions into future knowledge. No formal model is used and no two experts are likely to consider the same information in the same way, but it has provided good future insights in many situations. Empirical evidence and theoretical arguments suggest that between 5-20 experts should be used (Makridakis and Wheelwright, 1989). However, in situations involving exponential growth, judgmental forecasts may be inappropriate (P. Assakul, 2003).

The tea product’s mapping is done to identify the tea product’s development in Indonesia. Afterwards, patent data’s extraction will be done by using the Matheo software. Patent databases that can be used are (Patent Manual, 1994):

- USPTO (US)
- Esp@cenet (Eropa)
In this research, we use the USPTO and Esp@cenet databases which can be exploited and analyzed by Matheo software. The patent data taken is the one that related to cathecin (green tea) which exist in the USPTO’s and Esp@cenet’s patent database from 2002 until 2005. Based on that patent data’s mapping, the tea product’s development alternatives can be identified. Furthermore, the best alternative will be chosen using the AHP method.

3 Tea Product’s Mapping in Indonesia

Tea (*Camelia Sinensis*) plantation generally grow in the tropical climate area with 200 – 2,000 m high above the sea surface at the temperature of 14 – 25 °C. The vegetations themselves can grow about 9 meter tall for the Chinese tea and Javanese tea and 12 – 20 meter tall for the Assamica tea. However, in order to make the harvest of the best young leaves easier, the tea plantation is always maintained in growth to be 1 meter tall, with the manner of branch cutting. The expansion of the tea vegetation in the market area, the crossover of different type of tea, and the influence of different soil and climate have made the tea vegetation varies about 1,500 type from 25 different countries. Nonetheless, there are only three major types of tea vegetation:

1. Black tea
   The type of tea that is produced with full fermentation.
2. Oolong tea
   The type of tea that is produced with half fermentation.
3. Green tea
   The type of tea that is produced with no fermentation at all.

In Indonesia, the most popular one is the jasmine tea, which is the green tea that mixed with jasmine flower so it generates the specific scent. The green tea itself is one of the beverages with the fastest development in market ([www.coca-colabottling.co.id](http://www.coca-colabottling.co.id), 2005)

During the last several years, beside consumed as a beverage, the green tea has also been used in some products of health and beauty, because of the green tea itself contains antioxidant, so it can
be used to keep skin healthy and young.

The tea products in Indonesia can be classified into three categories as the following:

1. Foods and beverages
   - Candies (FOX Green Tea)
   - Frestea Green (PT. Coca Cola)
   - Beverin Green Tea (PT. Cherrio Primas Industrindo, Cherindo)
   - Sariwangi Green Tea (PT. Unilever)

2. Health products

3. Beauty products
   - Biore BrightWhite System (PT. KAO)
   - Citra Hand & Body Lotion Green Tea (PT. Unilever)
   - Lux Liquid Green Tea (PT. Unilever)

4  Catechin Patent Data’s Analysis

4.1 Patents Group based on years published

Patent data used in this research is obtained from the patent database of Europe (Esp@cenet) and America (USPTO). Furthermore, the data is extracted from the internet with Mateo Patent software. The data obtained is the one that available within the last 3 years, total of 31 patents.

![Figure 2. Patent groups based on year released](image-url)
4.2 Patents Group based on Applicants

Patent data can be classified based on the patent applicants and the total amount of their utilization (Figure 3). Based on those data, the patent applicant that uses patent data the most within the last three years can be discovered. For example, in Figure 3, the applicants use the most patent are KAO CORP and KAO CORP [JP] with the 5 times frequency of patent’s utilization each, within the last 3 years.

![Figure 3. Patent group based in applicant](image)

4.3 Benchmarking on various group using matrices and network

Beside the patent analysis based on the groups (inventor, year, etc.), the patent data can also be analyzed with the benchmarking analysis based on the correlation between data. The benchmarking analysis can be done from several dimensions, such as:

- Networks of applicant
- Networks of inventor
- Matrices inventor-applicant
- Matrices IPC number - applicant

From the patent group data based on applicants, it can be concluded that the patents connected with caheticin are used the most by KAO CORP and KAO CORP [JP]. To discover the inventor...
related with the patents, the inventor–applicant matrix can be used. From Table 1, it can be shown that:

- KAO CORP uses the most patents belong to Konishi Atsushi, 4 times.
- KAO CORP [JP] uses patents belong to Yamamoto Shinji (4), Hoshino Eiichi (4) and Iwasaki Masaki (4).

### Table 1. Inventor-Applicant Matrix

<table>
<thead>
<tr>
<th>Inventor</th>
<th>Frequency</th>
<th>Applicant</th>
</tr>
</thead>
<tbody>
<tr>
<td>KONISHI ATSUSHI (--)</td>
<td>4</td>
<td>KAO CORP (--)</td>
</tr>
</tbody>
</table>

Furthermore, the technology that is used by the most applicants can be discovered. To discover the difference of technology that is used between applicants, the applicant-IPC matrix can be used, as shown in Table 2. It can be noticed that the most patents used were originated from two groups: A23L2 (COFFEE; TEA; THEIR SUBSTITUTES; MANUFACTURE, PREPARATION, OR INFUSION THEREOF) and A23F3 (FOODSTUFFS, OR NON-ALCOHOLIC BEVERAGES).
Table 2. Applicant-IPC Matrix

<table>
<thead>
<tr>
<th>No</th>
<th>Applicant</th>
<th>IPC</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IWASAKI MASAKI [JP] ( -- )</td>
<td>A23L2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>KAO CORP ( -- )</td>
<td>A23F3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>YAMAMOTO SHINJI [JP] ( -- )</td>
<td>A23F3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>YAMAMOTO SHINJI [JP] ( -- )</td>
<td>A23L2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>IWASAKI MASAKI [JP] ( -- )</td>
<td>A23F3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>KAO CORP [JP] ( -- )</td>
<td>A23L2</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>KAO CORP [JP] ( -- )</td>
<td>A23F3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>HOSHINO EIICHI [JP] ( -- )</td>
<td>A23F3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>HOSHINO EIICHI [JP] ( -- )</td>
<td>A23L2</td>
<td>4</td>
</tr>
</tbody>
</table>

Based on data above, it can be noticed that almost all of the companies/applicants in Table 2 use the patent from the A23L (foods) and A23F group (beverages). The companies/applicants themselves are:

- Iwasaki Masaki (inventor)
- Yamamoto Shinji (inventor)
- Kao Corp [JP] (company)
- Hoshino Eiichi (inventor)

On the other hand, the company/applicant that uses only the patent from the A23F group (beverages) is KAO CORP. From 9 applicant data that use patent with the most frequency (4 times), there is just only one applicant that represents company. The other applicants are inventors that use patent data to make further development.

Based on the cathecin’s patent data analysis, it can be concluded that:

- The most patent data used in the companies are the ones from the group of foods and beverages.
- The patent data related to cathecin are mostly used again for the further development.
5 Product Development’s Alternative Identification

The output from patent data can be used in product development, process development, or further development. If the potential patent for the further development is about to be identified, the patent identification can be done with expert opinion. Alternatively, if the potential patent developed as a product is about to be identified, the potential patent identification can be done based on the market analysis and the company’s consideration.

Based on the patent data analysis and panel discussion from the industrial side, it can be concluded that the potential patent to be developed and/or marketed in Indonesia is the cathecin’s patent in the foods and beverages group. From those several alternatives, the potential alternative can be chosen, with the respect of the company’s ability.

Patent owners and applicants pay combined fees and costs of over a billion dollars per year to the PTO to obtain and maintain their patents and applications. Additional fees and costs are typically incurred for related professional services, such as attorneys’ fees, search fees, drafting charges and the like (Patent Rating, LCC, 2001). Therefore, the company should be more careful in choosing the patent to be analyzed. The patent alternative selection can be made in several ways, such as Intellectual Property Quotient (IPQ) (Patent Rating, LCC, 2001) or AHP utilization (Chiu, 2003).

“Intellectual Property Quotient” or IPQ, is akin to the familiar Intelligence Quotient or IQ used to score human intelligence. Thus, a score of 100 on the IPQ scale generally corresponds to an expected normal or median quality. An IPQ higher than 100 indicates above-average quality (higher expected maintenance rate) while an IPQ lower than 100 indicates below-average quality (lower expected maintenance rate) (Patent Rating, LCC, 2001).

The AHP’s model developed by Chiu (2003) has been used to validate the selected alternative. In this model, the 4 dimensions are considered in estimating patents. They are: (1) technology essence, (2) cost dimension, (3) product market, and (4) technology market. With the utilization of those methods, the potential patent then can be decided and used in the tea product’s development in Indonesia. The technology essence corresponds to for sub criteria: refinement, application scope, compatibility and complexity. Cost dimension consists of three sub criteria: R&D Cost, transfer cost, and reference cost. Product market consists of four sub criteria: product
life cycle, potential market share, market size and utility/advantage. Technology market corresponds to three sub criteria: number of supplier, number of demander and commercial level. Based on multi criteria analysis regarding the four dimensions including its associated sub criteria, it is found that foods and beverages tea product is the best choice to develop in Indonesia. The market size, application scope, R&D cost and commercial level are the most important sub criteria that support this choice.

Beauty products is second alternative to develop. Commercial level sub criteria has the highest score for this alternative, and according to AHP approach, R&D cost is not so interesting for this alternative, due to its expensive cost. On the other hand, tea for health products has the lowest preference. In fact, market size for this product is not as high as foods and beverages products. Sub criteria of complexity has the lowest score for this alternative.

Based on the above description it is clear that tea utilization for foods and beverages products has the highest priority to develop by industry. However, in the same time, industries have to start to develop tea for beauty and health products. The main problem in this later is how to reinforce its R&D capabilities. In fact, universities are the most preferred type of external partner, and their contribution is focused almost exclusively on contributing solutions to R&D problems that are defined, orchestrated and appropriated by other organizations. In problem solving the role of universities is essential.

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Business Incubators in Japan:  
- An Effective Model for
Japanese-Style Business Incubators -

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Abstract

The business incubator is well known as an effective institution for entrepreneurs, but many business incubators have not had successful results in Japan. The reason for this situation is because of the improper introduction of the concept of the business incubator from the United States in the early 1980s. The Japanese National Government used business incubators as policy tools for fostering high-tech start-ups. But no software support for entrepreneurs --incubator managers, business consulting, marketing, accounting, or legal services-- were provided. Recently, the Japanese National Government became aware of the importance of software support in addition to hardware facilities. Finally we are witnessing the new operation of more effective of private, not-for-profit organization business incubators.

Keywords: business incubators, Softnomics, Technopolis, CPS

Introduction

According to the National Business Incubation Association (NBIA), business incubation is “a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the
A business incubator’s main goal is to produce successful firms that will leave the program financially viable and freestanding. These graduates have the potential to create jobs, revitalize neighborhoods, commercialize new technologies, and strengthen local and national economies” (http://www.nbia.org.).

Business incubators have been positioned as an important policy tool for the revitalization of local industries and development of industrial clusters. Nevertheless, they have their critics, who voice opinions such as: "business incubators are expensive to set up and run, yet they have so far failed to live up to expectations in terms of results." This kind of critical assessment is, in large part, attributable to the historical background of the introduction and development of business incubators in Japan and their operating environment.

Business incubation research in Japan dates back to the 1980s, and early work, such as the Softnomics Center (1986) and Japan Incubator Research Society (1989), centered on the introduction of the concepts behind business incubators from the United States and other countries. These were followed by self-analysis of Japanese business incubators, surveys of successful cases, and the like in the 1990s. Examples include KSP (1994) and Seki and Yoshida (1993). More recently, Hoshino (2006) and others put forward papers designed to disseminate the correct understanding of business incubation. However, there has not been much work that summarizes the evolution and present state of Japanese business incubators and critically evaluates them. The author conducted a complete survey of Japanese business incubators and analyzed the issues facing them in 1995 (Kazumi 1996). Now, more than a decade later, the number of business incubators has risen to the hundreds, making it necessary to update the situation.

This paper analyzes the reasons behind the present state of Japanese business incubators in the context of their evolution from the early introductory period right up to the present day, and explores directions of their future development that are independent of the U.S. model by investigating and analyzing a successful case that has produced excellent results in a short period.

1. Introduction and Development of Business Incubators in Japan

Some 20 years have passed since business incubators were introduced into Japan1. In this section, the paper looks into the origin of the problems identified so far by taking an overview of the historical background of the introduction and development of business incubators in Japan in the 1980s and 1990s.
(1) Introduction of business incubators in Japan

Papers on business incubators began to appear in Japan in the mid-1980s. In 1985, the Softnomics Center2 established the Business Incubator Research Society and held an inspection tour of the United States and five research meetings inviting researchers and other interested parties. The Society pointed out that, in Japan, business incubators were "geared towards the laying of the foundation for a transformation of the industrial structure and research and development management focusing on the high-tech sector," whereas they were established and operated mainly for the purpose of creating employment in the United States and Europe, resulting in an overemphasis on facilities and lack of consideration for operational know-how, etc. Stating that "the concept (of business incubators) is yet to be established in Japan." it identified the development of a socioeconomic system that would encourage the start-up of new businesses, combined with consideration given to the creation of employment, as a matter of ultimate importance3.

Although the society's discovery of the importance of operational know-how in as early as the 1980s was noteworthy, it still focused on facilities, equipment and other hardware elements during its field inspection tour. The same thing can be said of the National Government and local governments. The National Government and prefectural governments paid attention to business incubators as a new policy tool, and the construction of facilities began in the late 1980s.

(2) Industrial policy and business incubators

In the 1980s, business incubators were viewed as a policy tool to foster venture businesses engaged in business activities based on advanced technologies and to revitalize and stimulate the growth of industrial clusters. Examples include "rental research and development laboratories" under the Law concerning the Promotion of the Development of High-tech Industry Clusters (Law No. 35 of 1983, Technopolis Law), business incubators placed the institute for fostering high-tech start-ups in the several laws enacted in 1980s in Japan as it. In other cases, business incubators were located as "industrial advancement promotion facilities" under the Law concerning the Promotion of the Clusterization of Specified Businesses Contributing to the Advancement of Local Industries (Law No. 32 of 1988, Industrial Brain Location Law), and "R&D-oriented business fostering and support facilities" under the Temporary Measures Law concerning the Development of Specified Facilities Based on the Utilization of the Capacity of Private-sector Operators (Law No. 77 of 1986, Private-sector Vitality Utilization Law)4.

Since the development of hardware infrastructure, such as buildings, is tangible and therefore easy to understand, it helps secure sizable budgets. This is believed to be the reason why
it was enthusiastically pursued. Business support measures, such as services provided by incubation managers and other professionals, on the other hand, are less visible and therefore more difficult to understand, and often require fixed recurring budgets due to personnel costs. For this reason, they tended to be ignored.

The heart of business incubation lies with business consulting and coordination. In Japan, however, business incubators were initially utilized as an industrial policy tool, particularly one geared towards fostering R&D-oriented businesses, and spread across the country on that basis. Because of this, the majority of business incubators established in and before the second half of the 1990s centered on the development of hardware infrastructure, leading to their failure to adequately produce expected results.

When the author conducted a survey of domestic business incubators in 1995, eight facilities were found to have been established on the basis of the Technopolis Law and Industrial Brain Location Law. Of those, only one had an incubation manager. In addition, only 16 out of 82 companies that had moved in had their headquarters established at their respective incubators. (Although another 13 companies were identified in the survey, their status was unknown, because they were yet to move in). Moreover, only three facilities provided a management counseling service (Kazumi 1996, pp. 19-23)

It was believed that business incubation was about specifying the industries to be supported in accordance with a law, screening applications in terms of whether they were R&D oriented, and letting successful applicants move into a facility for cheap rent and stay there until the end of a predetermined period. There was a belief that, as long as businesses came up with high-tech products, they would succeed because buyers would automatically emerge. Unfortunately, this scenario, in most cases, turned out to be just a myth⁵.

(3) Problems with Japanese business incubators during their introduction phase

(i) Lack of policy coherence

In Japan, the notion of business incubators being synonymous with R&D-oriented business fostering facilities took hold as soon as they were introduced in the mid-1980s. As a result, the development of hardware infrastructure immediately took off, leaving the introduction and dissemination of operational know-how behind.

The main reason for the failure of the software side to function was a lack of understanding about the major role of consulting in the business start-up support functions of business incubators. At the same time, there were very few professionals with adequate knowledge and experience in
business start-up support, particularly the fostering of R&D-oriented companies, resulting in the absence of incubation managers at most facilities. Although industrial location policy under the Technopolis Law incorporated the networking of business incubators with universities, public institutes of experiment and research, and the like, it did not include their networking with individuals and organizations that supplied them with professional services essential for fundraising, marketing, business alliance building, and so on (e.g. management consultants, accountants, lawyers and patent attorneys).

Initially, business incubators were utilized as a policy tool in the area of industrial location policy relating to, among other things, the development of infrastructure aimed at luring businesses to set up bases. Management diagnosis and consulting support for individual companies, on the other hand, was provided under SME policy. However, this service was meant for existing companies, and often involved different sections of a local government, with no systematic mechanism for coordination among them put in place.

Thus, despite the fact that the National Government and local governments made great efforts to introduce and spread business incubators as an industrial policy tool, they were slow to produce results, because only hardware elements took off, leaving software elements behind in terms of conceptual understanding and spread. Factors responsible for this were a lack of accumulated know-how needed to foster companies that had moved in, a shortage of specialized personnel, and a discrepancy between the concept of business incubators and conventional policy principles and implementation methods.

(ii) Underdevelopment of an environment conducive to starting of companies and creation of venture businesses

Another problem was the underdevelopment of a socioeconomic environment that provides the seedbed for the starting of companies and creation of venture businesses. In spite of the establishment of many business incubators, entrepreneurs and candidates had not rushed to incubators. In concrete terms, it encompassed, among other things, a lack of entrepreneurial education as part of school education, very limited availability of risk money for early-stage companies, difficulties in fundraising due to a very high hurdle for new listings and initial public offerings, heavy skewing of the creation of technology seeds to research laboratories of major companies, and low mobility of quality personnel. In short, despite efforts made to foster R&D-oriented companies, few entrepreneurs emerged, and venture businesses faced enormous difficulties with commercialization and growth.

Since then, adequate policy measures relating to technology transfer from universities
and other institutions, the fundraising environment and business start-up support have been put in place, and factors involved in the socioeconomic environment have greatly improved. One can say that the environment needed to start companies and create venture businesses is now in place.

2. Present State of Business Incubators and Issues

(1) Development of business incubators under New Business Creation Promotion Law

In December 1998, the Technopolis Law and Industrial Brain Location Law were replaced by the New Business Creation Promotion Law (Law No. 152 of 1998), which took partial effect in February 1999. Aiming to achieve local revitalization through the creation of new businesses, the new law set as its policy pillars the following: (i) direct support for the starting of companies by individuals and launch of spin-off businesses through the establishment of new companies, (ii) promotion of SME business activities based on new technologies, and (iii) development of a business environment conducive to the self-sustaining development of local industries on the basis of an effective utilization of local industrial resources. Business incubators are characterized as an element that forms part of a local platform to be developed in each prefecture under the policy pillar (Ministry of International Trade and Industry, 1999).

