The Intellectual Property Rights of the Insurance Industry

Calvin S. Weng*
Department of Banking and Finance,
Takming University of Science and Technology, Taiwan
calvinweng@takming.edu.tw
**Corresponding Author*

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Abstract

E-commerce has developed rapidly in recent years. It has changed the way that businesses compete, created new rules for business and a new type of economics. Therefore, technologies are no longer a tool considered after the formation of business strategies, but a powerful motivation and main reason for formulating new business strategies. "Business Methods" are the key weapon in this campaign. The purpose of this paper is to explore the intellectual property of the insurance industry. This paper has focused its discussion on subclass 4 of USPC 705. Moreover, it also discusses the possible impacts and strategies that companies should take after the implementation of intellectual property rights (IPR). In conclusion, several suggestions are made to companies in response to this industrial restructure due to the implementation of IPR.

Keywords: Business method, insurance, intellectual property rights

1. Introduction

Incited by the innovation of internet technology, e-commerce has developed rapidly in recent years. It has not only changed the way that businesses compete, but has also created new rules for business and a new type of economics (Kalakota and Robinson, 2002; Kshetri, 2007; Odagiri et al., 2010; Yaghoubi and Tajmohammadi, 2011). The adoption and application of e-commerce in the insurance business is an important issue for the development of the insurance industry (Yaghoubi and Tajmohammadi, 2011). To enhance the efficiency and lower the overall costs of an insurance company, many insurance companies have established new business models to incorporate e-commerce technologies, such as B2B and B2C (Taylor et al., 2002; Durvasula et al., 2004; Yaghoubi and Tajmohammadi, 2011). Hence, technologies are no longer tools to be considered after the formation of business strategies, but a powerful motivation and the main reason for formulating new business strategies (Grossman et al., 2004). "Business Methods" just happen to be the key weapon in this campaign (Jackson, 2003).

A financial product is a type of service in nature. Therefore, in the past, a financial service was not protected by intellectual property rights (IPR) due to its characteristics (Odagiri et al., 2010). In addition, the insurance industry has traditionally been included as part of the finance sector and positioned as a service provider. However, protection of the intellectual property of insurance companies was an issue (Hall et al., 2009). Theoretically, the services and products of an insurance company should be included in the "Trade Secrets Act," which is part of IPR. This law prohibits the companies' trade secrets being illegally copied or delivered to others by either their employees or customers. However, this is not the case in reality. Since an insurance company has been defined as a service provider, how can clients and agents be prevented from knowing the contents of a

company's products, such as an insurance policy, the rationale of the product design, and so on. There is no secret that can be kept. In short, it is fair to say that an insurance company has no exclusive rights to protect the IPR of their products; even the name and content of the products are legally authorized from relative governing authorities. In fact, the business world, including the insurance business, is no different. New product development requires protection to ensure that product development efforts, such as the investment of manpower and capital, go as far and as long as possible to maximizing the return on investment. Why is it not the case for the insurance industry?

A "Business Method" is typically a new service method or new service system often developed by the Internet or other electronic technologies according to its description. Due to the "business methods exception" made by the United States Patent and Trademark Office (USPTO), process patents had, historically, met with difficulty in attaining the status of patentable subject matter. Therefore, all patented business methods were mostly computer software or other Internet-related technologies (Hunt, 2008; Lerner, 2006). Nevertheless, insurance companies were adopting new technologies in their application of marketing, calculation methods, or risk selection methods. Companies were also actively integrating new technology into new product designs or updates of existing products. Although the prime goal of a business method is to maximize the companies' profit when operating a new method, insurance products and methods were designed to improve service and operational quality and these innovations failed to be patented (Hall and Manfred, 2007; Wagner, 2008; Hall et al., 2009).

In fact, from the aspect of "Statutory Subject Matter," insurance business methods should not have been excluded from the protection of patent laws. However, this issue has long been argued in the fields of law, academia, and business. Rules or methods related to intellectual activities of insurance have conventionally failed to be patented. However, the U.S. Court of Appeals for the Federal Circuit (CAFC) changed this convention by sentencing the patentability of business methods in two cases. One was the case of State Street Bank & Trust Co. v. Signature Financial Group, 149 F.3d 1368 (Fed. Cir. Jul. 23, 1998). In this case, the court announced that, whatever the product, if they are useful, concrete and tangible, they are able to be patented. The CAFC also held that business methods are no longer an exception to statutory subject matter. Instead, business methods are subject to the same legal requirements for patentability as applied to any other process or method. Second was the case of AT&T Corp. v. Excel Communications Inc., 172 F.3d 1352 (Fed. Cir. 1999), in which the CAFC reassured the patentability of subjects that produce practical usage. The importance of these two cases is that business methods were now considered as patentable subject matter, and everyone could be an inventor. Practically anyone can come up with a process or improve an idea that in some way facilitates the methods of business. From then, innovative business methods become patentable, and, therefore, insurance business methods were protected by intellectual property rights (Bakos and Nowotarski, 2003).