To strengthen local incubation functions, the Ministry of the Economy, Trade and Industry (METI) provides integrated facilities and operation support under the development of the system of local platforms mentioned above (Industrial Cluster Project from FY 2004), with the budget for the development of new business support facilities and other purposes reaching 6.7 billion yen in FY 2006.

In particular, subsidies have been introduced for the fostering and utilization of entrepreneurs and support personnel, business matching, hosting of seminars, operation of comprehensive counseling corners, implementation of incubation manager training, and placement of incubation managers (personnel costs) as a support measure relating to the operation of business incubators.

(2) Establishment of the Japan Association of New Business Incubation Organizations

On the heels of the enactment of the New Business Creation Promotion Law, it was decided to organize core support organizations as agents for business incubation throughout the country, and the Japan Association of New Business Incubation Organizations (JANBO) was established in June 1999 within the Japan Industrial Location Center.

JANBO undertakes the promotion and dissemination of business incubation, training of
incubation managers (IMs), exchange and sharing of business incubation-related information and know-how, research and investigation relating to business incubation. Of these activities, IM training is practically oriented, involving five months of OJT in addition to classroom studies on business incubation. By the end of FY 2007, over 500 people have completed the course.

It also established JANBO awards in FY 2003 to further spread and advance business incubation, with awards presented to incubators and IMs who have produced outstanding results. In FY 2005, it introduced a certified IM system designed to formally recognize IMs who, on the basis of assessment, meet certain standards set in accordance with diverse criteria in order to improve the status of IMs and facilitate their mobility.

(3) Present state of business incubators and assessment

In 2002 and 2004, JANBO conducted a comprehensive general survey of business incubators, and shed light on their situation by ascertaining their numbers and collecting basic data on their facilities (METI 2005). Let us now look at overview of the present state of Japanese business incubators using 2004 survey data.

(i) Number of business incubators and years of establishment

According to the four definitions set by JANBO, there were 177 business incubators that provided management support, as well as access to facilities and equipment. When the author surveyed domestic business incubators in 1995, there were only 40 such facilities, including those without a resident IM, so that there was more than a four-fold increase in their numbers over some 10 years.

Not surprisingly, the breakdown of facilities by year of establishment shows that the number increased rapidly following the enactment of the New Business Creation Promotion Law in 1998. The major contributing factor to this was the introduction of national government subsidies payable to local governments which undertook facility and program development relating to business incubators.

(ii) State of tenant businesses

Where restrictions apply to the activity fields of prospective tenant businesses, electronics & machinery and information & communications were the most common industrial categories, followed by pharmaceutical, biological & agricultural technologies, marketing & service, and the environment & recycling.

Overall, 61.3% of all companies surveyed experienced an annual average increase in sales of at
least 1% from the time of moving into the incubator, with 42.5% enjoying an annual average increase in sales of at least 30%. Survey findings on graduate clients show that the cross-industry average tenancy period was 32.0 months, indicating that companies successfully achieved commercialization and financial independence in just under three years. Companies which attempted to commercialize R&D results took nearly five years, with their tenancy period averaging about 56 months.

Figure 1: Breakdown of Business Incubators by Year of Establishment

Source: "Promotion of Innovation through Business Incubation - Survey Report" (March 2005) by the Japan Industrial Location Center

Of all graduate clients of the main incubation facilities\(^8\), an average of 96.6% were in existence at the time of the survey, while the five-year survival rate of graduate clients was also high at 89.3\(^9\). These figures show that business incubation had some degree of effectiveness in helping tenant businesses achieve growth and successful commercialization.
(iii) State of IM support

The average number of IMs stationed per facility was 1.9 for main incubation facilities and 2.0 for pre-incubation facilities. The most common service provided was business start-up and growth support, 87%, followed by incubator operating management (e.g. recruitment of client businesses, event planning and facility management), 56%, support system development, 49%, and entrepreneur education and training, 34%.

Twenty percent of IMs maintain almost daily contact with incubatees to provide business start-up and growth support, with 39% and 25% doing so for 2 to 4 days a month and 2 to 3 days a week, respectively.

![Figure 2: Activities of Incubation Managers](source: "Promotion of Innovation through Business Incubation - Survey Report" (2004) by Japan Industrial Location Center)

(iv) Achievements of business incubation

The JANBO survey attempts to quantify the benefits brought about by the local platform program over a five-year period from FY 1999 to FY 2003 as follows: the number of businesses started, 1906; the number of jobs created, 3576; and the increase in sales achieved by tenant businesses, 41.16 billion yen. Of these, the BI facility-related budget (new business support facility assistance and strengthening program) accounted for 254 businesses started, 660 jobs created and an increase in sales of 5.93 billion yen.

Although the survey results indicate that business incubation has been successful in
terms of business growth and survival rates as far as tenant businesses are concerned, these results are rather inadequate in the context of the start-up of new businesses and creation of employment in the Japanese economy as a whole. Nevertheless, there are other factors that need to be taken into account when evaluating those figures as follows: the survey only covered business incubators recognized under the local platform program, and there are quite a few cases in which spin-off businesses of existing companies move in or companies move in after being launched. It is also true that, given that most of the business incubators surveyed were established in 1999 or later, they had not been given enough time to produce significant results at that time.

(4) Problems with business incubators

(i) Redefinition of concept and review of business incubation

Quantitatively speaking, the creation of start-up companies by business incubators is inadequate. A widespread understanding of the basic concept of business incubation, i.e. supporting companies during their early stages and helping them achieve commercialization, has been slow to catch on, and some incubators even solely target entrepreneurs engaging in R&D-oriented businesses. However, in light of the diversity in local conditions from area to area, it is unrealistic to expect that R&D-oriented companies can be created in all areas.

A sensible approach would be to devise a more realistic concept according to the issues and conditions characteristic to each area and develop a business incubation system consistent with such a concept. Examples include the revitalization of local industries and response to the closure of a large manufacturing plant. Another possibility is the creation of community-based businesses aiming to meet demand arising from an aging or shrinking population. The important thing is to establish a clear, justifiable reason for the injection of public funds or local management resources to support the start-up of new businesses, which is, after all, individuals' voluntarily action, to help them survive longer and grow faster. Since the target differs from objective to objective, a support menu and support activities should be tailored to each target.

(ii) Position of business incubation in local revitalization

Another problem is that the relationship between local revitalization and business incubation has not been clearly recognized. The industrial cluster project aims to "create industrial clusters which turn out new world-class businesses one after another." To achieve this goal, it is desirable to develop an environment conducive to innovation and efficient production in specified industries in each area by promoting local cooperation between the industrial, academic and
government sectors. Business incubators are defined as entrepreneur development facilities under the industrial cluster project. The number of incubators and similar facilities affiliated with the industrial cluster project has been put at 125, which is only about 40% of all facilities (329)\(^{10}\). Moreover, only a fraction of the tenant businesses, approx. 2%, have taken part in the project\(^{11}\).

Local economy revitalization policy initiatives other than industrial clusters often fail to incorporate business incubators, while most of the companies that form existing industrial clusters are SMEs. Persons starting new businesses do so on the basis of the latest business opportunities. This fact points to the need to promote the exploration of new business fields by combining existing companies in conventional industries which are suffering from a slump in demand with new companies. Nevertheless, in many areas, there is little interaction between new companies operating from the local incubation facility and existing local companies. It takes too long for business incubators to create small batches of new companies and wait for them to gradually replace existing ones. There is a need to position business incubators as a system integral to the revitalization of local economies, instead of operating them in isolation of local economies.

(iii) Enhancement of incubation managers as professionals

Incubation managers (IMs) provide tenant businesses with management support and help revitalize local economies. For this reason, they must be professionals with advanced knowledge and support know-how. Although IMs are being trained through various training programs, including those implemented by JANBO, they are no match for their U.S. counterparts. Their remuneration also falls short of levels appropriate for professionals. Despite the fact that about 70% of IMs have worked at private-sector companies, there are few experienced IMs, with 61% only having less than three years’ experience (METI 2007).

In the United States, 48% of full-time IMs have a masters degree, with another 29% holding a bachelor's degree. Their average income is $84,157 for men and $63,744 for women, and their length of experience in working as an IM is 0-4 years for 57% of them, and 5-9 years for 34% of them (Knopp 2005).

Although an accurate comparison is not possible because of the limited availability of Japanese IM-related statistical data, according to the author's general impression, Japanese IMs are inferior to their U.S. counterparts in terms of both academic qualifications and annual income. To advance business incubation, it is necessary to position IMs as high-level professionals and improve their pay and other conditions to attract talented and well-qualified people\(^{12}\).

This section explores future directions of business start-up support and local revitalization on the basis of the practice of a business incubator engaged in new activities, taking into consideration the current issues faced by business incubators.

The Chiyoda Platform Square (CPS) has sought inspiration from the yamori agent system dating back to the Edo period, in which agents called "yamori" took charge of the land, buildings and residents of row houses and extended this to the management of entire neighborhoods by looking after tenants' industry selection, fostering new businesses, and so on. CPS's updated version of the yamori agent system is a brainchild of the Chiyoda SOHO Community Development Promotion Study Group, established by Chiyoda Ward in 2000. The Kanda area of Tokyo's Chiyoda Ward has a concentration of old small office buildings and has been left with pockets of vacant office spaces due to the collapse of the bubble economy and the rise of large-scale redevelopment projects, for example Roppongi Hills and Shiodome. Against this background, the study group issued a recommendation advocating "the pursuit of SOHO-oriented community development policy initiatives that take advantage of Kanda's historical background and convenient central location by characterizing the SOHO sector, which embodies the "work where you live"-type work style and lifestyle, as a contributor to the regeneration of an inner-city commercial district, while envisaging the recovery of the area's resident population (Edami 2006, p. 37). In short, this amounts to an attempt to transform Kanda, a traditional craftsmen's town dating back to the Edo period, into a district dominated by SOHO professionals, such as IT engineers, consultants and planners.

Along the lines of this recommendation, yamori agents were recruited, and the first floor of an old office building was turned into a Linux café, which doubled as the base of an Open Resource-related venture, while office/studio space was created on a floor of another building to cater to architecture and design-related SOHO businesses. This was followed by a renovation of the Chiyoda SME Center, owned by Chiyoda Ward at the time, giving birth to CPS, which featured booth-style open-nest work spaces, closed-nest office spaces for SOHO businesses, conference rooms, a café, a business convenience store and other facilities.

The heart of the yamori agent system lies in the creation of new activities, cross-sector interactions and businesses in the community through collaboration with administrative authorities, local residents and local businesses. In addition to promoting collaboration between businesses using its facilities, CPS seeks out opportunities for collaboration between users and local residents and transaction between users and local companies and tries to revitalize the entire
community by drawing administrative authorities and local residents into the scheme as well. These activities get a further boost from CPS's facilities. For example, the cafe and outdoor wooden deck area have been opened up to non-users. This, along with events held on the rooftop, facilitates interaction between users and local residents and companies. As a yamori agent has successfully brought in design offices and designers, hopes have been raised that plans to develop new products will proceed in collaboration with local small to medium-size textile wholesalers.

The key difference that CPS has with other business incubators lies in the fact that its staff, i.e. yamori agents, try to solve local problems and create business opportunities for tenant businesses and others by actively involving themselves in the local community. It is also managed in a flexible and nimble manner which is only possible in the private sector. And their activities also provide financial return for the Chiyoda Ward local government. The CPS building belongs to Chiyoda Ward. CPS is also paying rent to Chiyoda Ward. Before the CPS launched, the Ward absorbed about a 20 million Yen loss every year operating the building as an education and support center for SMEs.

It takes swift action whenever the need arises to improve support for tenant businesses or advance the revitalization of the local community, while minimizing costs through creativity and ingenuity. This light-footedness has produced tangible results. In just three years from its establishment, CPS has won more than 400 contracted users, who are engaged in business activities using CPS as their base, as well as 1800 registered users.

CPS's activities show a new direction for Japanese business incubators in terms of (i) an open facility and facility management that encourage collaboration among users and between users and the local community, (ii) setting of targets that take into consideration the area's historical background and local management resources, and (iii) flexible action to adapt to local circumstances and environmental changes. These characteristics are readily adaptable to non-SOHO industries. There is no need to develop high-tech industry clusters in all parts of the country. Possible avenues include support for the development of spin-off businesses by existing companies and commercialization through collaboration between start-ups and existing companies. To encourage this kind of collaboration, open facilities should be established and operated.

Rather than blindly following the U.S. model, which is based on the construction of a research park in a desert, luring of research laboratories, launch of high-tech ventures by engineers who are ex-employees of major corporations, and promotion of a further concentration of high-tech companies through business incubation, local revitalization based on a combination of existing industrial clusters and IT and other cutting-edge technologies should be pursue as it would be
more suited to Japanese conditions. CPS presents an excellent example for this new direction of business incubation.

4. Conclusion - Future Outlook of Japanese-style Business Incubators

This paper provided an overview of the historical background of the introduction and development of the business incubation concept in Japan and discussed past and present problems and issues. Because of its origin as the National Government's policy tool under its industrial location policy, early Japanese business incubators tended to specialize in the fostering of R&D-oriented companies and all but neglected management support services, leading to their failure to produce adequate results. In recent years, the true role of business incubators has begun to be widely understood, and the business start-up environment has improved. On the other hand, in the face of problems such as a decline in local industrial clusters and collapse of communities due to the aging of the population and depopulation, there is an urgent need to recognize/utilize business incubators as a catalyst for local revitalization.

Functions that will be demanded of business incubators in the future include a local business direction function designed to coordinate/commercialize technologies, human resources, brands and other business resources accumulated in the local area on the basis of a grand design drawn up for it. The creation of community-based businesses and businesses that utilize farm products, tourism resources, and the like may be considered to tackle a falling birthrate, aging population and depopulation. To respond swiftly to the needs of entrepreneurs and the local communities possible, a public-private partnership in the form of facility development by the public sector and facility operation by the private sector is necessary.

In addition to CPS, there are other successful business incubators. Examples include the SOHO Pilot Office in Mitaka City and SOHO Shizuoka. Their success is a result of incubation managers' efforts in business start-up support and local revitalization which involve community residents and local companies and take into consideration local characteristics (Koide 2006 and Kazumi 2004). A reevaluation of the roles and functions of business incubators will help produce results beneficial to the local area.
Notes

1. Although the Tohoku Industrial Technology Development Association was established in 1966, it was an R&D facility intended for companies pursuing collaboration between the industrial and academic sectors. The oldest facility that supported the commercialization of R&D results was Micon Techno House Kyoto, established by the Kyoto Industrial Information Center, a third-sector (public-private partnership) organization, in 1983.
2. The Softnomics Center ceased to operate in March 2005 and dissolved in the December of the same year.
3. This argument appears in the introduction of the Business Incubator Research Society Report (October 31, 1986), published by the Softnomics Center.
4. There were 26 designated areas under the Technopolis Law, and the same number of areas were designated under the Industrial Brain Location Law. Those designated areas were established prior to the enactment of the New Business Creation Promotion Law (1998), and a total of 24 business incubators are still in existence. Under the Private-sector Vitality Utilization Law, 14 research-core facilities were established altogether.
5. Some papers have passed a negative assessment on industrial location policy, including the Technopolis Law and Industrial Brain Location Law. Yamazaki 2003, p. 178, which states "from a long-term perspective, (industrial location policy) has not been so successful in making the local economic structure more advanced and maintaining and expanding employment," is a typical example. Nevertheless, discussion here focuses on business incubators.
6. Those four definitions are: (i) owning office space and other facilities to be offered to entrepreneurs, (ii) providing support for business start-up and growth through support personnel (e.g. incubation managers), (iii) placing restrictions on prospective tenant businesses (by business area, industrial category, number of years that have passed since establishment, size, etc.) and (iv) classifying companies which have moved out into two categories, "graduated" (the company moving out as a result of achieving its commercialization and other goals) and "other".
7. Of those 177 institutions, approx. 90% were established by local governments, non-profit corporations, universities, and the like. Although BIs established by private-sector companies account for about 10% of the above total, many similar BIs are likely to have slipped through the survey's net, as it is difficult to get a grasp of such BIs in a comprehensive manner. Private-sector BIs are classified into those used by venture capital to nurture the start-ups it has invested in, those operated by a consulting firm, those operated by a real estate company in an office building
owned by it, and so on. Ascertaining the situation surrounding BIs established by private-sector companies will be a future task.

8. JANBO divides the incubation process into pre-incubation (preparation for company establishment), main incubation (commercialization support) and post-incubation (follow-up support after graduation).

9. Graduated company current survival rate = Number of graduated companies currently in existence/Total number of graduated companies×100%

Five-year survival rate = Number of graduated companies in existence for five or more years after graduation/Total number of graduated companies that graduated five or more years prior to survey ×100% (March 18, 2005)

10. "Japan's BI Policy - Future Direction and Strategies" by the Industrial Facilities Division, Regional Economic and Industrial Policy Group, Ministry of Economy, Trade and Industry

11. Ibid.

12. In 2008, METI decided to cut off the budget for JANBO operations, so JANBO will have to abandon most of its activities. Accordingly, some volunteers established a new private organization for business incubation and incubation managers, named the Japan Business Incubation Association (JBIA). More than 100 incubation managers and supporters joined JBIA. This new organization will take over most of the support activities for Japanese business incubators.

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Kiwis Can Fly – Incubation in New Zealand

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Abstract
Business incubation in New Zealand is a relatively young industry having commenced around the year 2000. Being a country that is; geographically, located far away from some of the world’s major trading partners, unique approaches to incubation have been devised to maximise the success of incubated companies. This has seen a process that is driven to produce maximum value from limited resources and funds, have a strong focus on innovation, achieving benefits for the economy and exporting New Zealand innovations to the world. There is a strong emphasis on the quality of the companies with pre-incubation being adopted as a method to screen potential companies. Efforts are also made in developing valuable networks and sponsors who complement an incubator’s activities and have the passion and drive to take New Zealand companies to the international stage. This case study provides insights into the incubation process in New Zealand and observes the results that have been achieved to date. The location and size of New Zealand presents some interesting challenges and it has been observed that incubators prepare their incubated companies for export markets almost immediately to compensate for the low number of early adopters in the domestic market and the limited availability of grants. This case study will provide a introductory view to incubation in New Zealand and will set the scene for further case studies in the future.

Keywords: Incubation, New Zealand, Process, Common features
Introduction

Lust green forests, rolling hills and wonderfully clear water are some of the many images that come to mind when one mentions New Zealand to an overseas person. That is usually the first impression but this quickly gives way to the fact that New Zealand is a country that is full of sheep; in fact according to recent statistics, New Zealand has a human population of around 4.5 million and a sheep population of just over 40 million (Statistics New Zealand, 2008).

This is hardly surprising as the country’s tradition and heritage is deeply entrenched in dairy and agriculture. These industries have in fact given rise to New Zealand’s reputation as a quality producer of items such as meat, milk, cheese and butter. To give some perspective of how reputable New Zealand has become in the agriculture and dairy industries, the country’s largest co-operative of dairy farmers supply raw materials to the organisation known as Fonterra; a New Zealand company that supplies more than a third of the world’s dairy trade. Fonterra accounts for nearly 25 percent of New Zealand’s export earnings each year (Fonterra, 2008). Whilst this is an impressive figure; and shows the demand and creditability of New Zealand’s dairy produce, it is also a concerning fact since it shows the vulnerability of the New Zealand economy as a quarter of our export earnings are dependent on one organisation.

Business incubators in New Zealand are tools that aim to address situations like the one described above and have been actively assisting entrepreneurs to step outside the realms of just dairy and agriculture and explore other industries where innovative products and services can be devised. If we observe other great New Zealand innovations we find such products as the Jet Boat; invented by William Hamilton, research undertaken in the splitting of an atom by Ernest Rutherford (he also received the Nobel Prize for his work) and the bungy jump by AJ Hackett. If we move into more technological achievements we find New Zealand companies such as Navman who produce innovative GPS solutions (Navman, 2008) and Rakon who develop high performance frequency control technology based on quartz crystals (Rakon, 2008).

These innovative developments show that New Zealand has so much more to offer to the global market and if we can nurture and develop these entrepreneurs and companies we can build a knowledge economy capable for taking leading edge products and services to the global market. Incubators around New Zealand have been established to assist and support the development of new innovations and accelerate their growth.
Incubation in New Zealand

Incubators have been established around the country to address three core industries as stipulated by the New Zealand government. The industries are:

- Information Communications Technology (ICT): Includes products and/or services related to software and hardware. This also includes technologies in general.
- Creative: Includes fashion, art, film, music and the cultural uniqueness of New Zealand.
- Bio technology: Includes medicines, health related industries and bio-fuel.

(New Zealand Trade and Enterprise, 2008)

These three industries have been identified by the government as having the ability to shape the economy of the country and in the future; have a greater growth and success rate. They’re also the industries which present the country with large export opportunities upon the establishment of a global presence. In addition, the core industries are perceived to create what the government calls “High growth” companies. These are companies that are able to transform economies; contribute in a significant way to revenue generation, attract investment into New Zealand, create wealth, contribute to a knowledge economy and create new employment opportunities (Incubators New Zealand, 2008).

Each of the incubators specialise in one of the core industries listed above; however it isn’t uncommon for incubators to have several divisions within them, each one having a management team with particular expertise in one of the core industries. This can diversify the offerings of an incubator and also allows them to assist a broader range of entrepreneurs.

What type of company?

Given the strong focus on contributing to the economy and identifying export opportunities it is common practice for New Zealand incubators to look for several key criteria before allowing a company to join their programmes. The main criteria are:
- **Evidence of intellectual property (IP):** It is understood that whilst other assets in the company depreciate, IP actually appreciates with continued research and development, provided that there is good evidence that it would be a successful; and wanted product/service in the market. IP is an important factor in determining whether a company is suitable for incubation. Due to an incubator’s limited resources, they must adhere to strict entry requirements and be confident that it is a company where value can be added/created.

- **Innovation:** This is closely linked with IP. Innovation can be a completely new method of addressing a market need or it can be the use of existing technology/products to produce a new product or service that is novel and inventive. Essentially a basic definition is that an innovative company is one that offers something that hasn’t yet been seen in the market or is an improved substitute over an existing product/service.

- **Evidence of a real market need:** All too often entrepreneurs in New Zealand think that if they create a good product people will want it. This isn’t the case and incubators place great importance on solid research by the company to establish whether there is a need for what they’re proposing and more importantly; if there is a need’ will people buy it?

- **Export potential:** Like IP, this is crucial since creating wealth for the country and it’s economy is a key focus. In order to create wealth, companies must go to larger markets outside the domestic market.

- **Good “coachable” management team:** Incubators realise that business incubation isn’t right for every company so it is established very quickly as to whether a company is suitable based on the current people they have in their team. People can be difficult to manage and ones that don’t take the incubation process seriously, see the value that is being offered or don’t engage in it are not accepted into the programme.

The criteria is put in place to ensure that quality companies are coming through the incubation process and have the willingness to engage in rapid growth and economic development. One could argue that an incubator should take in any company since it is in our best interest to have a good number of residents in the programme. Whilst this might be true in some cases, the overall practice in New Zealand is to strictly adhere to the entry criteria which have been put in place. This is due to several reasons:

- **Limited resources:** Incubators in New Zealand are like the very companies they assist; typically limited cash but have an excellent ability to create value from very little resource. The resources in the form of sponsors, network contacts and the team that manage the
incubation programme are limited. It is for this reason that incubators must be highly selective of the companies they bring into the programme i.e. incubators want to create maximum value from the resources they allocate to companies and the company has to be the right one otherwise it could be a waste of an already limited resource.

- **Limited members of staff:** It isn’t uncommon for an incubator to fall into the not for profit category. Budget limitations mean that quality staff members have to be identified and acquired; staff capable of motivating and providing quality support to the incubated companies. A small incubator team means that staff time has to be managed efficiently and allocated appropriately so that the quality of the incubation programme is maintained to a high standard. Like limited resources, the ideal situation is to have quality staff dedicate time to quality companies thus maximising value and growth.

- **Attitude:** The motivation of the principle of the incubated company must be high and there is an ambition to look towards a global market, not a domestic market. There is an interesting cultural behaviour that resides in New Zealand entrepreneurs. We refer to this as the “3 Bs” mentality where the entrepreneur is satisfied with his achievements of acquiring a “BMW car, a Boat and a Bach (New Zealand terminology for a holiday home close to a beach)”. Once the “3 Bs” have been achieved, the entrepreneur is content and has no desire to look global and build upon their success and wealth. As an incubator we have to educate entrepreneurs, create a mind shift so that they can reach a level of success but also wish for more and try to improve upon their successes. This accumulation in knowledge and wealth has the ability to improve an economy. In the pursuit of finding quality companies that we can dedicate our resources to, they must have an attitude and desire to look beyond the 3 Bs and strive for greater success.

### The incubation process

The process in New Zealand can be divided into three stages:

- Pre-incubation
- Incubation
- Graduation
Each of the activities undertaken during each phase is summarised in figure 1 below and a more detailed explanation follows.

**Figure 1**

<table>
<thead>
<tr>
<th>PRE-INCUBATION</th>
<th>INCUBATION</th>
<th>GRADUATION</th>
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</thead>
<tbody>
<tr>
<td><strong>Market validation</strong></td>
<td><strong>Funds/grants</strong></td>
<td></td>
</tr>
<tr>
<td>- MBA student</td>
<td>- Angels/dragons</td>
<td>- Second stage funding/investment</td>
</tr>
<tr>
<td>- Research</td>
<td>- Government agencies</td>
<td>- Commercialisation of IP</td>
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<tr>
<td>- Identification of &quot;low hanging fruit&quot;</td>
<td>- Early commercial product</td>
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<tr>
<td><strong>Securing of IP</strong></td>
<td><strong>Product/service</strong></td>
<td></td>
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<tr>
<td>- Unique</td>
<td>- Proof of concept</td>
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<td>- Novelty</td>
<td>- Prototype</td>
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<tr>
<td>- Can be commercialised</td>
<td>- Marketing/business Model</td>
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<tr>
<td><strong>Company structure</strong></td>
<td><strong>Collaboration</strong></td>
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<td>- IP holding company</td>
<td>- Potential customers</td>
<td></td>
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<tr>
<td>- R&amp;D company</td>
<td>- Pilot sites</td>
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<td>- Marketing company</td>
<td>- Joint ventures</td>
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**Pre-incubation**

There are instances where an incubator is approached by a potential company and the concept they’re proposing is so unique and innovative that it warrants further investigating by the incubator to establish if they’re an ideal candidate for the incubation process. If such a scenario occurs, the company is induced into Pre-incubation.

During this stage, several activities are undertaken to investigate the potential, feasibility and quality of the proposed innovation. These activities include:

- **Market validation**: It isn’t enough to say that there is no competition or similar products/services in the market. During pre-incubation, a company must conduct some
market research and gather evidence for the incubator to show there is a level of need/demand in the market and the market is willing to pay for the product/service. Incubators that have a relationship with a tertiary education provider may acquire the services of a post graduate student to conduct the market research for the company. This is a cost effective manner of having the research done. Incubators may also approach their sponsors and networks to obtain pro-bono or discounted services.

The market research also identifies what is termed as “low hanging fruit” markets. With unique and innovative companies, there may be many applications or target markets for their innovation. However, some applications and target markets may be easier to develop than others. These applications or target markets are known as the “low hanging fruit”; the ones that are the easiest to reach and “pick off the tree”. The early cash flow generated from the initial markets will assist in the accumulation of funds to put towards further research and development to add value to IP creation. The initial cash flow will also provide a strong indication of the commercial value of the company and this is particularly useful when applying for government funding and attracting early investors.

- **Securing of IP:** The proposed innovation is introduced to patent attorneys to establish whether it is unique, novel; and most importantly, can be commercialised. This is a key requirement for entry into the incubation programme due to its importance for future revenues and the growing and fostering of knowledge. With IP being a vital asset of the company, it will also influence the company valuation in the future. Part of the process will be to identify similar patents in the market that may prove to be a barrier for the innovation to be developed.

Since having IP is a necessary criteria for entry into an incubator in New Zealand, all companies in incubation have proven that they have unique IP and are therefore capable of high growth potential. We can, for example, observe in figure 5 (further on in this case study) that in the year 2007, there was a total of 107 resident companies. This equates to 107 patents being filed out of the entire incubation industry for that year.

- **Company structure:** The structuring of companies is important in New Zealand since it offers a degree of separation and protection for the company founder(s). The current government has also introduced a policy for research and development tax credits where a
company that can prove that it is engaging in such activities will be taxed at 15% as opposed to 33%. A separate entity setup for research purposes makes it easier to account for research and development expenditure and allows accountancy activities to be tracked and validated. Having a good company structure can also protect the IP from any legal ratification that may occur when the company is trading in the market. For example a marketing company is setup to sell the innovation to the market. If a law suit is bought against the marketing company, the IP is protected in a separate company which is an IP Holding company.

The pre-incubation phase can take up to 3 months to complete and incubator staff are fully engaged in the process to assist and introduce companies to appropriate sponsors/network partners.

**Incubation**

A company enters the incubation phase when they’ve demonstrated; and provided strong evidence, that there is a market need for their product/service, clear export potential, potential for high growth status and have a product/service they can protect via the patent process. As mentioned earlier, it can take up to 3 months for a company to complete the pre-incubation phase and move into the incubation phase.

In the incubation phase, the areas below are addressed. One will see that this phase focuses heavily on product development, seeking appropriate expertise, funding and partnerships. Also note that all of the activities below are done in parallel, not in isolation of each other.

- **Securing of funds/grants:** Shortage of funds and cash flow are a common characteristic of start-up companies. In New Zealand there are several methods an incubator may assist a company in securing funding/grants:

  - **The 3 Fs:** The 3 Fs are Friends, Families and “Fools”. This is a common form of securing early funds by start-up companies; from people they know and/or have a relationship with. They’re also people who have been convinced that the product/service concept is a good one and they’re interested in having an early stake in it.

  - **Angels/Dragons:** These two terms are common terminologies which are used to describe individuals who have a high net worth and are willing to invest funds into a company during
its early developmental stage in order to allow it to grow/develop their product/service. In New Zealand, associations and networks of these individuals have been formed and they meet on a regular basis to listen to presentations by fledging companies.

- **Government:** New Zealand’s government has an excellent range of grants available through their various departments. The grants cater to companies at various stages of growth; from seed/early stage through to more established companies. Depending on the grants being sought, they can be used to prove a business case, develop further IP, obtain expert assistance from around the world and develop a market further both domestically and internationally. Companies aren’t required to give up an equity stake in order to secure a grant. Smaller grants are 100% funded whereas larger grants are 50/50 funded i.e. the company puts in half the funds being sought and the government puts in the other half.

Government grants are available from organisation such as New Zealand Trade and Enterprise ([http://www.nzte.govt.nz](http://www.nzte.govt.nz)), and the Foundation for Research Science and Technology ([http://www.frst.govt.nz](http://www.frst.govt.nz)).

- **Product/service development:** With the market research work conducted in the pre-incubation phase, the knowledge and information obtained can be used to develop a product/service that addresses the needs of the market. The market research intelligence is used to:

  - **Develop proof of concepts:** These are highly conceptual forms of the proposed innovation. They’re simply models and are used to simulate how the final product will function. For technological innovations, a proof of concept can be a spreadsheet or a simple construction of the technology with simple materials in order to test and establish whether the innovation can be achieved.

Companies can develop numerous proof of concepts before proceeding to build a prototype. An incubator assists the company by putting them in contact with members of their network who have the expertise to assist the company in their development. The assistance by organisations within the network are either pro-bono or at competitive rates. An example is if an incubator is part of a university. The incubator can call upon key departments within the university to assist in the testing and validation of the technology. This also has the added
advantage of having access to graduate and post graduate students who can assist the company in the project as part of their qualification.

- **Prototype development:** A prototype is an accumulation of all the testing done through the proof of concept activities. A prototype form of the innovation is very close to what the final commercial version of the innovation will be like. Prototypes are also ready to be pilot tested and the incubator assists the company with finding the ideal customer or development partner; who is interested in taking part in the pilot testing, to identify areas of improvement for the innovation.

Like the proof of concept stage, access to incubator networks are proven to be valuable as suitable experts are able to be identified to assist in the implementation of the prototype into a pilot site.

- **Marketing channels and business model development:** This task focuses on establishing the right marketing channels to build awareness and exposure for the innovation. This reaffirms the market research that was conducted in the pre-incubation phase and also establishes the right path to market for the company in anticipation of the completion of the pilot site testing.

Investigation into the various business models will also be conducted by sponsors as it is important to identify any barriers to commercialisation. Sources of revenue are identified as a way to fully commercialise the innovation and an investment memorandum put together to calculate the value of the company, develop financial forecasts and prepare a term sheet.

- **Collaboration:** Early adopters of the innovation are identified and approached as potential end users or development partner. Companies must realise that they can’t achieve high growth if they do not collaborate and bring the right staff, organisation and experts into the project.

The advantage of collaborating with a potential customer is that it is a mutually beneficial relationship where the company can access feedback on their innovation thus creating a product/service closer to what the market requires; and the potential customer is able to engage in the development process and have access to a unique innovation that can give them a competitive advantage.
Collaborations can also lead to joint ventures being formed so that a combination of resources, expertise and experience, will allow an innovation to develop even faster.

**Graduation**

Graduation is the final phase for the company and this usually occurs 2-3 years after entry into the incubation programme. A company is deemed to be ready for graduation when at the discretion of the incubator advisory board, the incubator cannot add any more value to the company and they’re ready for second stage investment; assistance and funding by a venture capitalist. A company is also ready for graduation when the company has successfully launched their innovation and has a strong corporate structure in place which consists of a board of directors, an established team, protected IP and a company constitution.

**Common features of incubation in New Zealand**

Being a small country with a global position which is far way from the world’s major trading partners, New Zealand incubators have common features of their programme which aim to assist innovative companies take their products/services to the global market. In addition to providing the world with innovative products/services, New Zealand incubators also aim to reduce the failure rate of businesses in New Zealand. Statistics released by the Ministry of Economic Development suggests that over 90% of New Zealand businesses fail within the first 5 years of operation, a percentage that incubators are looking to decrease as they assist more companies to not only succeed, but have processes in place to address succession planning, further research and development for product improvement and diversification of product offerings.

Common features of incubation in New Zealand consist of:

- **A strong focus on export**: In the past, exporting meant sending our products to Australia. Incubators now go beyond this and are creating relationships with other countries, particularly in Asia.

  The focus on exporting is also due to the New Zealand government’s efforts in establishing trade offices in various countries to assist companies reach a global market. The programme
offered by the government department; New Zealand Trade and Enterprise, is called the Beach Heads programme and has established trade offices in South East Asia, United States, Middle East and United Kingdom (New Zealand Trade and Enterprise, 2008).

Incubators have incorporated annual trade missions to different global regions as part of their programme offering to give companies an opportunity to explore and experience international markets. This also motivates the company to develop their offerings in an international context, not just national.

With a population of just over 4.5 million people, New Zealand is a small market and it is becoming common place that start-up companies will launch their innovations in an overseas market as opposed to the local market. The New Zealand market also typically lies within the “Early Majority” and “Late Majority” categories as illustrated by Rogers Adoption/Innovation curve (Value Based Management, 2008), in figure 2 below. Exporting is a method that takes the innovation to a market that shows characteristics of being in the “Innovators” and “Early Adopters” categories so that the innovation has increased opportunities to gain early commercialisation traction and success. These markets are the ones identified during the incubation process when the market research and marketing channels are being explored. Focussing offshore is a necessity to commercialise an innovative company during incubation.

**Figure 2**

![Rogers Adoption / Innovation Curve](image)

- **Collaboration**: This has been explored in a previous section and is indeed a common feature of incubation in New Zealand. One of the main reasons for this can be explained by the “Experience Curve” (12 Manage, 2008) shown in figures 3 and 4.
From [figures 3 and 4] we can see the value of finding an ideal collaboration partner that has suitable experience in a market the incubated company is interested in targeting. Figure 3 shows that at the initial stages, there are high development costs to the start-up company and a large amount of effort is required to produce the innovation. In terms of development time they’re also at the early stages. This is due to the creation of a unique and innovative concept which requires a lot of research and development. It is ideal for the start-up to identify a collaboration partner who is further down the development path and has been able to reduce costs over time as their efficiencies, technologies, knowledge and productivity has improved.
In figure 4, the start-up and partner have formed a relationship and have a shared goal and vision to develop the technology together. By identifying the appropriate collaboration partner the start-up gains access to their resources and expertise, dramatically lowering development costs and effort thus saving valuable development time. This allows market launch and commercialisation to become a reality much quicker compared to working in isolation. The collaboration between the two companies can also bridge a technology gap where the IP from both companies can be combined to find a final solution or address the market need/problem they’ve been working on. It should be appreciated that the saving in time can be significant thus allowing an innovation to be taken to market sooner to maximise opportunities.

Further into the relationship, a joint venture can also develop and the two organisations can have joint share in IP development.

It is for this reason that incubators strive to identify key strategic collaboration partners early in an innovation’s development.