Nowadays, patented insurance products are mostly related to so-called business methods, in which the competition has been intensive (Chang et al., 2009). Traditionally, IPR did not protect the products and innovative service design of the insurance industry and the competition between insurance companies was mainly focused on the speed of copying and emulation. However, the inclusion of the insurance industry into IPR has restructured the insurance industry's ecology. IPR for insurance will become a key issue for insurance companies in the near future. Therefore, in this paper, the following issues are discussed: what is the impact on insurance

companies? How can companies manage and integrate company strategies and business methods with the addition of IPR concepts at the same time?

This paper is a brief introduction to intellectual property for insurance, from the perspective of how patents may be applied to insurance products. This paper mainly focuses its discussion on U.S. patent classification 705 (USPC705) and its subclass 4, and explores the discussion on the developing technological trajectories of insurance business methods. The authors try to provide some business strategies that may help companies integrate business methods, IPR and management. The structure of this paper is organized as follows: First, there is an introduction to the patent law for business methods. Second is a literature review of intellectual property rights and insurance business methods. The third section is a discussion on the patent of insurance business methods. The fourth section is an analysis of insurance business method patents. Finally there is a conclusion and discussion.

2. Intellectual Property Rights for Insurance

Financial and insurance products were firstly excluded from IPR due to limitations in the economical and legal environment and capital circulation. This was because innovative products of an insurance company, such as new product ideas or better business processes, were freely shared among firms. Creating a concept for product development in the insurance industry was very simple; a firm sold its newly designed product in the market and other insurance companies quickly emulated that new product. Legitimacy was not a consideration at that time since the IPR had no protection. Thus, the innovative product often became a general product, which was freely copied by different companies in the market within a short period of time. However, this is no longer the case. A dramatic change came in 1998. The US CAFC announced the patentability of insurance business methods in the case of the State Street Bank. Hence, IPR now formally protects the business methods of the insurance industry. The result of this case was not only significant to the insurance industry, but also changed the competition pattern and ecology of the insurance industry (Bakos and Nowotarski, 2003).

2.1 Insurance Business Method

A business method may be defined as "a method of operating any aspect of an economic enterprise" (Advisory Council on Intellectual Property, 2003, p6). In 1997, the USPTO created the patent classification class 705 (USPC705), entitled "Data Processing: Financial, Business Practice, Management or Cost/Price Determination" in response to the trends in e-commerce. It is a business method patent class. Business method patents are a class of patents which disclose and claim new methods of doing business. This includes new types of e-commerce, insurance, banking, tax compliance, etc.

Later, in 2000, the USPTO published a White Paper entitled "Automated Financial or Management Data Processing Methods - Business Methods" (USPTO, 1999). According to the white paper, the focus of Class 705 is on "Finance" or "Management." Therefore, whatever the methods are that deal with financial or managerial issues, they all belong to Class 705. Additionally, Subclass 4 of USPC 705 was specifically created for insurance (e.g., computer implemented systems or methods of writing insurance policy, processing insurance claims, etc.). Subclass 4 clearly defines that insurance business methods can include the process of issuing insurance policies and claims, marketing methods, packaging methods, insurance product designs, and even insurance products that are designed for specialist needs. Hence, insurance business methods have become important assets for both independent inventors and major insurance companies.

The definition of subclass 4 of USPC 705 as "insurance business methods" highlights all the characteristics of insurance

products or business processes that can help lower costs or risks. Unfortunately, many insurance companies are currently not aware of the new changes instigated by the emergence of patent law. Some companies are even still coping with their competitors' product designs as they traditionally did before. However, it is important to note that most successful patents do not spring from entirely new ideas (Stuart and Podolny, 1996; Ruttan, 1997; Redding, 2002; Rycroft and Kash, 2002); they can be the improvement of existing ideas. However, as soon as one of the competitors obtains a patent from the improvement of an existing insurance product, which can be the existing sales product of other companies, how can the other companies survive in this game? Will they need to stop selling that product?

"Lincoln National Life Insurance Co. v. Transamerica Life Insurance Co. (Fed. Cir. 2010)" is a good example. Lincoln pursued Transamerica and others for infringement of its patents covering their method of administering a variable annuity plan with a guaranteed minimum payment[1]. A jury found the claims valid and infringed and awarded $13 million in damages. Therefore, if insurance companies are still not aware of this serious issue, they may pay for it in the near future due to the loss of competition in the market.

2.2 Patent of Insurance Business Methods

Subclass 4 of USPC705 also describes "computer implemented systems or methods." Most newly patented business methods for insurance are related to computer systems or Internet technology, which involves various types of data processing procedures and the application of information systems. In other words, insurance business methods basically transform conventional financial activities into the virtual Internet world, and create new Internet economics.

Patenting in this area has increased significantly in the last two decades (Hall et al., 2009). Innovations, such as new marketing technologies, the promotion of new skills, and improvements in risk-selection methods are all able to apply IPR for protection in the insurance industry. As Table 1 shows, before 1998, the U.S. had only granted 47 patents regarding insurance. During that time, the "inventions" of insurance companies, such as new product designs and new business methods when calculating insurance payments, were treated as "public property" and could be shared for free. Patents protect the ideas themselves, not just their expression. Now, there are more than 1300 licensed patents for insurance business methods.

2.3 Implication

The implication of this change is twofold. First, insurance companies have started to integrate their unique business methods into their customer services, product designs or marketing techniques at the same time. Second, any innovation in insurance is no longer public property. Although the numbers of patented insurance business methods are still small in the USPTO, companies, especially those that generate profits mainly from the sale of insurance products, should specifically pay attention to this change. More and more companies are hoping to produce products with innovative new methods, and will register these products into IPR systems in order to protect their innovations from emulation. Therefore, companies will start to form their own teams for product development and design and leave less space to allow competitors to copy their work. In practice, insurance companies have begun to pay attention to the value of IPR. For example, in the past, insurance companies

[1] **US Patent No: 7089201**
Title: Method and apparatus for providing retirement income benefits
Abstract: Computerized methods for administering variable annuity plans are disclosed. In certain embodiments, minimum payment features and mechanisms for adjusting current payments in response to cumulative payment totals are provided. Other embodiments provide withdrawal features under which certain guarantees are provided if withdrawals do not exceed predetermined withdrawal rates.

usually applied a trade mark to protect the value, reputation and prestige of the company and its products' "brand names." Unlike the electrical industry or other scientific industries, the insurance industry did not value the merit brought by their innovations. However, in the near future, if an insurance company aims to succeed and generate profits, it must know how to utilize the value created by innovation and the protection of IPR. In summary, licensing patents for insurance business methods can offer a legal and effective protection to financial and insurance products and services, and these can also safeguard the considerable amount of capital that insurance companies invest in product development and innovation. This protection will encourage companies to invest in innovation and may restructure the market based on a firm's institutional mechanisms, which is the company's capability to develop and innovate. Next, this study will present an analysis of the insurance business method patent and possible implications for management.

Table 1: Patents of Insurance Business Methods

Year	Application	Issue	Year	Application	Issue	Year	Application	Issue
1982	1	0	1993	8	8	2003	91	21
1984	1	0	1994	14	3	2004	71	25
1985	2	1	1995	18	3	2005	68	31
1986	3	0	1996	24	7	2006	99	46
1987	5	1	1997	38	9	2007	139	45
1988	1	4	1998	35	21	2008	125	90
1989	4	4	1999	43	36	2009	55	80
1990	5	3	2000	96	31	2010	81	276
1991	4	3	2001	118	19	2011	40	275
1992	3	1	2002	108	15	2012	3	245
Total								1303

Data source: http://www.USPTO.com

3. Analysis

Patents were searched from the USPTO by the patent analysis tool called "PatentGuider." The retrieval keyword was the current US Classification 705/4 for the period from 1980/1/1 to 2012/8/30. 1303 patents were extracted in total from the USPTO as per the analysis basis. Below is the data analysis exploration and content analysis.

3.1 The Trend of Insurance Business Method Patents

Insurance business method patents mostly apply to computer information systems or internet-related technologies. The technological life cycle (TLC) can be analyzed and described with statistical changes in the patent data, such as the number of patents licensed or under process.