An example from one of our incubators is a company that specialises in remote monitoring technology. The incubator assisted the company in identifying a potential client who had a dedicated R and D team who were addressing the problem or minimising waste in the agricultural industry. The waste contributed to millions of dollars in wastage each year. The two companies had a discussion and found that the technologies they were independently working on could be bought together to deliver an ideal solution. A collaboration agreement was signed and when it was clear that a solution and workable relationship could be established, the two formed a joint venture company (spin out) and established joint ownership in the IP. The joint venture also attracted early investment into the project to develop the IP further and identify a path to market.

To provide a further example of the effectiveness of collaboration, we can observe the relationship between Sony and Ericsson to release a range of mobile phones under the Sony Ericsson brand. Sony was interested in entering the mobile phone market but had limited expertise and Ericsson was a well established maker of mobile phones but wished to enhance the camera and audio technology on their mobile phone designs. The collaboration was ideal as the expertise from both companies bridged the technological gap each one was facing and
bought together two global brands to create an innovative high quality product range. What started off as a collaboration, eventually became a joint venture with both Sony and Ericsson having equal shares in the then newly formed Sony Ericsson (About Sony Ericsson, 2008).

- **Sponsors and incubation partners:** Incubation is a process that can’t be successful without the establishment of a network of value added services; like minded individuals and organisations that are interested in the programme we offer and wish to contribute to its success.

Incubators in New Zealand usually have relationships with organisations that are able to provide expert advice in the main disciplines of business; accounting, law, marketing, advertising, design, communications and finance. As many of us are aware, the incubated companies are technically able but usually lack the fundamentals of business in order to grow their innovation and make it a commercial success. An incubator’s relationships with organisations that fill this gap are invaluable.

For more technical expertise; particularly in the case of technology, relationships are sought with organisations that are able to offer such skills as software development, prototyping and manufacturing. Incubators which are part of a university also foster strong relationships with internal departments such as engineering, computer sciences and information technology. Students and professors with knowledge in the main business disciplines described above are also a valuable resource.

The expression “two heads are better than one” fits incubation in New Zealand perfectly. Without an excellent support and expert network which can be called upon to address gaps in an innovation’s development, growth is minimised and occurs a lot slower.

The relationships and offerings by the network/sponsors are generous. Consultation is offered at no charge and when there is a need for paid services, the rates are generously discounted so as to not affect the limited cash flow of an incubated company.

- **Sustainability:** Like the companies they look after, cash flow in an incubator can be quite limited. Different incubators use various methods of meeting their expenses and ensuring they are sustainable for the future. The common methods used are:
- **Offer additional services to non-incubated companies:** This can be offering business training seminars to external companies or providing consultancy services to companies which might be interested in being coached but don’t fit the criteria for entry into an incubator. Courses and workshops may be offered and these are charged at commercial rates.

- **Taking an equity share in the company:** A small equity share is taken (between 5% - 10%). Obviously a value of a company isn’t realised until they’ve graduated. After a certain period of time after graduation from an incubator, an independent valuation of the company’s shares is conducted and then sold, either back to the company or to external parties. The funds from the sale of the shares are either put back into the incubation programme to fund the next generation of companies or are rewarded to staff if they have a personal interest in the companies they mentor.

- **Charging a monthly incubation fee:** All incubators charge a fee for being part of the incubation programme. Several models are used. The first is a sliding scale of fees where the incubation fee increases every quarter. The second method is simply cost recovery where the company only pays for what they use along with a set incubation fee. This is common for not for profit incubators who have a large supporter such as a university. A third method is deferred payment where an incubated company continues to incur debt during the programme and it is hoped that value will be realised in the future and the debt can be recalled. This method isn’t very common now and hasn’t been a form that has worked particularly well.

- **Commercialisation offices:** This is a common feature for incubators affiliated with a university. Universities have commercialisation teams that assist university staff to conduct their research and development in order to produce a commercial outcome in the future. There is a lot of expert knowledge within these teams and they have good relationships with university departments as well as external organisations. This is a valuable addition to an incubator’s network and their companies can also gain access to this resource.

**Incubation results**

Being a relatively young industry, New Zealand incubators have been able to create value in the economy and produce some highly successful companies. This has been reflected in government
policies that have been designed to assist with the fostering of innovation in New Zealand. Incubators continue to be funded by the government and are invited to submit an application each year to compete for the funds.

For incubated companies, funds and grants have been introduced and they cover a broad range in terms of availability; catering for early developmental stages as well as market launch and identification grants. The recent introduction of research and development tax grants has also enabled companies to maximise cash flow and spend budgets on activities that move a company forward at an accelerated speed.

With support from their networks and the government, the success of incubation in New Zealand is summarised in the following table, figure 5 – note that all monetary amounts are in New Zealand dollars.
Figure 5

<table>
<thead>
<tr>
<th>Incubator Performance Data</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of incubators reporting</td>
<td>10</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Number of resident companies</td>
<td>129</td>
<td>123</td>
<td>107</td>
</tr>
<tr>
<td>Number of pre-incubation clients</td>
<td>41</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>Total number of clients</td>
<td>170</td>
<td>164</td>
<td>135</td>
</tr>
<tr>
<td>Number of pre-incubation clients</td>
<td>41</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>Full time employees employed by resident companies</td>
<td>750</td>
<td>694</td>
<td>303</td>
</tr>
<tr>
<td>Capital raised by resident companies</td>
<td>$13.8m</td>
<td>$20.1m</td>
<td>$24.1m</td>
</tr>
<tr>
<td>Domestic revenue generated (annualised)</td>
<td>$28.2m</td>
<td>$28.8m</td>
<td>$12.9m</td>
</tr>
<tr>
<td>Export revenue generated (annualised)</td>
<td>$10.1m</td>
<td>$9.9m</td>
<td>$4.0m</td>
</tr>
<tr>
<td>Total revenue generated (annualised)</td>
<td>$38.3m</td>
<td>$38.7m</td>
<td>$16.9m</td>
</tr>
<tr>
<td>Successful company exits (graduations)</td>
<td>20</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>High growth company exits</td>
<td>12</td>
<td>24</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of incubators reporting</td>
<td>9</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Total number of alumni companies</td>
<td>106</td>
<td>126</td>
<td>157</td>
</tr>
<tr>
<td>Number providing performance data</td>
<td>68</td>
<td>75</td>
<td>68</td>
</tr>
<tr>
<td>Full time employees employed</td>
<td>544</td>
<td>618</td>
<td>651</td>
</tr>
<tr>
<td>Domestic revenue generated</td>
<td>$38.7m</td>
<td>$58.3m</td>
<td>$42.9m</td>
</tr>
<tr>
<td>Export revenue generated</td>
<td>$11.6m</td>
<td>$14.1m</td>
<td>$28.4m</td>
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<tr>
<td>Total revenue generated</td>
<td>$50.3m</td>
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<td>$71.3m</td>
</tr>
<tr>
<td>Capital raised</td>
<td>$19.6m</td>
<td>$12.9m</td>
<td>$13.1m</td>
</tr>
</tbody>
</table>

From figure 5, one might draw the conclusion that incubation is a declining industry in New Zealand. I would like to remark on this trend to dispel any misconceptions.
The incubation industry is not declining. The information shown in figure 5 is a result of an industry that is being proactive in identifying areas of improvement and then acting upon those improvements. For example, the number of incubators in 2007 is seven. This doesn’t mean that there are only seven incubators in New Zealand, but there are seven that are funded by the government. This is due to the government identifying incubators that are showing high levels of performance and success and are known to be able to graduate quality companies. By funding the top seven incubators means that the available government funds are utilised effectively and wisely; on incubators that have a proven track record and can maximise the government’s investment.

One will also notice that the number of clients and domestic and export revenue is declining. As previously mentioned, incubation programmes in New Zealand are constantly improving to reflect best practice and global market changes. These changes, coupled with limited resources have meant that a shift has occurred where the emphasis is on quality, not quantity. Deal flow; the identifying of quality clients, has become a common issue for all incubators thus the adoption of pre-incubation as a method to obtain quality companies and minimise the waste of already limited resources. Whilst the number of clients and revenue may be decreasing, the industry is confident that our alumni statistics will improve significantly upon what are already good results, as quality companies begin to take the world stage.

Conclusion

Being a small country with a small local market and a challenging geographical location, business incubation in New Zealand has assisted young companies to accelerate their growth and develop unique innovations.

Part of the challenge has been changing the mind set and attitudes of entrepreneurs; making them think about exporting and going global as opposed to only being successful in the domestic market. As shown in the results, the message is starting to get through and the export revenue being reported by our graduate/alumni companies is steadily increasing each year.

The drive to further build the New Zealand economy is also evident from the results with more employment being created as the graduate and incubated companies grow in staff numbers. The
economy is becoming stronger not just from a revenue point of view but also from knowledge as entrepreneurs continue to develop innovation after innovation. Staff can also benefit from being part of the team that is creating new innovative products/services and this builds upon the knowledge that is being gained. This is similar to a “snowball effect”; it starts out small but as it gains momentum it gets larger.

With the New Zealand incubation industry nearing ten years old, it is still a young industry and our incubators are always developing and improving their incubation process to better support the increasing complexity of innovation in New Zealand entrepreneurs. As the times and markets change, several key lessons have been learnt during our venture into incubation:

- Being proactive in adapting to the needs of an incubatee is crucial as we place a strong emphasis on creating value and contributing to our incubatee’s successes. Pre-incubation was never part of the process in the earlier times when incubation first started. Pre-incubation has proven to be an insightful method of identifying the companies that have the potential to contribute to New Zealand economically. This maximises the usage of our already limited resources and ensure they are used effectively and towards a good cause.

- Behind every great incubator is a good sponsor/partner. In fact there are many great sponsors behind an incubator. An incubator cannot create value for an incubatee without the support of its networks. Sponsors are part of every aspect of the incubation process, from an IP expert in the beginning stages, to a prototyping expert and a marketing expert as they prepare to launch onto the market. An incubator that thinks they can do it on their own won’t gain many successes and will essentially be working harder; not smarter.

- Support global companies. New Zealand is a small country and compared to our other trading partners, there is no contest when comparing market sizes. Businesses that choose to only operate in the domestic market are limiting their growth potential, restrict the growing of knowledge and cannot build upon their contribution to the New Zealand economy. New Zealand incubators must therefore identify and support companies with ambitions to export to take advantage of greater opportunities and therefore opportunities for growth. As previously mentioned, incubator resources are limited so we wish to give them to companies that can take a little but do great things with it, in other words “the value created is far greater than the sum of all the parts.”

- Focussing on export potential from the outset is essential due to the characteristic of the New Zealand market. The domestic market is traditionally not made up of early adopters of new
innovative products/services. New Zealand consumers are heavily influenced by trends internationally and prepare to observe the experiences of their international peers before adopting the innovation themselves. Due to this behaviour, incubators have leant towards focussing first on international markets and using New Zealand as a test market thus minimising risk and having a test bed for technology research and development.

- Quality staff within the incubator is essential. Given the number phases a company goes through as it grows, incubation staff must have a broad knowledge and skill base to cope with early stage technology and later stage ones. This involves knowing about commercial implications and essential practices from each of the major disciplines; law, marketing, management, coaching, mentoring, technology etc. Without a good understanding of commercialisation, a staff member cannot effectively assist an entrepreneur. People skills are also essential as incubator managers require their clients to trust and build a relationship with them. The better we understand a company, the better we can assist them.

As New Zealand incubators and their companies begin to venture into overseas markets, their networks will continue to grow and collaborations with incubators around the world will mean that not only will New Zealand, as a country benefit from a more innovative and sophisticated economy, but other countries will also experience; and share, in the same successes as New Zealand companies begin to go global.

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Biographical notes

Kevin Ha is the Incubator Business Manager at the Auckland University of Technology (AUT) Business Innovation Centre, Auckland, New Zealand. The Business Innovation Park is one of the founding organisations of the business incubation industry in New Zealand and has an award winning incubation programme with a proven track record.

Kevin has been part of the incubator since its inception and has a strong focus on coaching the companies to, protect their IP, establish a strong company structure and identify key collaboration, joint venture and investment partnerships.

He is also responsible for many of the sponsorship arrangements, value added services and industry contacts for the incubator and manages the incubator's relationships with the government, both in New Zealand and internationally.

With a keen interest in Asian markets, Kevin has focussed his attention on Singapore and most recently, Japan.

Kevin is a graduate of AUT specialising in marketing and information systems and holds a Masters in Business Administration (MBA) from the University of Auckland.

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The Integrated Marketing Communications Mode of Chinese MICE Enterprises

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Abstract

As a new industry, MICE industry is developing rapidly in recent years contributing much to national economy in many developed countries. With China’s entering WTO and marketization of China economy, the development of Meetings, Incentives, Conventions and Exhibitions (MICE) industry attracts more and more people’s attention. Along with the success of bidding for the 2008 Beijing Olympic Games and the 2010 Shanghai EXPO, MICE industry will be one of the most potential industries in this century and its profit will reach as high as 30%–50%. Moreover, MICE Industry can produce huge economic efficiency and social efficiency. MICE industry in China began at a comparatively late date, the relevant law is still unsound, market mechanisms are disordered and excess competition still exist in MICE market. So, how to guide MICE industry and how to protect the MICE market is one of the most burning issues.

The paper will adopt Integrated Marketing Communications theory, Stakeholders Theory and relevant theories of MICE marketing as its rationale. This study uses IMC mix tools to demonstrate that privately managed MICE enterprise should catch market opportunity and set accurate market location. It is the aim of this paper to analyze and structure the concrete Integrated Marketing Communications strategy and try to make a research results helpful in MICE marketing management practice to MICE enterprises.

Key Words: Meetings, Incentives, Conventions and Exhibitions (MICE); Integrated Marketing Communications; Stakeholders
I. Introduction

A review of past research efforts in a particular field provides an understanding of that field’s research issues and the boundaries of a discipline. This effort is particularly valuable in a relatively new and developing field, such as the MICE sector, where few indicators delineate the maturity and sophistication of a field (Reid and Andereck, 1989; Baloglu and Assante, 1999). In that regard, researchers have attempted to determine the direction of MICE management research (hereafter “MICE research”) through the content analysis of articles published in academic journals. However, their reviews are limited to specific research themes (Barrows, 1994; Crouch and Ritchie, 1998) and specific regions (Carlsen, 1999). An overall review of MICE research published in hospitality and tourism journals across regions has not been conducted to date.

Over the past decades, the growth of the MICE industry has sparked an awareness of the economic significance of MICEs to local, state, and national economies. Authors, both industrial and academic, agree that conventions are a major contributor to regional and national economies (Crouch and Ritchie, 1998; Rutherford and Kreck, 1994). Not only do conventions contribute economically to their host destinations, but they also accelerate the growth of overall travel and tourism activities through repeat visits and word of mouth communications (Rutherford and Kreck, 1994). According to recent industry data, the total spending for the MICE industry in 2000 in the US was $122.1 billion (Successful Meetings, 2001).

However, many researchers have observed that the existing industry data and statistics on the economic impact of conventions have been underestimated for several reasons. First, published figures provide only national totals and therefore fail to record the regional impact of convention activities (Zelinsky, 1994). Second, tracking total convention spending by delegates, sponsors, or exhibitors is difficult (Kim et al., 2003). Third, published data almost always fail to distinguish MICEs from trade shows, expositions, incentive travels, and other types of meetings, which makes it difficult to gauge the exact influence of MICEs on the host community (Fenich, 1998). Lastly, reported data often underestimate the fact that nearly 70 percent of MICE attendees combine business and family leisure.

Therefore, the total impact of convention activities is much larger than the spending associated with attending a MICE (Braun, 1992; Grado et al., 1998). Each dollar of MICE-related spending initiates a broad set of economic interactions that produce additional spending in other sectors of a region’s economy (Braun, 1992), and thus the economic impact of MICEs can be doubled or tripled because of the extensive indirect influence on host cities’ economies. Crouch and Ritchie (1998) noted that, given these shortcomings and the obvious difficulty of measuring the true...
impact of the MICE industry, existing estimates of the size of the industry should be treated and interpreted with great caution.

As competition in the MICE industry grows, it becomes more critical for destinations and facilities to identify key destination factors influencing associations’ site-selection decisions and to develop marketing strategies based on those identified factors (Go and Govers, 1999). A review of relevant literatures indicates that most publications attempting to identify important site-selection factors appeared to report similar findings. Major site selection factors frequently identified in empirical studies include “accessibility”, “availability of facility”, “quality of service”, “affordability”, “destination image”, “attractions/entertainment”, and “safety/security”. Particularly, adequacy of physical facilities and accessibility appear to be the two most important factors for MICE planners when they select meeting sites. The physical MICE facility is closely related to the basic meeting considerations: meeting size, anticipated volume of meeting attendance, purpose of the meeting, and predilections of attendees.

Although many researchers have focused primarily on identifying primary motivations of association members’ meeting participation, motivation factors alone do not explain how association members’ meeting participation decisions are made.

An overall review of convention research on the meeting participation factors indicates that meeting participation decision-making factors are relatively similar among professional association members. However, it is important for associations and MICE planners to identify unique factors reflecting their associations, and design meetings based on general and unique factors. In doing so, associations can achieve a higher turnout and a higher satisfaction level, which will ultimately lead to participation in future meetings.

The MICE industry is characterized by different types of products delivered on a similar platform, i.e. a MICE can be held showcasing products from the computer, aerospace, defense, publishing, health, household goods, medical, education and car industries but similar activities are performed to deliver the overall product to the visiting public. Every MICE requires a venue. Every MICE requires organization of the exhibitors. Every MICE requires integrated marketing communications strategy.

However, we are still in the early stage of cognitive development, the Chinese MICE industry's development history is quite short, as for an initial stage, occupies the exploration and the accumulation experience's time, the MICE enterprise has some problems in the convention marketing aspect. Therefore, launches the MICE enterprise IMC strategy research appears very important without doubt. This paper attempts to analyze the situation and the characteristic of the MICE industry quite clearly, as well as the MICE enterprise concerned stakeholder’s localization.
and the constitution, and propose the MICE enterprise’s IMC strategy design and the operation frame. Thus, this paper will provide certain reference for the attention of MICE marketing researchers and simultaneously support the theory of the MICE marketing for the related enterprises.

II. Theoretical Background

1. Integrated Marketing Communications

Integrated marketing communications (IMC) emphasize the benefits of harnessing synergy across multiple media to build brand equity of products and services. Theoreticians and practitioners have embraced the concept and it is firmly entrenched in marketing. The American Association of Advertising Agencies defines IMC as follows:

* A concept of marketing communications planning that recognizes the added value of a comprehensive plan that evaluates the strategic roles of a variety of communication disciplines – for example, general advertising, direct response, sales promotion, and public relations – and combines these disciplines to provide clarity, consistency, and maximum communications impact.