Currently, there are few patented insurance business methods registered by the USPTO and only about 1300 patents have been issued. It can, therefore, be said that the technology of insurance business methods is now positioned at the introduction stage of TLC. However, it can also be seen that numbers of applying cases and applicants have tended to increase. In Figure 1, the red line represents the issued patents and the blue line represents the applications for a patent. Table 2 lists the top 10 assignees. 644 firms in the United States have, in total, obtained 1180 patents. This result met the expectations of this study. Because the classification of business methods was created by the USPTO, firms in the US would be more aware of this new trend than firms in other countries.

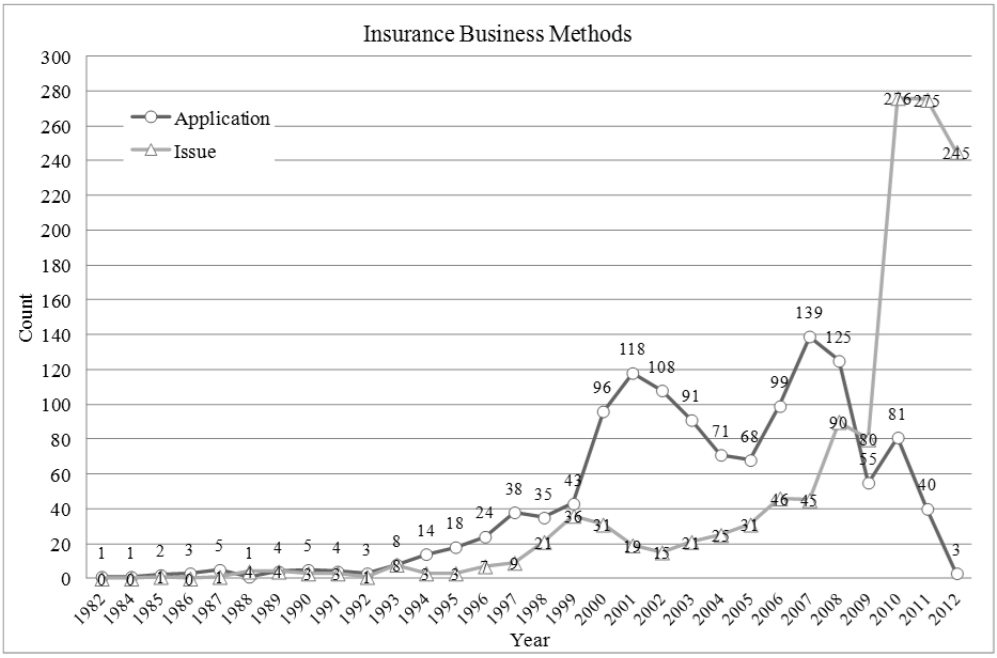

Figure 1：Number of Patents by Year (from 1982 to 2012)

Table 2: Distribution of Assignees

Nation	Patent count	Assignee
America	1180	644
Japan	31	19
Switzerland	15	6
Germany	15	6
South Africa	8	4
Australia	7	5
Bermuda	7	4
Canada	6	6
Ireland	6	1
Holland	5	3

3.2 Citation Analysis

Why are these patents important to the insurance sector? Patents highly cited by other patents are presented as significant patents to that relative field. Table 3 lists the citation frequency of the 1303 patents ranked within 20's. The patents with a high frequency of citation are crucial to the development of the insurance service. For example, patent 04831526, titled as "Computerized insurance premium quote request and policy issuance system," was cited by 97 firms 177 times, and can be described as a base patent or key patent.

3.3 Technological Trajectories of Insurance Business Methods

Graff (2003) suggested observation of technological trajectories and to study the emergence and growth of a new technology by analyzing the relative patent database with international patent classification (IPC). Following Graff's approach, this study identified the current technological trajectories of insurance business methods by IPC, and the result is summarized as Figure 2.

Table 3: Top 20 Patents of Insurance Business Methods

Patent No.	# of total Citation	Title of patent (Technology)	Assignee (Issued corporation)	# of self citation	# of other citation	# of cited corporation
04831526	177	Computerized insurance premium quote request and policy issuance system	The Chubb Corporation(US)	0	177	97
05523942	141	Design grid for inputting insurance and investment product information in a computer system	New England Mutual Life Insurance Company(US)	0	141	61
05191522	117	Integrated group insurance information processing and reporting system based upon an enterprise-wide data structure	ITT Corporation(US)	0	117	47
05873066	110	System for electronically managing and documenting the underwriting of an excess casualty insurance policy	Insurance Company of North America(US)	0	110	35
06208973	104	Point of service third party financial management vehicle for the healthcare industry	Onehealthbank.com(US)	0	104	55
04975840	105	Method and apparatus for evaluating a potentially insurable risk	Lincoln National Risk Management, Inc.(US)	0	105	55
05950169	101	System and method for managing insurance claim processing	CCC Information Services, Inc.(US)	1	100	39
05797134	97	Motor vehicle monitoring system for determining a cost of insurance	Progressive Casualty Insurance Company(US)	5	92	24
06163770	97	Computer apparatus and method for generating documentation using a computed value for a claims cost affected by at least one concurrent, different insurance policy for the same insured	Financial Growth Resources, Inc.(US)	0	97	25
05655085	96	Computer system for automated comparing of universal life insurance policies based on selectable criteria	The Ryan Evalulife Systems, Inc.(US)	0	96	46
05301105	92	All care health management system	Cummings; Desmond D.	0	92	62
05930759	178	Method and system for processing health care electronic data transactions	Symbol Technologies, Inc.(US)	0	178	28
06343271	77	Electronic creation, submission, adjudication, and payment of health insurance claims	P5 e.Health Services, Inc.(US)	0	77	41
04491725	76	Medical insurance verification and processing system	Guard Insurance Group(US)	0	76	56
05956691	71	Dynamic policy illustration system	Second Opinion Financial Systems, Inc.(US)	0	71	33
05809478	69	Method for accessing and evaluating information for processing an application for insurance	Allstate Insurance Company(US)	0	69	34
06119093	65	System for syndication of insurance	Walker Asset Management Limited Partnership(US)	0	65	24
04837693	65	Method and apparatus for facilitating operation of an insurance plan	The Chubb Corporation(US)	0	65	31
05504674	62	Insurance claims estimate, text, and graphics network and method	CCC Information Services, Inc.(US)	2	60	15
06341265	62	Provider claim editing and settlement system	P5 e.Health Services, Inc.(US)	0	62	31

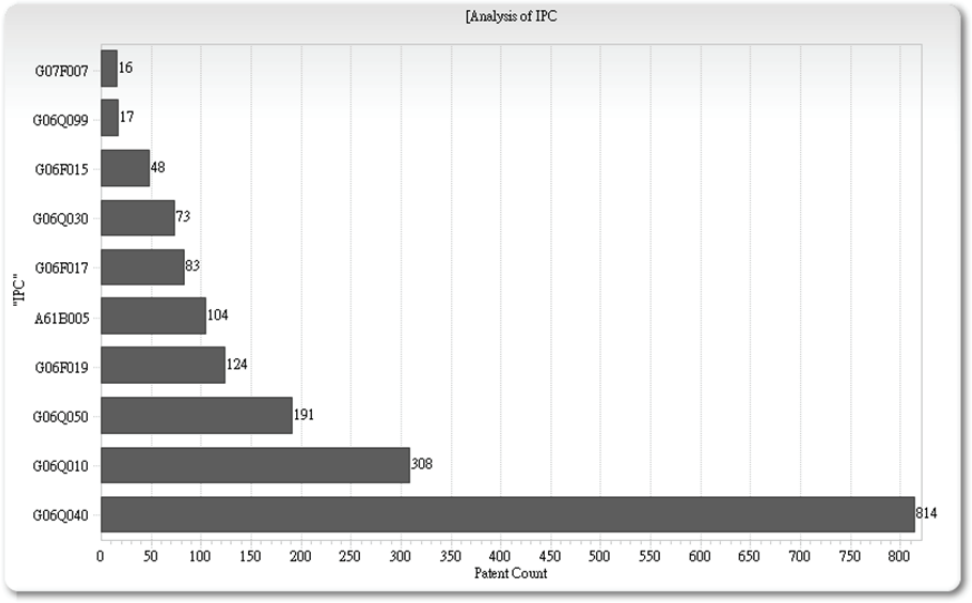

Figure 2: Identification of Technological Trajectories by IPC.

From Figure 2 above, it can be understood that the current technological trajectories of insurance business methods center on electronic digital data processing in IPC G06G, especially G06Q040 and G06Q010. The main technological items are computers in which a part of the computation is affected hydraulically or pneumatically; self-contained input or output peripheral equipment; computer systems based on specific computational models and impedance networks using digital techniques.