The literature concerning IMC has accelerated since the mid 1990s, although the concept had its implicit rather than explicit origins in the 1980s (Dyer, 1982). As with most conceptual developments in marketing, the initial practitioner-oriented literature concerning IMC was focused on benefits. Thus, strategically, “if” marketers were to adopt the designated integrated approach, “then” received outcomes in terms of communicability, understanding and, of course, actual behaviors would be significantly enhanced rather than in continuing to use older and presumably less integrated approaches (Kitchen, et. al, 2004). The early literature focused on integrating all elements of the promotional mix, an exercise that can be carried out internally, or by communications agencies, so that messages “look and sound alike” to customers exposed to them. But this and was simply a tactical intervention. The current literature is focused on IMC in terms of its strategic imperative and value. Thus, to connect IMC with other marketing “hot topics”, there has to be a far greater focus on understanding the needs, wants, and desires of target markets (even segments of one when circumstances dictate), so the need for outside-in or
customer-driven marketing is taken for granted (one form of strategic imperative). Other strategic imperatives include the funding, design, installation, and management of customer-supportive databases, more finely tuned customer data translated into customer knowledge, measurement of actual marketplace behavior, and linking of behaviors into loyalty loops with the caveat that loyalty involves both businesses and the consumers they seek to serve.

2. MICE Industry in China and its current problems

The scope of China’s Meetings, Incentives, Conventions and Exhibitions (MICE) industry, although more developed than any time in its history, will undoubtedly expand: its potential is vast.

MICE industry in China has been developed rapidly since 1990s putting China in the position of Asia's leading MICE country. Along with the convention specialization, the marketability and the internationalization level's unceasing enhancement, China's MICE industry has become the important industry in a number of local and the urban area.

With its booming economy and ever-growing market, China is expected to become the most popular MICE destination worldwide in the future. China possesses the attractive combination of rich cultural heritage, breathtaking landscapes, and one of the world's fastest growing economies. Most renown international hotel chains have set up facilities in the major MICE destinations Beijing, Shanghai, and Guangzhou, as well as in less-known locations, such as Xi'an, Guilin, and even the tropical island Hainan in the south of China. The country has the additional advantage of world-class service at relatively inexpensive rates. As the host of big international events like the Beijing Olympics Games 2008 and the Shanghai World Expo 2010, China is home to a wealth of new opportunities.

Rules and regulations have been established concerning the MICE industry, including the Protective Measures of Exhibition Intellectual Property Rights and Administrative Measures on Holding Economic& Trade Fairs Abroad Approval that were issued in 2006, serving as key documents in the improvement of the industry’s legal administration.

The MICE industry in China has experienced strong and steady growth in recent years. In 1997, there were about 1,000 exhibitions and conventions; within ten years that number had grown to 3,800. There is now more than 2.5 million square meters of exhibition space available, exceeding that of Germany, which is known as the “kingdom of exhibitions.”

The rapid expansion of the MICE industry in China, however, is not without its problems. Large, influential exhibitions requiring an area of more than 100,000 square meters are limited in
number; so it is difficult to achieve economies of scale in these productions. Supply of platform-design and building, logistics and consulting services, also lag. Intellectual property rights protection (IPR) has been a major concern of exhibitors.

Along with its rapid development, problems arise as follows:

First, the marketability is insufficient. Under the planned economy system driven by the government, marketability of Chinese MICE industry is very limited to the extent that new market penetration, open competition in this industry is hard to imagine as the Chinese MICE industry is certainly in a monopoly stage at present and not an independent industry. Second, qualified professionals in this field are limited and accordingly, low service quality. PCO has not yet been formed in China and the DMC(Destination Management Company) are at its initial stage of development. It means standard of service and field specialists are absent and overall level is low. Third, low international brand image. Comparing with the MICE industries in the developed countries, China lags far behinds in terms of extent, exhibitor population, management level, brand recognition, and accumulated industrial know-how.

3. IMC Strategy in the MICE Industry

3.1 Establishment of MICE Enterprise's Stakeholders Database

To overcome the difficulties with the IMC concept applied to MICE industry, the suitability of the stakeholder model was investigated. The “stakeholder” concept, along with associated concepts such as “stakeholder model”, “stakeholder management” and “stakeholder theory”, has been introduced to the business and ethics literature over the last 20 years. This difference is important when we consider the theory's applicability to MICE industry. While it may be true that many groups or individuals may be affected by a purchase decision, if they cannot be identified at the time of the decision, the application has the same problem as was identified with the decision-making unit (DMU) approach.

Donaldson and Preston (1995) indicate three uses for stakeholder theory: description of the relationships an organization has in its decision making; to be used as a method by which stakeholders may be considered during organizational decision-making processes; and finally as a method by which a company can prescribe acceptable behavior when making its decisions. The stakeholder theory is normally applied to strategic decision making, but can also apply to less strategic decisions.
3.1.1 IMC Database's Role and the Establishment Step

Influential role of database is that a MICE enterprise may weigh the achievements of implementing the IMC strategy with the presence of IMC database. Also, it keeps the client and the stakeholder's information, understands and reflects its demand, formulates the strategic foundation for a MICE enterprise. Analytical and operational roles of a IMC database of a MICE enterprise is shown in Figure 1.

Schultz and Cole (2004) proposed four levels in IMC strategic implementation: coordination, integrated marketing scope limits, information technology application, finance and strategic conformity. In the strategic implementation stage, the database and new media tool may implement the IMC strategy for the enterprise to provide the technical support, the development based on the new media technology integrated strategy combination.

Customer database in a MICE enterprise is established through the collection and the accumulation of massive stakeholder’s information. In order to provide suitable service for the stakeholders and understand the client’s demand accurately, establishing the stakeholder database is one of the efficient paths. The following is the steps how to establish stakeholder database and the actual content, as shown in Figure 2:

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**Figure 1** Roles of MICE Enterprise IMC Database

**Figure 2** The Step of Establishing the IMC Database
3.2 Establish MICE Audience Database

Successful convention depends on audience's quality. The MICE audience is the final target client, which attracts the exhibitor to participate, maintain and develop convention project. Many professionals agree that organizing the specialized audience is becoming one of exhibition's core questions. To make this question clear, it should be clear about the relations among the audience, the exhibitor and the MICE enterprise. Following Figure 3 is a ideal relations proposed in this study.

![Figure 3 Multi Dimensional Relations of MICE Enterprises](image)

3.3 Establishes the Exhibitor Information Database

Exhibitors are at the core position in the MICE community. Exhibitor's participation behavior is one part of overall marketing behavior of the enterprise, which the exhibitors are in. The final marketing goal is to provide product or service to the target clients and to build the foundation for the enhancement of the present and long-term sales volume.
To establish a complete practical target exhibitor database, collecting target exhibitors related information is essential and it can be obtained through various channel as shown in Table 1.

Table 1 Target exhibitor information collection channel

<table>
<thead>
<tr>
<th>Collection Methods</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through profession business directory collection</td>
<td>Profession business directory with complete material or enterprise comprehensive work and so on. Such as business name, address, relation means and so on massive target exhibitor information.</td>
</tr>
<tr>
<td>Collect through the profession association</td>
<td>The chamber of commerce or the profession association has close relations with profession enterprise, and so grasp the massive enterprise information.</td>
</tr>
<tr>
<td>Collects through the government departments</td>
<td>The government departments responsible for the work quite generally understand their own profession enterprises they manage and also have certain contacting with the enterprises. This is an important source of information.</td>
</tr>
<tr>
<td>Through specialized publication collection</td>
<td>The various professions' specialized newspaper and the magazine show this profession’s newest tendency and the information, and have related enterprise's information. Moreover, grasp the certain amount enterprise information through the collection of enterprise advertisement in specialized newspaper.</td>
</tr>
<tr>
<td>Collects through the similar convention</td>
<td>Attention to various locations to collect each exhibitor's information directly, and may also collect through the purchase of the conference proceeding or the exhibitor list.</td>
</tr>
<tr>
<td>Through foreign organization in China collection</td>
<td>The various countries' organization stationed abroad can recommend one batch of famous conventions every year to domestic enterprises to make the participation choice for them.</td>
</tr>
<tr>
<td>Through specialized website collection</td>
<td>There are the massive enterprises to register the user in the specialized website, and also there are many enterprises to make the advertisement in above, It is one quick way which collects the enterprise information.</td>
</tr>
<tr>
<td>Through telephone and homepage collection</td>
<td>The telephone and yellow page is similar with the profession business directory. They also contain the massive local enterprise's information inside.</td>
</tr>
</tbody>
</table>

Considered from the MICE enterprise angle, materially, what the convention sells to the exhibitor are sales opportunities in the convention period. This sales opportunities' size is decided by the specialized audience's quality and quantity, who attend the meeting. The quality and quantity is decided by MICE enterprise's ability of inviting business. Therefore, a good goal participation database is not only the foundation which the convention flutters, is also the foundation carrying on the convention scale forecast and establishing convention plan.

3.4 Application Integration between Insider Information Systems

Enterprise Application Integration refers to carrying on the integration to the application system in the MICE enterprises, which completes the different service function, and establishes the main center system which may supply the data exchange and the application communication between them.

In the situation that realizes the MICE enterprise application Integration opening, the MICE enterprise must establish the MICE enterprise Information Portal. Each convention's formidable Stakeholders may visit the personalized information which they need from the consistent channel. As the Web application procedure’s simple and unfixable visit spot, EIP has provided the integrated content and application, as well as the unfixable and cooperative working conditions, and simultaneously increase many valuable additional functions. The MICE enterprise may establish the value relation with its formidable stakeholders through interaction with EIP.

The following research has made the MICE enterprise's formidable stakeholders information system integration, as shown in Figure 5.
4. MICE Enterprise's Client Relationship Management

Client Relationship Management (CRM) is the core of MICE enterprise’s IMC. The integrated marketing investigates enterprise activities radically which take the client as the center. For the client relationship management, it has already formed a quite mature system from the theory, the technology to the practice. With the aid of the CRM application system, the development of MICE enterprise IMC client relations dissemination management in the database and in the interactive media's foundation has already became an important tendency to the MICE enterprise IMC development in the future.

4.1 Client Relationship Interaction Contact Management

The major function of client interaction relationship management is to realize the conformity contact point management between the MICE enterprise and the client, and to expand client contact point through many ways like the telephone, the facsimile/business letter and so on. One of the client interaction relationship management's characters is that it fused contact information
of many kinds of channels and the media, and guaranteed the client to serve the purpose smoothly and obtain the contact surface consistent service through any kind of channel

4.1.1 MICE Enterprise Stakeholders Interaction Center’s Function

The MICE enterprise's stakeholders interaction center is composed of the call center service, the facsimile/letter service, the email service, a website service and the scene contact serves, and through one kind of stakeholders Contact Media Technology (CMT) it makes interactive media conformity to the interactive center platform. Specifically, these media undertake the following functions:

First, Computer Telephony Integration (CTI). The MICE enterprise provides free telephone service for the stakeholders, and through the automatic menu selection and the interactive pronunciation feedback, let the users talk with the specialized telephone service personals over the telephone quickly, and record conversation data.

Second, MICE enterprise’s website. The MICE enterprise may provide on-line automatic service system, on the basis clients’ demand, and use the network at the real-time supply the related product service information automatically.

Third, E-mail. The MICE enterprise may carry on the interactive communication conveniently with the client promptly and quickly.

Fourth, traditional facsimile, mail and scene contact service are also important channels to communicate with MICE enterprise’s stakeholders. The information which obtains through this kind of channel is more real and reliable, and it has the irreplaceable function.

4.2 Client Relations Management Operation System

A mature MICE enterprise Client Relationship Management's operation system is mainly composed of Sales Force Automation (SFA), Marking Automation (MA), Customer Service & Support (CSS) these three basic function, which realize the automation of selling through exhibition, marketing and the client service and support operation flow.

The market information of MICE includes the client registration, the client purchase, the commodity inquiry, the commodity order and sales volume of exhibition and so on; The marketing information includes the marketing activity management, the marketing encyclopedia, network marketing management, marketing task assignment, clue management and schedule and more functions and service support which marketing needs; The client service and support includes the client service application management, client suit management, client concerning, the client account transferring or opening a bank account and some more automation
management function; Product support includes product information or automation question solution.

**Figure 7** The operation flow of MICE enterprise Client Relationship management

Service sector personnel who contact the client immediately input the information that contact the client each time into the operation system through registering the CRM system, and use the records in the operation CRM system about clients’ individuality records, history records of purchase, the suit service applications for content valid and so on, to communicate with the clients validly, and then launch the target-oriented convention marketing and the service concern one-to-one. Simultaneously, these will connect and exchange the related client order form information and MICE enterprise's enterprise resources plan(ERP) system and supply chain management(SCM) system, and then make use of the support program after exhibition to product and fulfill clients’ order forms.
5. The Procedure of MICE Enterprise's IMC Management Mode

5.1 Conformity Content of MICE Enterprise IMC

From the outside-in marketing viewpoint, stressed is an interactive back coupling circulation process, the back sight by the exterior client demand on internal enterprise convention marketing and the product, and making the adjustment by way of the client response to revise.

First, MICE Stakeholders Conformity. Along with public relation's value and the relational guidance's marketing tendency, the target audience that the MICE enterprise wants to disseminate and establish relations with, no longer limits to existing and the latent client, but should contain the MICE enterprise which has the influence on convention stakeholders.

Second, Dissemination Contact Media Conformity. The target audience that the MICE enterprise is facing is multiple, and the channels they usually use to communicate and receive information are different. Therefore, the MICE enterprise must conform all kinds of channels. Though the diverse channels the information is passed to the latent clients and the stakeholders with MICE. And making the channels for the interactive connection.

Third, Propagation Mode Conformity. The interactive communication is the best communication method through which a MICE enterprise understands the target audience. To achieve the good unimpeded communication, the MICE enterprise should set up a professional the unit, which is responsible to carry on the interaction with the target audience, as the front establishing relations with target audience, and record interact the process, as the following intercourse basis in the future.

Fourth, MICE Business Data Conformity. No matter whether it is the MICE enterprise uniform information dissemination, the MICE enterprise and the target audience relations maintenance and promotion, or promotes it to the MICE enterprise's value contribution, needed former interact the data which is preserved. After transform data to the information to know target audience, could aim at the target audience to provide the appropriate information, the product, the service.

In this flow, experience on interaction with client formerly was the foundation on which the MICE enterprise makes adjustment and revise, from which the MICE enterprise studies how to meet the clients’ need. Therefore, accumulating the experience which they work on making it a part of MICE enterprise assets and supplying the effective use, will be a big key point.
5.2 MICE Enterprise IMC Management Flow

The MICE enterprise IMC management mode already implied a logical master line of management flow, starting from stakeholders database; Through data analysis and knowledge excavation, segment stakeholder value territory; conformity existing MICE enterprise resources, then assign integrated marketing budget according to the segmentation value territory; Chooses a group of the tool disseminate combination, then through interactive media combination and contact point performance management; make client-made the integrated marketing to the segmentation value territory, sets up the brand image, establishes the long-term value relation; The above a series of marketing spreading process are connected through the information platform and the MICE enterprise IMC database, and constitute a closed loop management flow.

In this management flow, the MICE enterprise conformity existing resources, monitor integrated marketing communications strategy effect all the time, and adjusts the integrated strategy immediately through the feedback information. Moreover, positively coordinating the coordination integrated marketing between the value chain partners.
What this research here gives is the MICE enterprise conformity marketing disseminates one general by the stakeholders for the beginning by outside, but in interactive flow, Shown in Figure 8.

The following makes briefly this flow in this decomposes: First, we need to conform MICE enterprise internal and external information resource, and depend on the data warehouse technology to form the MICE enterprise IMC database. Next, carries on the relational conformity in view of the segmentation value domain, will reveal market, selling by MICE service system of the enterprise, integrating, entering to the managing flow, simultaneously, in view on the value chain and the supply chain's partner, adopting the coordination marketing to carry on interaction between chains. Then the choice the dissemination channel, determine the budget, carry on the dissemination combination, establish disseminates base, develop disseminating base, media base that adapts to different value region, collect each kind of media to the clients’ coverage fraction, the influence rate, takes advantage of these to develop necessary media combination and contact point strategy. Finally, collect the feedback from client, appraise the of value client, enrich client information base, establish new conforming marketing disseminating strategy.

5.3 MICE Enterprise Conforming Marketing Disseminating Management Pattern

The MICE enterprise first needs to determine its own organized goal and mission. Then carry on analyzing the concern, determine its market objectives according to the analytic, design the conforming integrated marketing plan simultaneously integrate each kind of information to carry out integrating integrated marketing plan, finally carry on the appraisal.

Like Figure 9, the MICE enterprise needs to integrate each kind of factors, supply the clear consistent information, and attain to the biggest integration benefit. But, first, brand integration, need to the individuality of the brand loyalty, enable it to become the individuality brand, to become the brand that others are able to imitate and attack.

To establish the adapted MICE enterprise's IMC strategy, carry on the design to the MICE enterprise based on it, design business management pattern based on it, then first introduce the IMC to the MICE enterprise, boldly innovate based on it, and establish the effective convention management pattern according to the MICE enterprise’s business condition the actual situation. But establish to the stakeholders who must analyze the MICE industry based on the IMC convention business management pattern, through to the organizer, the undertaker, the participation (meets) and specialized audience and so on, the convention’s benefit main body research analyses may see, must establish the database based on the IMC. The MICE enterprise
must carry on the data collection to the different stakeholders, carry on the quite accurate analysis localization to it, and thus establish the database based on the IMC. We mainly rest on two principles in this process (2Rs): Relational guidance development principle and Response guidance development principle.

In order to serve this purpose, the MICE enterprise must carry on the decentralization to the marcom manager, carry on the reform to the IMC connection operation flow, carry on the conformity enterprise to the IMC connection service tool, in addition, strengthen specialists' training work. Through to the stakeholders analysis, to the MICE enterprise essential factor's conformity, establish MICE business management mode based on the IMC.

![Diagram of MICE Enterprise’s IMC Strategy Implementation Frame]

**Figure 9** MICE Enterprise’s IMC Strategy Implementation Frame
This research believed that, the electronic commerce platform, the CRM system's MICE enterprise use the platform is to continually achieve the final goal that to establish the stable customer relations and the brand value, this is the IMC goal based on the resources, to carry on the conformity and to continue, create value interactive relations with the final customers.

III. Conclusion

This paper which uses the literature review and the qualitative analysis method, in the predecessor fundamental research achievement's foundation, proposed the application of IMC theory in the MICE enterprise, and has carried on the analysis in which MICE enterprise is taken as the object of study.

First, this research carries on the systematic review to the IMC theory, and mainly reviewed its concept and the classification to the stakeholder theory, and relates the IMC theory and the stakeholder theory, proposed related the management the MICE enterprise and the stakeholders.

Next, introduced the international MICE market's present situation and the trend of development, with interpret various international MICE position in the convention profession. Also briefed the Chinese MICE markets trend of development and the existing problems. Has analyzed each kind of environment which the MICE marketing faces using analysis method as well as the MICE marketing strategy and so on.