3.4 Relative R&D Capability

Which firms have obtained financial patents? What are their characteristics in terms of competitiveness? The indicator for the relative R&D capabilities of a firm includes the following criteria: the number of patents, number of other citation, number of self citation, average patent age and active year. This study selected the relative R&D capability over 50% for demonstration. In total, 15 firms met the criteria, as per Table 4. The results showed that Progressive Casualty Insurance Company was the most competitive, with The Chubb Corporation located in second place, etc.

4. Technological Field of Patents

The business processes of the insurance industry are highly related to information technology. For the companies that intensively utilize knowledge and information, business methods have become their main source when planning business activities. The innovations regarding the new ways of doing business are all able to apply IPR and to be protected in the insurance industry. According to the definition of subclass 4 of USPC705, current available insurance business methods are mostly related to Internet technology. For example, in the case of E-insurance, Yaghoubi and Tajmohammadi (2011) stated: “E-insurance can be broadly defined as the application of Internet and related information technologies (IT) to the production and distribution of insurance services” p. 252). In other words, it can be defined as the provision of insurance cover whereby an insurance policy is solicited, offered, negotiated and contracted online. In addition, the services of payment, policy delivery and claims processing may all be done online as well.

Table 4: Relative R&D Capability

Assignee	Patent	Other citation	Self citation	Inventor	Ave. patent age	Active year	Relative R&D capability
Progressive Casualty Insurance Company	8	191	8	30	10	8	100%
The Chubb Corporation	2	178	0	11	20	2	91%
CCC Information Services, Inc.	3	160	3	18	15	3	82%
Computer Sciences Corporation	45	35	176	31	10	8	78%
ITT Corporation	2	145	0	24	23	2	74%
Insurance Company of North America	2	143	0	10	16	2	73%
New England Mutual Life Insurance Company	1	141	0	5	18	1	72%
P5 e.Health Services, Inc.	2	139	0	4	14	1	71%
The Ryan Evalulife Systems, Inc.	2	132	0	3	17	2	67%
International Business Machines Corporation	32	124	5	88	9	13	65%
Financial Growth Resources, Inc.	2	118	1	2	15	2	60%
The Pharmacy Fund, Inc.	2	115	0	8	18	2	58%
Lincoln National Risk Management, Inc.	1	105	0	3	24	1	53%
Onehealthbank.com	1	104	0	2	14	1	53%
Walker Asset Management Limited Partnership	2	104	0	3	16	2	53%

From the perspectives of management and the practice of insurance, insurance business methods involve the methods of collection of financial information, administrative management, product design, service and selling activities, and so on. On the other hand, from the perspective of patent management using the application of patents, these activities can be categorized into five fields: (1) product design, (2) claim process, (3) marketing, (4) payment handling, and (5) information system. Since insurance companies are handling most of their business electronically, these five fields are closely related to each other, and each field also relates to the information system. Figure 3 is the conceptual model explaining the relations between the five patent fields for insurance business methods.

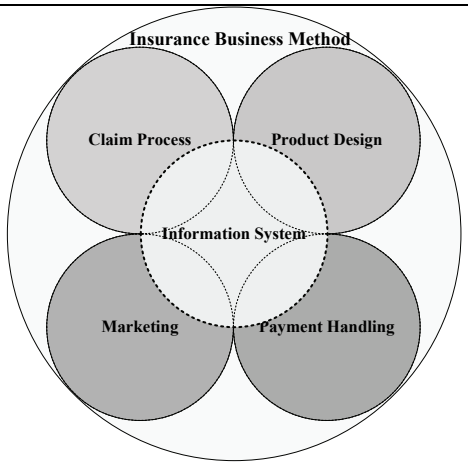

Figure 3: Conceptual Model of the Patent Field

4.1 Product Design Field

This involves new product design, risk management, underwriting technology and management, premium calculation and formula, novel policy forms, the identification of new insurance risks, and ways of utilizing information systems to assist these processes. Samples of relative granted patents are listed below in Table 5.

Table 5: Granted Patents in the Product Design Field

Patent No.	Issue date	Patent Title
07016871	2006/03/21	System for and method of variable annuity contract administration
06611808	2003/08/26	Method and apparatus for determining additional benefits and costs for an annuity contract
06343272	2002/01/29	System for analyzing and managing equity participation life insurance and annuity contracts
06134536	2000/10/17	Methods and apparatus relating to the formulation and trading of risk management contracts
05970479	1999/10/19	Methods and apparatus relating to the formulation and trading of risk management contracts

4.2 Claim Process Field

This involves the identification and estimation of claim cases, fraudulent settlement, claim submission, and ways of utilizing information systems to assist these processes. Samples of relative granted patents are listed below in Table 6.

Table 6: Granted Patents in the Claim Process Field

Patent No.	Issue date	Patent Title
07555439	2009/06/30	Computerized medical underwriting of group life insurance using medical claims data
07438218	2008/10/21	Systems and methods for pharmacy reimbursement claim resubmission
07406427	2008/07/29	Capture highly refined claim evaluation information across multiple web interfaces
07392201	2008/06/24	Insurance claim forecasting system
07376573	2008/05/20	Claims data analysis toolkit

4.3 Payment Handling Field

This involves account management, payment handing, etc. The payment handling field is strongly linked to the Internet and information systems for handling payment transmission, notification, and combination. Unlike traditional payment handling methods, which are seldom covered by IPR, new payment handling systems and methods mostly combine with Internet and information systems and have become the key fields in insurance business methods. Samples of relative granted patents are listed below in Table 7.

Table 7: Granted Patents in the Payment Handling Field

Patent No.	Issue date	Patent Title
07533047	2009/05/12	Method and system for securing card payment transactions using a mobile communication device
07536349	2009/05/19	Method and apparatus for processing a charge applied to a financial account
07260548	2007/08/21	Long term disability overpayment recovery service with post award service and savings program and financial assistance
07072842	2006/07/04	Payment of health care insurance claims using short-term loans
06343271	2002/01/29	Electronic creation, submission, adjudication, and payment of health insurance claims

4.4 Marketing Field

This involves selling technology or methods, marketing methods or technology, distribution technology, risk evaluation of channels, and the utilization of information system to assist these processes. Traditional, personal selling is very different from the new Internet or telephone selling. The new focus is to create convenience and efficiency in selling channels through Internet or telecommunication technologies. In the e-commerce age, the utilization of electronic marketing technology is very im-

portant. Samples of relative granted patents are listed below in Table 8.

Table 8: Granted Patents in the Marketing Field

Patent No.	Issue date	Patent Title
07533031	2009/05/12	Method and system for providing insurance services
07505916	2009/03/17	System and method for allocating home health services
07383197	2008/06/03	Method and apparatus for matching consumer of health care services to health care service provider
07124088	2006/10/17	Apparatus for internet on-line insurance policy service
07610257	2009/10/27	Computer-implemented risk evaluation systems and methods

4.5 Information System Field

Subclass 4 of USPC 705 is described as "computer-implemented systems or methods." This implies the inseparability of new insurance business methods from the information system. Completeness, speed, and comprehensiveness are the basic requirements for an information system in the insurance industry, and includes the technologies of filing, saving, retrieving, selection, confirmation, information transmission, and presentation of policy records and customers' personal data. Transforming traditional business activities into a computer's virtual world just fits into the characteristics of a patentable business method. Samples of relative granted patents are listed below in Table 9.

Table 9: Granted Patents in the Information System Field

Patent No.	Issue date	Patent Title
07555439	2009/06/30	Computerized medical underwriting of group life insurance using medical claims data
07519540	2009/04/14	Computerized prescription system for gathering and presenting information relating to pharmaceuticals
07451097	2008/11/11	Method, data storage medium, and computer system for generating a modular multi-coverage insurance product
07340383	2008/03/04	Control device, method and computer program product for browsing data
07328183	2008/02/05	Computer program and method for determining the economic impact of long-term care

5. Conclusion and Discussion

5.1 Implementation of IPR into the Insurance Industry

The insurance industry plays a key role in the contest for the patenting of business methods. This is because insurance business methods involve the activities of collection and processing of insurance data, and the management of insurance business activities, such as marketing and innovation. The scope is bigger than just an insurance industry; the banking and security industries are also related.