Finally, based on the urgency of this research union MICE enterprise's actual situation apply the integrated marketing communications, the paper proposed the MICE enterprise's IMC application mode. This mode has the feasibility, so that some MICE enterprise may accept according to enterprise's actual situation to do slightly revision and apply directly.

This research has analyzed the MICE market’s characteristics and the MICE enterprise's marketing competition environment as well as the relationship between the stakeholders and the MICE enterprise on the rationale of IMC; Proposed some strategy measures theories about the MICE enterprise; Proposed the data warehouse administration, the exhibitor, the audience, and other stakeholders and partially relations' management of IMC; For MICE enterprise’s researches about market proposed to the constructive direction - - to manage the MICE enterprise and conformity the IMC strategy mode of theory dissemination.

This research fixed position location to a fundamental researching. But is restricted in the correlation level, this paper’s theoretical ion has the deficiency, and the theory’s depth is insufficient. And we have not able to carry on the investigation of the enterprise, therefore we...
has not carried on the quantitative analysis, only has conducted the qualitative research to the extant material.

This research thought that the MICE enterprise’s competitive advantage is marketing ability and advanced service, IMC is the MICE enterprise’s fitting marketing strategy, and the MICE enterprise has the basic requirement of IMC.

The IMC research needs to have a very solid rationale, the authors realized profoundly in the study that the IMC theory is rigorous and deep, that it is very difficult to do the true valuable research if we don’t stand in certain theoretical level.

The authors hope that continue be engaged in the research about the MICE enterprise to implement the IMC theory from now on, will argue vigorously has the breakthrough, will obtain the valuable research results, and will carry on the more widespread researches.

References


The Key Concept of Academic Technology Entrepreneurship in the Current Practice

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Abstract

Entrepreneurial potential of university graduates have attracted the interest of policy makers, educationists and development agencies. Through technology entrepreneurship development program (TEDP), academic communities in higher education are expected to support development of new products and enterprises by playing a leading role in generating self-employed enterprising graduates. Currently, most universities promote economic development via university-company technology transfer through taught courses, joint university-company research project, and university spin-off creation. In Malaysia, TEDP is promoted through graduate training program, i.e. Master of Science Technopreneurship. However the program falls short in achieving its objective. Many of its graduates are unable to turn their IT skills and business knowledge into business opportunity. This issue has led to the following research questions: (1) what factors influence the success of TEDP? (2) What are the current practices in implementing academic entrepreneurship? and (3) Are there any differences and similarities between Malaysian current TEDP implementation with it’s counterparts in the other developed countries? These research questions led to the analysis on related theories and models, and the current practice of TEDP to identify the basic knowledge and to design a basic model framework.
of the current practice of TEDP. Hopefully, this will provide a guideline for further detail analysis on TEDP in order to fork out an ideal framework for TEDP through a graduate training program.

**Key words:** Technology entrepreneur, new venture creation, implementation climate, entrepreneurial process, development environment.

1. Introduction

“Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions (Kuratko and Hodgetts, 2006, p. 30).” It has become increasingly apparent that graduates are seriously interested in establishing their own business recently (McLarty, 2005). Kuratko (2004) believed that an entrepreneurial perspective can be developed in individuals. This perspective can be exhibited inside or outside an organization, in profit or not-for-profit enterprises, and in business or non-business activities for the purpose of bringing forth creative ideas. Thus, entrepreneurship is an integrated concept that permeates an individual’s business in an innovative manner. Kuratko also noted that most of the university centers for entrepreneurship focused on three major areas: entrepreneurial education; outreach activities with entrepreneurs; and entrepreneurial research. To this end, entrepreneurial education must include skill building courses in negotiation, leadership, new product development, creative thinking and exposure to technological innovation (McMullen and Long, 1987; Vesper and McMullen, 1988).

Academic capitalism is primarily bounded by the assumption that knowledge is a raw material to be converted to products, processes, and services (Slaughter and Rhoades, 2004). According to Storey and Tether (1998), the reason for interest in academic entrepreneurship usually centers on the reported economic benefits arising from the commercialization of knowledge and technological knowledge. With knowledge on the fundamental basis of competitive advantage, regional economic development agencies are looking for ways to create and develop new innovative, technology-based start-ups (O’Shea et al., 2007). Brennan and Pauric (2006) noted that academia and individual academic institutions are the primary source of new knowledge production and innovation. Economic and social prosperity in the current practice
depend on the ability of nations to educate all members of their societies to be prepared to thrive in a rapidly changing world (St. Petersburg, 2006). Without education as the core policy, innovation will remain unsupported. It must promote talent and creativity from an early stage (COM, 2006). Thus, academic communities are required to lead to scientific and technological progress, to support the development of new products and enterprises through scientific research (Chiriacescu, 2007). In this respect, a major expectation has been placed upon higher education to play a leading role in generating enterprising graduates, in general and into self-employment in business, in particular. Moreover, the current practice of academic entrepreneurship also shows that policymakers in many developed countries have responded to the importance of academic spin-offs by erecting infrastructures intended to facilitate the commercialization of scientific research output (Goldfarb and Henrekson, 2003). Thus, universities are increasingly being viewed by policymakers as engine of economic growth, via the commercialization of intellectual property through technology transfer (Phan and Siegel, 2006).

2. Methodology

The choice of research design is related to the research purpose, which is either exploratory or explanatory or both, that seek to contribute to empirical knowledge and to the development of theory (Creswell and Plano-Clark, 2006). For this research, there are several methods used by the authors through qualitative research strategy to expose the current practice of academic technology entrepreneurship. Qualitative research is concerned with understanding, interpreting, describing particular phenomena (Morse and Field, 1995). In addition, Strauss and Corbin (1990) claimed that qualitative methods can be used to better understand any phenomenon about which little is yet known, to gain new perspectives on things about which much is already known, or to gain more in-depth information that may be difficult to convey quantitatively. Moreover, Van Maanen (1977) stressed-out that qualitative data, with their emphasis on peoples’ lived experiences, are fundamentally well suited for locating meanings the people place on the event, processes, structures lives; and their perceptions, assumptions, presuppositions. Thus, to enhance the research finding, the authors act as action researchers who try to draw out theories through unstructured participant observation on current TEDP, informal interview, and literature review to develop the problem statement and research question as well as the key concepts of the current practice of academic technology entrepreneurship in Institutions of Higher Learning (IHL).
3. Previous Theories and Models

There are two main theories and models that cannot be ignored, while discussing academic entrepreneurship on the current practice of technology entrepreneur i.e. the born and the made debate; and the development influencing factors. Those theories and models form the body of knowledge to the topic discussed, as well as the literature on the current practice of TEDP in Malaysia and developed countries which will be discussed in section 4.0.

3.1 The Born and Made Debate

One of the critical and on-going debates is the concern whether or not entrepreneurship can actually be taught. If one equates entrepreneurship with Schumpeterian literature, i.e. the causing of disequilibrium, then it can be argued that entrepreneurs are born rather than made (Faoite et al., 2003). However, Dana (2001) noted that if one links entrepreneurship to Kirznerian literature, where the entrepreneur simply identifies opportunities for profit without actually creating them, then it could equally be argued that entrepreneurs are made and that entrepreneurship itself can be taught. This both opinions agreed by Bolton and Thomson (2004) that entrepreneurs are both 'made' and 'born'. Yet, the debate is most certainly not concluded. Psychologists believe that genetics shape a certain proportion of personality and environmental influences shape the reminder. However, the figures vary between researchers from 75% genetic (Woods, 1998) to 40% genetic (Whybrow, 1999). Contrary to the findings of psychologist, other contributors Burns and Dewhurst (1989); and Kent (1984) have concluded that only environments shape entrepreneurs. This argument supports the notion that entrepreneurs are made and not born. Thus, while the “born” vs. “made” schools of thought still exist, most modern commentators accept the fact that there are some aspects of entrepreneurship that can probably be taught and others that simply cannot (Faoite et al., 2003).

According to Hynes (1996), about 93% of American professors believe that entrepreneurship can be taught. Research done by Hill et al. (2003), found that the vast majority of students (72 percent) believed that entrepreneurship can be taught, corresponding to positive vote among 70 percent of Americans and 75 percent of Irish respondents. In addition, “the importance of entrepreneurial education is derived from the importance of the entrepreneur throughout the economic system (Ulrich, 2001, p. 147).” Therefore, initiatives to encourage entrepreneurship activities among individuals particularly among university students are being implemented at universities all over the world. Moreover, the entrepreneurial potential of
graduates has become the national agenda and has been attracting the interest of policy makers, educationists and development agencies (McLarty, 2005).

### 3.2 The Technology Entrepreneur Development Influencing Factors

Many authors discuss entrepreneur development through academic entrepreneurship from various perspectives. Most of the factors discussed focused on person; training environment; and development process i.e. technology entrepreneur new venture creation, university spin-off, and technology transfer. Another factor which rarely discussed by many authors but well explained by Klein and Knight (2005) and Klein and Sorra (1996) is implementation climate which influence the person and organization during the development process.

According to O'Shea et al (2005), individual attribute is one of the academic entrepreneurship focus areas. A person with high self-efficacy is more willing to expend effort on a particular task and show more persistence in the face of obstacles (Bandura, 1986). Self-efficacy among successful entrepreneurs that can be categorized into seven dominant themes: commitment and determination; leadership; opportunity obsession; tolerance of risk, ambiguity and uncertainty; creativity, self-reliance and ability to adapt; and motivation to excel (Timmons and Spinelli, 2007). However, Hisrich and Peter (2002) noted that various skills are required by a person to become an entrepreneur i.e. **technical skills, business management skills, and personal entrepreneurial skills**. Thus, based on analysis done by previous researchers on the triumph of entrepreneurs with experiences in related industries on new venture creation (NVC), experiences also has been identified by entrepreneurship research as relevant factor for an entrepreneur to be successful in NVC (Bhide, 2000; Timmons, 2000; Smith and Smith, 2000; Baum and Locke, 2004; Herron and Robinson, 1993; Samuelsson, 2001; and Robert, 1991).

According to Gnyawali et al (1994), entrepreneurial environment is a combination of factors that play a role in entrepreneurship development. Thus academic entrepreneurial environment is the combination of internal factors i.e. institutional environment (Shane, 2004; and West et al, 2005), and training environment (Solomon, 2007; Cruz et al, 2002; Hynes, 1996; and Klandt, 1993a and 2001b); and external factors i.e. government initiative (Goldfarb and Henrekson, 2003; Gnyawali et al, 1994; and West et al, 2005), and industrial internship (Chatterji and Manuel, 1993; Charles and Howells, 1992; and Prathaban and Shankar, 2003). Johannisson in Klandt et al (1993) suggested four key point of departure for a training strategy for entrepreneurs included: entrepreneur should be provided with contexts for self-organized learning, not just with training programs which are planned in detail; entrepreneurial training
should be integrated with everyday business operation; the personal network of the entrepreneur should be mobilized during the learning process; and formal education must be actively mediated in order to become an integrated feature of the entrepreneurial company’s rationale. Meanwhile, according Hynes (1996), the informal aspects of entrepreneurship education should combine and integrate with the formal aspects of education. Hynes noted that the informal aspects of entrepreneurship education focus on skills building attribute development and behavioral change, which allow the students to integrate and apply the theory learned through the more formal means. Solomon (2007) proposed that one should consider integrating concepts and theories presented in the fine arts, drama and the engineering department, and create an entrepreneurial environment in the classroom. He also pointed out that growth issues interface with external forces and developing a management team, are all significant factors in understanding the entrepreneurial process. In addition, Cruz et al. (2002) has focused on seven key elements in their technology based entrepreneurship education model which included: creative and innovative thinking; multidisciplinary learning; hands-on experience; balance between knowledge depth and breadth; learning activities that motivate; continuous self-learning; and self regulated model to respond with the environment needs. Cruz et. al. model is the most related models to the TEDP. The model proposed by Cruz et al. is presented in figure 1.

Figure 1: The Model for Technology Based Entrepreneurship and it Interaction with Environment
(Adopted from Cruz et al. 2002).
On entrepreneurial process, three main stages of technology entrepreneur development through academic entrepreneurship in IHL are technology entrepreneur new venture creation (TENVVC) phase (Gartner, 1985; and Galbraith, 1982), university spin-off (USO) phase (O’Shea et al, 2007; Rasmussen, 2006; and Shane, 2004), and university technology transfer phase (Pordan, Drnovsek and Ulijn, 2006). Galbraith model describes four stages for new venture creation i.e. a proof-of-principle stage in which the hopeful entrepreneur with an idea faces the basic task of developing some proprietary technology; a prototype stage in which the entrepreneur turns proprietary technology into a prototype; a model shop stage; and the start-up stage in which formal production begins and the firm makes its first sales. Meanwhile, According to Rasmussen (2006), universities are found to be an important source of new innovations and increasingly seen as a seedbed for new spin-off ventures. Commercializing university spin-off helps universities with three major things included: major missions of research and teaching; disproportionately high performing companies; and generates more income for universities than the licensing to established companies (Shane, 2004). With collective data from MIT, O’Shea et al. (2007) has developed a model for university spinoff which is presented in Figure 2. The model developed suggests four attributes of the university that can be important in supporting and encouraging spinoff activity included: the science and engineering resource base of the university; quality or excellence of the staff’s research activity; leadership and supporting policies; and culture within the university. Moreover, university spin-off is often referred as a special case of technology transfer (Samsom and Gurdon, 1993). This logic implies that before academic research results can be commercially applied, the technology or knowledge has to be transferred from the research organization to industrial adopters. University spin-offs are seen as a tool for technology transfer where the goal or outcome is to transfer university knowledge into application in society (Carlsson and Fridh, 2002).

![Figure 2: Spin-off performance model (Adopted from O’Shea et al., 2007).](image-url)
Other influencing factors on technology entrepreneur development in IHL is implementation process. Klein and Knight (2005) claim that implementation is the critical gateway between the decision to adopt the innovation and the routine use of the innovation. The difference between adoption and implementation is fundamental: Individuals, teams, organizations, and communities often adopt innovations but fail to implement them successfully. Implementation climate as proposed by Klein and Knight (2005) and Klein and Sorra (1996) are implementation policies and practice, organizational climate, managerial role, financial resources, learning orientation, managerial patient, managerial commitment, and managerial skill. In addition, through the interview with the key informers, the researchers have identified another key element that should be taken into consideration during the implementation process i.e. the cultural change. This key attribute focuses on the issues that argue on the readiness of the program participants to be developed as technology entrepreneur, and TEDP management to change from traditional entrepreneurship program management to technology entrepreneurship.

4. The Current Practice

In order to enhance the understanding on the current practice of academic technology entrepreneurship, the researcher has reviewed TEDP at 3 different countries beside Malaysia, i.e. Singapore, United Kingdom (UK) and United States (US).

4.1 Graduate Programs in Malaysia

The first TEDP at graduate education in Malaysia was introduced in 1999 in Universiti Teknologi Malaysia (UTM). The program is known as “Master of Science IT Technopreneurship” or SKIT program. The main focus of the program was to generate IT technology entrepreneurs in Software Engineering Development through education and incubation process. Six main components have been focused through the program i.e. IT skill, entrepreneurship knowledge, experiential learning, incubation process, technology entrepreneur development training (TEDT), and industrial visit. The candidates’ selection process is akin to the selection process in UTM, where all candidates must go through interview and aptitude test before they are selected as participants to join the program. To complete the program and being awarded with Master of Science IT Technopreneurship, all participants have to undertake all modules with a minimum of two year duration. In year 2001, slight changes have been made to
the focus of SKIT program, i.e. to generate technology entrepreneurs on IT Services, beside Software Engineering Development (UTM, 2001).

A second technology entrepreneurship graduate program was introduced in Universiti Utara Malaysia (UUM) in year 2003. The program is known as ‘Master of Science Technopreneurship’ or MOST program. The key components of SKIT and MOST programs are generally similar. However, there are few additional key components such as command of foreign language, industrial internship, and supportive action after graduation has been added as part of the MOST’s component. Minimum duration for this program is two years with a maximum of three years time for every cohort. Although the program is handled by the Faculty of IT, the management team was able to combine the skill and knowledge of IT/ICT from Faculty of IT, knowledgeable business and management mentors from Faculty of Management and Business, and successful IT/ICT technology entrepreneurs from the industries. However, to improve the effectiveness of the program, MOST program structure was modified in June 2007 (UUM, 2007). The main difference between the new proposed structure and the previous structure include: program operation period from four semesters to three semesters; traditional classroom to independent study; and normal course that is normally conducted in full semester will be conducted in modular courses mode. Moreover, to improve implementation and delivery, UUM (2007) also proposed to place MOST program under the tutelage of the Faculty of IT to minimize administrative complexity.

4.2 Graduate Programs in Singapore

Singapore hoped to create conditions that will stimulate and support high-technology enterprise, or high technology entrepreneurship since 1999 (Singapore, 2006). To this end, there are two universities offering technology entrepreneurship course in Singapore, i.e. National University of Singapore (NUS) and Nanyang Technological University (NTU). However, none of the program in NUS and NTU specifically focuses on IT/ICT technology entrepreneurship. In NUS, three type of technology entrepreneurship program offered includes: Technopreneurship Minor Program (TMP) in NUS Overseas Colleges; Technopreneurship and Incubation Program (TIP) for undergraduate engineering students; and Graduate Elective Course in technology entrepreneurship. With three main components, these programs focused on: curriculum (syllabus, assessment, mode of teaching and learning, reading list and workload); incubation process; potential business plan; and industrial internship (NUS, 2006).

In addition, under the management of National Technopreneurship Center (NTC), NTU offers Master of Science in Technopreneurship and Innovation Program (TIP), a joint program
conducted with University of Washington (UW). Similar to the program conducted by NUS, with three basic components, this program has three extra main components included: knowledge competency building program at UW; industrial visit to Silicon Valley and Zhangjiang Hi-Tech Park; and seminar session at Stanford University (NTU, 2006).

4.3 Graduate Programs in the United States

Responding to the necessity for entrepreneurial skills in the emerging global economy, a contagious culture of technology entrepreneurship and high degree entrepreneurial awareness has been created in campus (D’Cruz et al, 2006). Several IHLs in US structured their curriculum to integrate students’ technical skills with entrepreneurial knowledge (D’Cruz et al, 2006; and Basu, 2006). However, according to them, most of the IHL in USA focused more on developing engineering entrepreneurship. This fact is clear since most of the locus of high-tech entrepreneurship education in the US have been moved from business schools to engineering schools. Among the programs introduced are Networking and Neat Ideas Forum. These programs encourage students to conceptualize and present new business ideas in an exciting learning environment (Florida Institute of Technology (FIT), 2006; D’Cruz et al, 2006; Basu, 2006; San Jose State University (SJSU), 2006; MIT Sloan (2008), and Stanford University (SU), 2006).