Insurance businesses methods help to solve the problem in that there had previously been no protection for the intellectual property of the insurance and financial industries. In the past, competitors could quickly duplicate the new service methods or newly designed products of their competitors. Now, this defect has been solved by the emergence of patent law for business methods. It enables insurance companies to protect their innovations and inventions using IPR. However, compared with other patent classes, not many patents relating to insurance business methods have been approved. Only approximately 1300 cases are licensed. However, these 1300 have started to exert an influence. In particular, these insurance business methods are systematic and general in their characteristics and have less obviousness. Their impacts are high and deep. Therefore, insurance companies should pay more attention to this issue. For example, Citibank have started their patent managing activities in their e-business network so as to prohibit emulation by their competitors. At the same time, from the approved patents

of Citibank, it can be seen that this company holds many key financial technologies. The Electronic-Monetary System (EMS, US Patent No: 05453601) is one of the most famous technologies. The EMS applied for patenting in 1991 and was approved in 1995. This patent has since been cited by another 200 patents. Obviously, the EMS is one of the key fundamental patents of the finance industry.

The impact of patent law on business methods in the financial industry is high. Financial activity is one key reason for the application of a new business method. Applying for a new business method could become a future trend, and the companies owning patents will be protected by IPR globally. For instance, Citibank routinely requires its global branches to apply similar patents in different countries, simultaneously, in order to protect its patent rights globally (Luo, 2000).

5.2 Strategy Formulation

Since the impact of IPR on the insurance industry is enormous, the following are suggested strategies for responses, combined with an analysis of future trends.

(1) Changes in the modes of product development: Companies will either need to invent or pay to use other companies' ideas.

Since the changes in the modes of product development will become the trend, companies will either need to invent or pay to use other companies' ideas. The innovation and new design of products prevents the free sharing of information, as does the modes of product development. Fast followers will no longer be able to compete with other companies using their existing strategy of "copying from others." More and more companies will join the inventions and try to utilize patent law to protect their own ideas from competition.

(2) Organizational restructuring: new organizational structures need to facilitate innovation and patent management.

Since organizational restructuring may be necessary, a new organizational structure will need to facilitate innovation and patent management. The insurance industry values innovation, but few companies ever appear to compete on innovative activities. That is because most companies only have product development centers instead of research and development centers. Following the implementation of IPR and changes in the modes of product development, organizational restructure will become a must.

(3) Establishment of a reward system: companies will start to setup reward systems to encourage people to invent new methods etc.

Since innovation will become a significant activity in the insurance industry, companies will start to setup a reward system to encourage their employees to invent new methods.

There is no limit to the sources of innovation. A great idea can come from a company's product designers finding an improvement to existing products, a salesperson finding a great idea when trading with customers, underwriters finding better rules for underwriting or risk selection, or other people who do not even work for an insurance company. In the past, because innovation is not protected, companies have not created a culture of innovation. However, in the future, the organizational culture of a company will need to be transformed; innovation should become part of the core values. Companies will start to setup reward systems, encouraging people to invent and share profits with them. For instance, employees will be allowed to become inventors of their own ideas.

(4) Patent watch and analysis: the organization needs mechanisms, such as creating positions of CTO and CKO within the company to handle patent matters.

Patent watching and analysis will become a significant activity inside a company. Consequently, the organization will need certain mechanisms, such as creating the positions of CTO (Chief Technology Officer) and CKO (Chief Knowledge Officer) within the company to handle patent

matters. Patent infringement often happens in the electronic industry. Although the approved patents for insurance business methods are currently few, it does not mean this type of problem will not occur in the future. Protection is a focus, as is violation. Companies need to pay extra attention to the possible infringement of their existing patents. Also, utilizing patents to create competitive advantages is still not popular in the industry. Therefore, organization should handle, such as those below.

(A) Patent analysis before investment to reduce the risk to secure the return of investment.

(B) Patent analysis before and after product development to prevent infringement from existing patents and to innovate based on existing patented technologies.

(C) To analyze competitors' patents for planning the company's future market segmentation, patent portfolios and responsive strategies, once possible infringement has happened.

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About Author

Calvin S. Weng is an associate professor in Takming University of Science and Technology, Taiwan. He received his Ph.D. degree in Management from National Yunlin University of Science and Technology in Taiwan, and MA degree in Actuarial Science from Roosevelt University in Chicago, IL, USA, and has been working in the Aetna Life insurance company of America in Taiwan branch office for more than 10 years. His research interest focuses on strategy management and technology management. His works have appeared in Technological Forecasting and Social Change, IEEE Transactions on Engineering Management, Asian Journal of Technology Innovation, Journal of Management, International Journal of Innovation and Technology Management (IJITM), International Journal of Services Technology and Management (IJSTM), Journal of Management & Systems (Chinese), NCCU Intellectual Property Review (Chinese), Insurance Issues & Practice (Chinese).