Recently, Stamford University has introduced a rather unique program known as Global Entrepreneurship and Technology, an innovative international business education venture with other universities and firms (SU, 2006). The program aims are to provide (1) students with dynamic phenomenon emphasizes on integrated, applied, and exciting hands-on by bringing together students, technology entrepreneur, mentor, alumni, faculty, and business advisor; and (2) cross-culture learning experience as consultants to high technology start-ups from around the world. Since innovation is more than technological advancement and entrepreneurship is more than business, a pattern of focused action also has been designed in University of Washington (UW, 2006). According to UW this program is designed to create value across disciplines which include: Interdisciplinary Entrepreneurship - education, initiatives and forums that go beyond the borders of the UW to support and blend entrepreneurial thinking; innovative ventures - education, inspire networks and business plan competitions, support and launch new ventures of all kinds; and premier research – resources and support to develop leading-edge research on innovation and entrepreneurship.
4.4 Graduate Programs in the United Kingdom

In UK, technology entrepreneurship development programs are offered in the majority universities in the country. Among the programs offered include: Short course training program; Diploma and bachelor program i.e. Diploma in Technology Entrepreneurship, offered by University of Strathclyde and BSc Entrepreneurship in Technology, IT and Business, offers by University of Surrey; and Master program i.e. MSc Technology Entrepreneurship, offered by University of Strathclyde.

Most of the technology entrepreneurship training program in UK also are joining institutions from other countries such as Internationalization of Clusters (IOC) project, a partnership program conducted by University of Essex Southend (UES) and Indian Institute of Technology, New Delhi (UES, 2007); and CMI, a joint venture program between University of Cambridge and Massachusetts Institute of Technology, US (UC, 2007). Set up in 2000 and supported by the UK government and industrial partners, CMI is the most aggressive institute that promotes technology entrepreneurship trainings in UK (Acworth and Ghose, 2006). Its undertakes education and research activities designed to enhance the competitiveness, productivity and entrepreneurship of the UK economy by: improving the effectiveness of knowledge exchange between universities and industry; educating leaders; and developing programs for change in universities, industry and government (Acworth and Ghose 2006; and Schramm and Richard, 2005).

5. Discussion

In brief, the key components of both SKIT and MOST program offered in Malaysia i.e. teaching factory, industrial internship, incubation process, mentoring, industrial visit, and experiential learning, are recognized by most researchers i.e.: D’Cruz et. Al. (2006); Acworth B. and Ghose (2006); O'Shea, Allen and O'Gorman (2005a); and Klandt et al. (2001) as keys element for entrepreneur development. Some of these key elements are also used by other institutions in their TEDP i.e.: Florida Institute of technology (D'Cruz et. al., 2006); MIT Sloan School of Management (MIT Sloan, 2008); Center for Innovation and Entrepreneurship, Stanford Technology Venture (Stanford University, 2006); National Technopreneurship Center (NTU, 2006); and CMI (Acworth B. and Ghose, 2006).

Moreover, development of entrepreneurial high-technology businesses is a key
component of Singapore’s economic strategy in the 21st century (Singapore, 2006). NUS and NTU are the important institutions to boost technology entrepreneurship and innovative technology business ideas in order to encourage entrepreneurial activity in the country. In term of programs implementation, NTU and NUS offer technology entrepreneurship courses which mostly focus on technology entrepreneurship in engineering. There is no master’s level entrepreneurship program offered by NUS, instead, NUS integrate entrepreneurship as an elective course or minor program. However, Master of Science in Technopreneurship and Innovation is offered by NTU. One of the unique components of TEDP in Singapore is the external exposal component, the partnership program which allows the association between Singapore universities and other foreign universities globally.

Technology entrepreneurship development training in USA is more hands-on by bringing together students, the technology entrepreneurs, faculty and the business advisors through smart ideas forum and cross-culture learning experiences. Furthermore, university-industrial linkage and intrapreneurship concepts are commonly employed in technology entrepreneurship development programs in the USA. Besides traditional classroom teaching method, technology entrepreneurship development and training programs in the UK also emphasize on forum and interaction among students and industries through industrial internship for sharing experience, learning within selected groups, and having partnership with other institutions outside the country, though the programs offered are different from one university to another (UE, 2007; US, 2007; and UC, 2007). Overall, most of technology entrepreneurship developments through IHL in USA and UK involve co-operation with other institutions and are offered as short stint training. The programs tend to be hands-on which brings together the participants, technology entrepreneurs, faculties, and business advisors through smart ideas forum and cross learning culture learning experiences. The only university in UK with technology entrepreneurship at “Master of Science” level is University of Strathclyde.

Based on the result gain from practical experiences, unstructured experience participant observation on current TEDP, informal interview, previous theories and models discussed earlier, academic technology entrepreneur programs consists of the following seven key elements (shown in Figure 3):

1) The entrepreneur/person/program participant;
2) The new venture creation process;
3) The university spinoff;
4) Technology transfer;
5) The internal environmental element inclusive of institution environment and training environment;
6) The external environmental element inclusive of university-industry linkage, government support factors, family background, and cultural change; and
7) The implementation factors inclusive of policies and practice, organizational climate, managerial role, financial resources, learning orientation, managerial patient, managerial commitment, and managerial skill and cultural change.

![Figure 3: The Key Concept of Academic Technology Entrepreneurship in the Current Practice](image)

6. Conclusion

The belief that technology entrepreneurship is a vital part for gaining competitive advantages in today’s knowledge based economy has lead to the development of entrepreneurial potential of graduates as the national agenda. Many countries as well as previous researchers have now recognized entrepreneurship as a possible solution to the rising unemployment and to boost economic growth. The increasing importance of training and support as an effective way of stimulating entrepreneurial activity and reducing small business failure are recognized by academics, practitioners and government world-wide. In meeting the needs of new economy that
revolves around IT, developing technology entrepreneurs who can lead an organization and the nation to the forefront has become even more crucial. Thus, specific and unique efforts to educate and train future technology entrepreneurs are required to ensure future demand is met. In ensuring the success, seven key elements from technology entrepreneur development theories, models, and practices have been identified, i.e., the entrepreneur/person/program participant; new venture creation process; university spinoff; technology transfer; internal environmental element inclusive of institution environment and training environment; external environmental element inclusive of university-industry linkage, government support factors, family background; and the implementation influences factors.

Notes

1. One of the well-known short course entrepreneur training program in UK is Enterprise Tuesday, a series of free evening lectures and networking sessions run by the Centre for Entrepreneurial Learning (CfEL), part of Judge Business School, University of Cambridge, (Cambridge, 2007)

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An Introduction of the Legal Framework relating to the International Sales Contract in Electronic Environment

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Abstract

In the international sale of goods, contractual parties who are located in different countries can be confronted with a critical misunderstanding in relation with their contractual terms and conditions owing to differences of historical and social background, such as language, culture, and law. Especially, legal certainty binding the contract between the parties is a crucial point, so that it is necessary to establish a uniform or harmonized international regulation. Thus, several international instruments have been elaborated by leading international institutions in order to diminish risks and uncertainty. Furthermore, according to e-commerce has contributed to the increase of internal and external business transactions, many countries have established regulations to govern e-commerce. However, conflicting legislative efforts directed at facilitating e-commerce at the domestic level can effectively deter the development of a coherent global framework. This concern applies both to consistency among individual domestic states and consistency between nations increasing the need for convergence and harmonization in legislative approaches. Substantive and procedural legal incompatibilities between countries threaten to create a complex and unpredictable environment for international e-commerce. Thus, a uniform or harmonized regulation including e-commerce is essential for the continued vitality of the global on- and off-line of business transactions. In the circumstances, introduction of regulatory framework relating to international sales transaction is a momentous assignment. It could contribute to understand how to steer for an appropriate global legal framework in the international sales transaction.

Keywords: legal framework, transaction, international regulation, harmonized regulation
1. Introduction

International trade has been continuously developing since the exchange of goods between human beings became common practice. Historically, the volume of international trade has significantly increased with growing industrial development and economic philosophies movement such as free trade, laissez faire, and globalization. Practically, since the innovation of transportation, the scale and scope of international trade has enormously extended throughout the world. Nowadays, there may be no place in the world not involved in international trade.

In addition, the advent of e-commerce has been regarded as a distinct area in business. The world has been witnessing great changes in the way business is transacted, fuelled by companies’ rapid adoption of network technology. Companies need to expand their commercial activities beyond national borders in order to be competitive in today’s global marketplace. The global network of electronic infrastructure plays an important role in this expansion. The driver of this business revolution is not only technology but also the interaction of information technology and customer demand (Romm & Sudweeks, 1998, p.1). E-commerce is crucial to the effective functioning of organizations, especially to those companies which have to deal with suppliers, customers, partners and distribution of goods across the world. Arguably, as one of the drivers of major transformation in the business world, e-commerce offers unprecedented opportunities for enterprises whether large or small, domestic or international, and it has redefined all phases of business in a revolutionary manner.

From a legal perspective, the issue whether existing regulations governing international sales transactions can respond to the needs of new information technology or whether initiated regulations governing international sales transactions through electronic communication means may be effected by means of effective contract drafting has been lively discussed since the last decade. Nonetheless, some significant legal questions on the above issue have not yet been unresolved, hindering the posing significant barriers to further development of a global electronic trading system. Many countries have maintained their traditional legal frameworks, resulting in a global regulatory patchwork that is not conducive to reducing legal uncertainty and transactional costs. The continued vitality of the emerging global electronic trading system depends on the progressive adaptation of the international and domestic laws to the rapidly evolving networked infrastructure. Moreover, although an analogy to existing rules may be reconsidered in light of progressive technologies, this may lead to inappropriate results. Applying paper-based rules to
electronic transactions without sufficient consideration of the ramifications of such rules could create increased uncertainty, potentially to the detriment of the international trading community.

Similarly, conflicting legislative efforts directed at facilitating e-commerce at the domestic level can effectively deter the development of a coherent global framework. This concern applies both to consistency among individual domestic states and consistency between nations increasing the need for convergence and harmonization in legislative approaches. Substantive and procedural legal incompatibilities between countries threaten to create a complex and unpredictable environment for international e-commerce.

Therefore, it is necessary not only to understand the international legal framework in terms of international business transactions, but also to set up a sound legal system in order to reduce the legal uncertainty of international sales transactions and to be prepared in case a dispute arises between contractual parties. In addition, the legal system and framework relating to cross-border transactions would be strongly affected by economic regime with the changes of times. This paper introduces and analyzes the legal framework of international sales contract including e-commerce with employment of comparative methodology. In doing so, it will be selected two large dimensions including three international institutions and nations respectively as follows: UNCITRAL, UNIDROIT, and ICC as selected principal international institutions and the USA, the UK, and South Korea as selected nations.

2. The Concept of Legal Framework on the Contract Formation in the International Trade

2.1 Role of International Regulations in the International Trade
In the past two centuries, international and national economic environments have been reformed in a complicated manner. Since 1980’s, international economic regime has been reformed by many relative communities and organizations, inter alia, UNCITRAL, WTO, and OECD. According to Mistelis (2000)’ metaphorical statement, ‘Economic reform is as desirable as a birthday cake with plenty of whipped cream, fancy icing, and many cherries as ornaments. This cake will collapse as much emphasis is put on the decoration of the cake rather than its base.’ A sound economic reform calls for a sound legal system. A key point to make a sound legal system may be the global integrated regulation in the light of international trade regime.
The importance of law to sales transaction is not new. Hundreds and even thousands of years ago, some societies were codifying local customs and practices so that people would know what they were expected to do and not do. The codified local customs and practices developed into the substantive law. Then it has been adhered to for a long time with sovereignty according to each national peculiarity.

Consequently, where firms trade in countries and regions far from their origins, they need more knowledge about the laws and legal environment in other parts of the world. Whenever international trade is conducted between two parties who are located in different countries, they may have conflict with jurisdiction for governing a sales transaction. Therefore, the role of international commercial laws is to contribute to legal certainty for each trader. In other words, the more increment cross-border business transactions, the more likely international commercial law plays a crucial role in providing legal certainty to trade merchants in the fact that the national sovereignty is firmly determined. Although national laws still have a tendency to continue to be at the heart of the regulation of business, today a combination of national, regional, and international laws affect global business (Bagby & McCarty, 2003, p.113).

As Schmitthoff (1981) indicated, the international law of commercial transactions may be classified into two forms: international legislation and international commercial customs and practices. Both the laws and customs and practices of international trade have been remarkably diversified and shaped up since the scale and scope of international trade have significantly increased in the twentieth century. However, they have been very intricate when applied to the matter of international trade. Especially, after the United Nations was established, there has been a remarkable degree of harmonization among nations in the law applied to international sales transactions. In addition, many relevant international organizations have attempted to seek new legal forms to apply to new types of business transactions. Among them, the most remarkable development in this respect has taken place in the area of the transfer of information by electronic communication means, inter alia, the Internet.

In the circumstances, since the 1980s many instruments have been created with respect to international sales transactions including e-commerce. Among them, some model laws and conventions established by the UNCITRAL take a core role in this area. However, there is still an absence of an obvious rule or law to give legal certainty to practitioners in this area because many rules or conventions can be excluded by the practitioners.
2.2 Historical Trace of Legal Framework relating to International Trade

The advent of the concept of the international legal framework relating to international trade began from the Middle Ages, when cross-border transactions flourished over the European countries. In the absence of a global ruling power like the Roman Empire, the principle of personality allowed for the coexistence of the different laws of different peoples (Mistelis, 2000; Braithwaite & Drahos, 2000, p.45-7). It thereby produced great complexity and uncertainty, particularly in trade. Therefore, “lex mercatoria (merchant law)” was a solution to settle a dispute between contracting parties who were located in different territories (Sappideen, 2006, p.426).

After the Nation-State established from the 14th century, the sovereign of the Nation-States intervened the role of lex mercatoria, the sovereign managed a dispute between commercial parties. This was a problem for a foreign commercial party because most rulers were in favour of their own nationals’ party to decide in the commercial dispute. Therefore, private international law replaced the role of lex mercatoria (Sappideen, 2006). Private international law required the court to “choose a substantive domestic law” to fill gaps in a contract or where the contract had not foreseen an event, or if there was no contract at all because there were no standard sets of legal principles applicable to cross-border transactions, and disputes arising were looked upon as a matter for private law and were dealt with in a domestic court applying the commercial rules of that forum (Randall & Norris, 1993).

According to the fact that a highly localized legal regime proved to be obstructive to the free flow of trade, special rules known as the “new lex mercatoria”, which all parties regarded as fair came to be applied (Cremades & Plehn, 1984). In the beginning of the 20th century, International Inter-Governmental Organizations (IGOs) began to attempt to bring uniformity to the diversity of contract law created by the decentralized form of private ordering. Moreover, merchants also began to organize their own means of international coordination such as the International Chamber of Commerce (ICC) and International Institute for the Unification of Private Law (UNIDROIT) (Braithwaite & Drahos, 2000, p.53). Their significance lay in the fact that they came to bind traders without the sanction of any particular Nation-State (Rosett, 1992; as cited in Sappideen, 2006, p.427).

Since the Bretton Woods system launched, a new wave of cross-border transactions has emerged in the world. The principle of international trade pursued free trade. Therefore, the
amount of cross-border transactions rose significantly. Moreover, in the aftermath of World War II, many sovereign states became free and independent. They established their own national laws. According to the huge intricate international economic circumstances and the diversity of business connection, the traders required more standardization, certainty, security.

However, the numerous and divergent national laws of the various countries failed to defend the integrity of their transactions. In terms of the interpretation of national law even international law, many were worried. Sappideen said that ‘this was compounded further by legal phraseology being interpreted idiosyncratically by the courts of different nations. Other deficiencies such as the preference shown by a court to its nationals who were a party to the dispute had emerged, with the problem becoming more acute where a State itself was a party to the transaction. This resulted in a resurgence of non-domestic trade laws (Sappideen, 2006).’

In the 1960s, bodies such as UNCITRAL, UNIDROIT, and the Hague Conference on Private International Law (hereinafter referred to as Hague Conference) attempted to progressively unify the rules of private international law relating to international sales transactions. As a result, in 1964 two uniform laws, the Uniform Law on the International Sale of Goods (ULIS) and the Uniform Law on the Formation of Contracts for the International Sale of Goods (ULF), were established by the representatives of many nations who participated in the Hague Conference. Since UNCITRAL initiated its work from the second half of the decade, the main window of the discussion about harmonising or unifying – even legislating – of international commercial law had moved into the UNCITRAL. As a result, the most exemplification of the role would present the United Nations Convention on Contracts for the International Sale of Goods (CISG).

In the private sector, ICC led to the upgrade of international standard terms and rules through the modification of the International Commercial Terms (Incoterms) and the Uniform Customs and Practice for Documentary Credits (UCP) which were established in 1930s in order to adopt appropriate trading environment. Revised versions of the UCP were issued in 1951, 1962, 1974, 1983, 1993, and 2006. The latest version, which is called “UCP 600,” was adopted by the ICC Executive Board in November 2006 (ICC, 2006, pp.2-3).

Now, according to the development of information technology, national borders may be gradually diminished. E-commerce has already been vitalized in the developed countries’ marketplaces. The volume of e-commerce has been significantly increased during the last decade.
Therefore, the legal norms and framework will be changed to accommodate a solution for debates which happen in e-commerce.


3.1 International Agencies for the Legislation on the International Sale of Goods

3.1.1 UNCITRAL

The UN is the most important of international intergovernmental organizations. In addition to being a general organization, it is also a universal organization in that its membership is open to all the nations of the world, and nearly all are members. Underlying these goals is the idea that the relationships of nationals should be based on the rule of law. Among the UN organizations, the United National Commission on International Trade Law (UNCITRAL) is charged with promoting the harmonization of international commercial law. In the past, it was responsible for drafting the CISG, Model Laws, and other international agreements.

UNCITRAL has been active in the field of e-commerce since the end of the 1980s. UNCITRAL has monitored the technical, legal, and commercial developments associated with the growth of e-commerce. After examining the developments in e-commerce, UNCITRAL reports its finding to the General Assembly of the United Nations. In several areas of e-commerce, UNCITRAL has drafted model laws which propose uniform rules of a statutory nature, which the General Assembly endorses, and Member States are urged to adopt.

As a result, UNCITRAL drafted the Model Law on Electronic Commerce (MLEC) and was approved by the UN General Assembly in 1996. It is “intended to provide essential procedures and principles for facilitating the use of modern techniques for recording and communicating information in various types of circumstances.” In 2001, it created the Model Law on Electronic Signature (MLES) to apply a broad range of electronic signatures. The Model Laws have three broad principles to get their original aim: i.e., functional equivalent approach, technology neutrality, facilitation international harmonization and standard.

Both Model Laws reflect the most modern trends in comparative law regarding e-commerce, which makes them very reliable in situations where parties opt to use the newly available
technologies in their international transactions. Moreover, the Model Laws have served as useful tools in the interpretation of existing international conventions and other international instruments, and many national laws have been affected by them (Oyarzábal, 2004, p.502).

Recently, UNCITRAL, through its Working Group on Electronic Commerce, developed the UN Convention on the Use of Electronic Communication in International Contracting (ECIC) over a three-year period beginning in 2002 to remove obstacles to the use of electronic communications in international contracting, including obstacles that might arise from differing country-specific approaches to e-commerce, and obstacles arising under existing international trade law instruments, most of which were negotiated long before the development of e-commerce technology. ECIC complements and builds upon earlier instruments created by UNCITRAL, including MLEC and MLES. As such, it is designed to be “enabling” rather than “regulatory,” and does not alter the fundamental rules of contract law (Chong & Suling, 2006).

In technological practice, the Economic Commission for Europe (UNECE), one of the most significant institutes relating to the international sales transaction in the UN, has led national institutions to standardize and facilitate a process of international sales transaction through the development and harmonization of technical mechanism and electronic documents. It is comprised of experts on data elements and automatic data interchange and on procedures and documentation which are appointed by their governments or by organizations recognized by UNECE, especially CEFACT (the Centre for Facilitation of Procedures and Practices for Administration, Commerce and Transport, now renamed Centre for Trade Facilitation and Electronic Business). It has developed numerous standards for trade documentation, such as the United Nations Layout Key for paper documents and UN/EDIFACT (The United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport) for electronic documents. In its UNeDocs project, UNECE combines these standards with the latest Internet technologies to provide the international trade community with an integrated solution for paper and electronic trade documents.

3.1.2 UNIDROIT

The International Institute for the Unification of Private Law (UNIDROIT), which was set up in 1926 and re-established in 1940, is an independent intergovernmental organization. Its purpose is to study needs and methods for modernizing, harmonizing and coordinating private and, in particular, commercial law between States and groups of States.
The Institute published the UNIDROIT Principles of International Commercial Contracts (UNIDROIT Principles or PICC) in 1994, which are an attempt at a progressive harmonisation of the general principles of contract law. In 2004, the first edition of the PICC modified and supplemented. Parties to international commercial contracts now quite often agree that they shall be governed by UNIDROIT Principles, and they are widely applied by international commercial tribunals. In particular, PICC may be a more wide range of instrument to govern international sales transaction in comparison with the provisions of the CISG, as far as the development of communication means is concerned.

3.1.3 ICC

The International Chamber of Commerce (ICC) is the most active NGO representing businesses engaged in international transactions. It promotes open international trade, an open investment system, and the market economy. It issues a wide range of voluntary rules applicable to international business, such as Incoterms, UCP, URC, and International Court of Arbitration (ICA). In practice, those rules are the most popular employment to the international traders.

With respect to e-commerce, the ICC established a Commission which is responsible for drafting technical guidelines on international technology and formulating the Chamber’s policy on issues such as computer security, telecommunications standards, and competition. The Commission also functions as an advocate for these policies in meetings with IGOs involved in the development of e-commerce regulations, including the International Telecommunications Union (ITU), EU, OECD, WTO, and UNCITRAL.

Another program of the ICC was its Electronic Commerce Project which involved business experts from some ICC commissions, such as Banking Technique and Practice, Telecommunications and Information Technologies, Financial Services and Insurance, Transport, and International Commercial Practice. The aim of this project was to create trust in electronic trade transactions by developing uniform business codes. The codes, General Usage for International Digitally Ensured Commerce (GUIDEC) version I issued in 1997 and version II modified in 2001, contain rules for the use of electronic signatures and other digital authentication techniques. Other drafted codes include a code of “electronic commerce trade terms (e-Terms)” analogous to the Incoterms, and a code of “Supplement to UCP for Electronic Presentation (eUCP)”.

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3.2 National Laws on the International Sale of Goods in the USA, the UK, and South Korea

3.2.1 UK

Traditionally, the common law system developed from the UK legal system. The legal system of the UK has been quite different from the Continental European Countries despite being a Member of the EU. Furthermore, there are three different jurisdictional territories in the UK – England and Wales, Northern Ireland, and Scotland. It means each legal territory has an inherent legal system; England, Wales, and Northern Ireland have a common law system, but Scotland has a civil law system (Carter, 2005)


In terms of international sales law, the UK is not a member of the CISG. Consequently, when a sales contract is made between an English person and a foreigner, they have to negotiate a governing law for the contract. This takes time and can be costly. Even though the UK Department of Trade and Industry (DTI) recommended joining CISG, Parliament is still considering its position.

With respect to e-commerce, there are two basic Acts: the Electronic Communications Act 2000 (ECA) and the Electronic Signatures Regulation 2002 (ESR). In addition, the UK is one of the EU members; hence national regulations must be applicable to the EU Laws and Directives. Therefore, both are reflected by the EU Directives.

3.2.2 USA

The United States of America consist of 50 states which have legal sovereignty themselves, so that each state is entitled to make a law which is in force in the state only. The legal base of the USA is the common law, which comes from case law precedents. However, there have been some codes and acts in terms of commercial transactions. Most codes and acts have been established and modified by different judgements from previous judgements and a draft from the American
Law Institute (ALI) or Scholar’s commissions, like “the Restatements (Second) of Contracts” which are still very effective for judicial decisions in courts. With respect to domestic commerce between states, there is a federal government with extensive regulatory authority, but there is not a uniform general contract law (Farnsworth, 2003, pp.98-9; Bonell, 2003, p.91). Even the Uniform Commercial Code (UCC), which was promulgated in the early 1960s and provides uniform rules on the most important kinds of commercial transaction, is, formally speaking, state law which may well be – and to a certain extent actually is – applied differently from state to state. For example, the legal system of Louisiana (Civil Law) is not the same as other states.

With respect to e-commerce, the USA has been a leader in developing e-commerce law policy since the Internet’s inception. For the past decade, the USA government has maintained a consistent view that the global information infrastructure has the potential to revolutionize commerce by dramatically lowering transaction costs and facilitates, and enforces electronic transactions worldwide. The focus has been on technology neutrality and a non-regulatory approach designed to encourage the experimentation and innovation necessary for this new mode of doing business to flourish.

According to “A Framework for Global Electronic Commerce” announced by the White House in 1997, the USA government favoured the laissez faire or self-regulatory approach, in that the government would let the private sector take the lead unless governmental regulation is needed. The USA government warned that governmental regulation of e-commerce activities could not only distort the development of the electronic marketplace, but also be outdated by the time it is enacted considering the accelerated speed at which the electronic marketplace has been developing. Such outdated or technology specific regulation could seriously impede the development of e-commerce for the regulating nation as well as the rest of the world.

According to the announcement of the USA government, the basic approach of the legislation is that new regulations for e-commerce are not only established a predictable, minimalist, consistent, and simple legal environment, but also reflected the real market situation. Ultimately, any regulatory regime should be based on a decentralized contractual model of law rather than one based on top-down detailed regulations (Breslin, pp. 278-80). As a result, there are several laws relating to e-commerce being implemented in the USA. In 1999, the National Conference of Commissioner on Uniform State Law (NCCUSL) drafted the Uniform Electronic Transactions Act (UETA) which is now enacted in 48 states, and the Uniform Computer Information
Transactions Act (UCITA). In addition, the US Congress created the federal Electronic Signatures in Global and National Commerce Act (E-Sign), which was enacted in 2000. The framework embodied in UETA and E-Sign has worked well in the USA, facilitating the development of a robust e-commerce environment. Nevertheless, most e-commerce transactions are governed by traditional commerce law, namely common law along with the UCC.

3.2.3 Korea

In Korea international trade has been dealt with a very special honour because the economic growth had been contributed by the labour’s devotion to export and import goods or services given the fact that there were no natural resources and capital at least for 30 years (from 1960s to the 1980s). Korean laws relating to international trade were centralised to support expanding of volume of export during the period.

In the growth of international sales transactions, the Korean market has been pressed to open by developed countries, especially the American government, and the markets have been opened like developed countries. Consequently, the legal framework relating to sales contracts in Korea had to be further involved in the international legal environment.

Basically, Korean law follows the civil law system, but some of its provisions are adopted from a common law perspective, for example, “mail box rule”. The commercial transaction law, especially contract law, is generally stipulated in the Korean Civil Code (KCC, articles 528-534). Otherwise, with respect to the special rule for business transactions between companies, there are specific articles in terms of commercial transaction law between companies in the Korean Commercial Code (KCOC). Korea is a member of the CISG which has enacted from March 2005. That is to say that the international sale of contract must be governed by the Convention, in addition, KCC must be harmonized with the CISG.

Since 1990, some laws and rules related to e-commerce have been established, such as the Act for Automated Trade Promotion (AATP), vi the Basic Law of Electronic Commerce (BLEC), and the Digital Signature Act (DSA).vii These regulations have supported the development of e-commerce from an emerging marketplace to the advanced marketplace with legal certainty.

AATP was established in 1991 and became effective the following year. The aim of this act was to increase industrial competitiveness in the world by the simplification of trade procedures,
the exchange of trade information, and the curtailment of the time and costs of trade procedures (AATP, article 1). Almost all paper documents have been changed to EDI documents and they have been involved in trade procedures by a leading company called “KT-NET”. This act was the first act for dealing with electronic trade in Korea. Since the act was established, many legislative projects have progressed successively to adopt e-commerce. In 2005, the act was completely amended and changed its name as the Act for Promotion of Electronic Trading (APET) which was implemented July 1, 2006.

BLEC was originally legislated and implemented in 1999 (Korean Legislation No. 5834). A wholly amended version of the law was enacted on January 19, 2002, and it was implemented on July 1, 2002. Since then there have been several instances of amendment of the law (BLEC Supplementary Articles, 2006). BLEC has a comprehensive objective section, the contents of which are to ensure the safety and reliability of transactions by clarifying the legal effect thereof, to establish the transactional order by assuring fairness of transaction, to contribute to the development of the national economy by promoting electronic transaction (BLEC, article 1). Considering that BLEC has the characteristics of private law, the second and third objective of this act is to ensure the safety and reliability of transaction by clarifying the legal effect thereof, which is the same as the other acts (Jung, 2000, pp.66-7).

DSA was enacted and implemented in 1999. The latest version of the DSA was enacted on December 30, 2005 and has been implemented from July 1, 2006 (DSA, Supplementary Articles). The ultimate goal for enacting DSA was to advance “social benefit and convenience” through a reliable and secure framework for digital signatures. Establishing such a framework will result in a greater utilisation of digital signatures, thereby increasing utilisation of electronic messaging and communication on a national level (DSA, article 1).

4. Arising Complications on the Applicable Regulations in the International Sales Transaction

There are three basic processes to fulfil an international sales transaction, especially for tangible goods: contract, performance, and completion. With respect to those processes, there are many relative regulations including e-commerce, but excluding public sectors. According to Schmitthoff, a delimitation of international trade law is that:
… the law of international trade covers an unusually wide spectrum of business activity. [It includes] … The International Sale of Goods; Marketing Organization Abroad; Finance of Exports; Insurance of Exports; Transportation of Exports; International Commercial Dispute Settlement; Construction and Long Term Contracts; and Customs Law (Schmitthoff, 1990, p.vii; as cited in Mistelis, p.9).

The development of international trade led to a division of the traditional commercial law into two branches, the law applying to domestic transactions and that applying to international business transactions. As can be seen in <Table 1> and <Table 2>, there are many applicable regulations, international and national, to govern an international sales transaction according to the step of international trade process. In e-commerce, the applicable law can be the same as its conventional transaction with newly established regulations.

Table 1. International Approach of Applicable Regulations

<table>
<thead>
<tr>
<th>Contracts</th>
<th>Conventional Sales Transaction</th>
<th>E-Commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>CISG, PICC, PECL, Incoterms</td>
<td>Same as left &amp; ECIC</td>
</tr>
<tr>
<td>Transport</td>
<td>Hague-Visby Rule, Hamburg Rule, UN Convention on International Multimodal Transport of Goods, Road, Railway, Incoterms, etc.</td>
<td>Same as left &amp; Bolero Rule Book or other private regulations</td>
</tr>
<tr>
<td>Insurance</td>
<td>MIA 1906</td>
<td>Same as left</td>
</tr>
<tr>
<td>Payment</td>
<td>UCP 600, URC 522, Incoterms, etc.</td>
<td>Same as left &amp; eUCP (Letter of Credit)</td>
</tr>
<tr>
<td>Dispute Settlement</td>
<td>New York Convention, ICC Arbitration Rule, or Court in Jurisdiction and applicable law</td>
<td>Same as left</td>
</tr>
</tbody>
</table>

Table 2. National Approach of Applicable Regulations

<table>
<thead>
<tr>
<th>Country</th>
<th>Conventional Sales Transaction</th>
<th>E-Commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>SGA (Sales of Goods Act 1979) and Cases</td>
<td>Same as left &amp; ECA, ESR, EU Directives</td>
</tr>
<tr>
<td>USA</td>
<td>UCC (Uniform Commercial Code) and Cases</td>
<td>Same as left &amp; UETA, E-Sign, UCITA</td>
</tr>
<tr>
<td>Korea</td>
<td>KCC (Korean Civil Code) and KCOC (Korean Commercial Code)</td>
<td>Same as left &amp; BLEC, DSA, APET</td>
</tr>
</tbody>
</table>
Both national and international laws govern international sales transaction even in cyberspace. Similarly, both national governmental agencies and international intergovernmental organizations can enact, enforce, and adjudicate the laws governing international sales transaction. As can be seen in <Table 1>, many international regulations are established by international intergovernmental organizations and agencies or even international nongovernmental organizations and agencies. Those international organizations or agencies have done multifarious functions; in particular they have provided legislation for international society.

In the circumstance, contracting parties for business transactions can be complicated to choose a governing rule for their sales contracts. In the global marketplace, the word 'forum shopping' may be as familiar to international businessmen as 'capital market shopping' may be familiar to global financing players (Mistelis, 2001, p.7). Correspondingly, there have been attempts at integrating the laws governing international sales transactions to make it easier for persons to engage in cross-border transactions. Despite these efforts, national laws often continue to compete with similar laws of other nations and with various international agreements and understandings to which different countries may be parties.

In addition, international sales transactions are governed by independent national legal systems and long-term customs. Each legal system and custom reflects a unique set of historical and cultural circumstances which result in regulatory variations and contradictions. The diversity of legal systems and customs may also lead to increased uncertainty and transaction costs; consequently it has discouraged the growth of international commerce. Whenever a commercial dispute takes place, a crucial issue is which law is applicable to the resolution of the dispute unless otherwise agreed a choice of law clause on the contract. As all disputers would employ their national law as a governing law for the dispute settlement, it is not easy to reach an agreement of the governing law for the dispute after it takes place.

Therefore, nations and international business communities have worked towards developing a consistent international regulatory framework to reduce legal uncertainty and transaction costs. With respect to international sales transactions, there are three representative institutions to do the above work: UNCITRAL, UNIDROIT and ICC. These institutions have tried to distill a harmonized rule for governing international commercial transactions. However, the instruments legislated from those institutions may not yet completely dominate in international sales transactions. For example, some domestic laws may prevail over the rules of the international
uniform laws (Audit, 1998, p.173). Moreover, the UK and Japan among the major economic powers in the world have not ratified the CISG. These problems show that a harmonization of international commercial law may not be near.

5. Conclusion

In practice, international sales contracts inevitably raise the question as to which of the various national laws or international instruments will govern the transaction. The uncertainties that stem from this are clear; because of the different national rules of private international law, parties risk remaining uncertain of the law applicable to the contract until the proficient forum is established. This is a heavy price to pay in international commerce, where the allocation of risk is predicated on certainty. Thus, as Gopalan (2003) pointed out, there is some virtue in evolving an international legal regime that avoids solutions that have not been bargained for. However, the international instruments have not yet completely come to govern international sales transactions. In addition, according to increased international sales transaction through electronic communication means, the international instruments and individual domestic laws regulating international sales transaction through electronic communication means have also been established. These raise legal uncertainty and transaction costs to practitioners. Therefore, it is firmly necessary to seek a global harmonized regulation.

References


The Lex Mercatoria, a Latin word, was originally a body of rules and principles laid down by merchants themselves to regulate their dealings. According to the need for a quick and effective solution to a commercial debate between traders who were located in different territories, the merchant group set up a self-trial in a local area. It consisted of usages and customs common to merchants and traders in Europe, with slightly local differences. See http://en.wikipedia.org/wiki/Law_Merchant (last visited Mar. 1, 07).

The convention is called by many scholars as “UN E-Contracts 2005”. But in this paper, the author would refer to it as “ECIC”. The provision of the ECIC is available at http://www.uncitral.org/uncitral/en/uncitral_texts/economic_commerce/2005Convention.html (last visited Mar. 1, 08).
The United Nations electronic Trade Documents Project set up in 2000. Using the latest internet technologies and standards, it combines existing trade document standards for paper with data modeling techniques, electronic tools and extended Markup Language (XML), whereby trade documents are defined through data definitions, applicable standards and best trading practices. The project combines paper and electronic options since some governments and traders are likely to have to rely on paper trade documentation for some time to come. Users benefit from data security, signature authentication, mobile access to secured information and the exchange of advance information of trade data for security or goods clearing purposes. See http://www.unece.org/etrad/ (last visited Feb. 28, 08).

The relationship between UCP and eUCP is that, as article e2 provides, (a) ‘a credit subject to eUCP is also subject to UCP without express incorporation of the UCP,’ (b) ‘Where eUCP applies, its provisions shall prevail to the extent that they would produce a result different from the application of the UCP.’ (c) ‘If an eUCP credit allows the beneficiary to choose between presentation of paper documents or electronic records and it chooses to present only paper documents, UCP alone shall apply to that presentation. If only paper documents are permitted under an eUCP credit, UCP alone shall apply.’

Now, the Act has renamed the Act for Promotion of Electronic Trading (APET). The writer translates the English name of this act for sake of convenience, totally modified the previous act, “Act for Automated Trade Promotion (AATP)”, which was enacted in 1991 and enforced in Korea since 1992. AATP was the first act to promote e-commerce especially in the international trade.

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5) Title, abstract, keywords, addresses, biographical notes
Please assist us by following these guidelines:

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Abstract: approximately 200 words, maximum 300

Keywords: approximately 10 words or phrases

Address: position, department, name of institution, full postal address, e-mail address & Tel.

Biographical notes: approximately 50 words per author, maximum 100

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All illustrations, whether diagrams or photographs, suitable for printing in black and white, are referred to as Figures and are numbered sequentially. Please place them at the end of the paper, rather than interspersed in text.

Originals of line diagrams will be reduced and used directly, so please prepare them to the highest possible standards. Bear in mind that lettering may be reduced in size by a factor of 2 or 3, and that fine lines may disappear. Electronic copies of the figures are also required.

8) Translated works

Difficulty often arises in translating acronyms, so it is best to spell out an acronym in English (for example, IIRP-French personal income tax).

Similarly, labels and suffixes need careful attention where the letters refer to words that have been translated.

The names of mathematical functions may change in translation-check against an English or American mathematical reference text.

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