

Software Patent in India: A Comparative Judicial and Empirical Overview

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The question of software patent and its patentability was discussed in June, 2014 by the Supreme Court of the United States of America (USA) in the case of *Alice Corporation v CLS Bank International*. It has become necessary to view the issue of software patent in a new light as it is observed that there is greater ambivalence in the law and practice of granting patent to computer implemented inventions. Considering the significant role played by the Indian software industry in contributing to the growth of the Indian economy and putting India on the global map, it is necessary to ensure that the patent system can adapt to and assimilate new, innovative technologies for the growth and development of software industry. The patent system should be capable of handling them in a rapidly advanced way, and must not shut them out. The data relating to number of patent applications filed and granted in the field of computer technology in countries like the US, Canada, European Countries and India shows that there are variations in approaches towards patentability of software. Diverse approaches are creating differences in opinions about patenting of software, thereby leading to software patent war. The current patent war in software industry has created issues of protection of technology, enforcement and growth of the industry. This article throws light on the issues related with software patent. It also discusses the various cases in U.S. The article attempts to understand the status of patent law and practice relating to computer related inventions India, Canada and EPO.

Keywords: Patent, software, computer related inventions, industry, innovation, WIPO, IPO, EPO

The patent system endeavours to achieve a balance between promoting the creation and funding of new products. In doing so, it always tries not to hamper innovation or delay the development of future products so as to provide the maximum benefit to the citizens.¹ With change in technology, there is a need to maintain a balance between the law and technology in order to provide competitive market and growth in innovation.

Innovation has become a keyword in all kinds of industries. The Government of India, through its 'Make in India' campaign, is further promoting innovation in Indian industries. The speed of innovation in the fields of computer software, telecommunications and internet based services in last ten years has been increasing at a fast pace. Revolution in the information technology has changed life, working habits and the living conditions of humans. Thus, to protect the innovation and promote an innovative environment it is important to ensure that the patent system is capable of facing the challenges posed by these new innovative technologies.

Knowledge is an inevitable part of economy of the 21st century and innovation is a key to hold this economy. Ability of converting knowledge into wealth and social good through the process of innovation will determine future of our nation. Thus, after Trade Related Intellectual Property Rights (TRIPS) Agreement was implemented, issues of generation, valuation, protection, prosecution, defence and exploitation of intellectual property (IP) have become critically important all around the world. Exponential growth of scientific knowledge, increasing demands for new forms of intellectual property protection, access to IP related information, increasing dominance of the new knowledge economy over the old 'brick and mortar' economy, complexities linked to IP in traditional knowledge and community knowledge are posing challenges in setting up a new 21st century IP agenda.

This paper analyses the present position of the software patent in India and other countries like European Union and Canada with the help of data of filed and granted patent. It also throws light on the evolution of law by discussing various judgments and Indian case laws.

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Controversy on TRIPS and software

Article 27 Paragraph 1 of TRIPS states that '*patent shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application*'. The issue of patentability and its exclusion is a controversial issue in case of determining patentability of advance technological patents.² Article 27.1 of TRIPS specifies that the patent protection is available for all inventions and patent rights can be enjoyed without discrimination on the basis of the fields of technology.³ This clause does not define the exact meaning of the term 'invention'. However, it mentions about patentable criteria such as novelty, inventive step and industrial application.⁴ This provision has made members to define their own invention and its industrial application. Further, Article 27 Paragraphs 2 and 3 speak about exclusion from patentability. In both of these paragraphs nowhere has it been mentioned that the computer programme or software should be excluded from patentable subject matter.⁵ Apart from this, computer software is mainly protected by Article 10 of TRIPS. It says that the source code and object code shall be protected as literary work under Berne Convention 1971.⁶

The dispute of protection of software arises on the issues of copyright or patent protection. The TRIPS Agreement mentions about the copyright protection of object code and source code. It is difficult to protect computer software under copyright protection because of basic difference between the software and traditional literary work.⁷ The copyright protection to software is opposed because of the behaviour code dichotomy. According to Pamela Samuelson, the real value of computer programme lies in the source code, rather than the object code.⁷ It mainly depends on the how a consumer experiences the software and how the programme behaves. The TRIPS Agreement provides copyright protection for object and source code but it does not provide protection to valuable behaviour of the programme.⁸ Thus, till today, the question regarding patent protection for pure software or for its technical application or physical manifestation remains unanswered. Different countries determine their own laws and guidelines for protection of such kind of software related inventions.

Issues in EPC and PCT

According to Paragraph 2 of Article 52 of European Patent Convention (EPC) programmes for computers are not patentable inventions. However,

the scope of Paragraph 2 has been limited by Paragraph 3 which states that the provision of Paragraph 2 shall exclude patentability of the subject matter or activities referred to therein only to the extent that an application or a patent relates to such subject matter or activities as such. The term as such is not properly defined. The practice followed by the European Patent Office and the decisions by the Board of Appeals show that the computer programme having some technical effect can be considered for patent.⁹

The patent issued by European Patent Office under European Patent Convention is binding on all countries of European Union. However, each country maintains its own patent law and own patent office. It is observed that the efforts of reconciling the laws with EU standards is underway.

Patent Cooperation Treaty (1970) facilitates centralised filing procedure whereby a single application can be filed in a PCT governmental receiving office. This application can be considered as worldwide patent application. However, PCT does not provide worldwide patent. To get patent, a separate application has to be filed in the particular country. The patent is granted by that country based on the patent law of the country. In case of software patent, it always becomes problematic as software is considered as a non patentable subject matter in most of the countries. The US started granting patent to software but this is not the case in EPO and other countries. Thus, it can be said that according to Article 27 of PCT the patentability of invention can be determined by the national law of the applicant.

Protection of Software

Software can be divided in different groups like commercial, shareware, freeware and public domain software and it can be protected with different laws according to their industrial application.¹⁰ Commercial software is protected through copyright and a user needs to buy the software. Shareware software is available at cheaper rates. This software is free for test and trial. Freeware software is free for use and for making copies. In case of commercial, shareware and freeware software no one can change the code of the software or use in another programme without the permission of copyright holder. Public domain software is not copyrighted and can be used without any restriction. It can be copied and used in another programme.

Software is more or less connected to mathematical methods, algorithm and can be categorized into software with specific hardware, systems software and application software. Thus, traditionally software can be protected as copyright but with the growth of industry and advance application it can also be protected under patent system. The dividing line between the copyright and patent is very thin in case of software and computer implemented invention¹¹ (Table 1).

In the United States, as computer programs can be protected by both copyright and patent protection, Congress and the Supreme Court blurred the distinction traditionally made in the protection of computer related inventions.¹² There are three implicit exceptions to patent eligibility – laws of nature, physical phenomena, and abstract ideas. In determining the patent eligibility of a method claim reciting the use of a computer as a limitation, the Federal Circuit looked into whether the computer plays ‘a significant part’ in the invention or is merely ‘an obvious mechanism for permitting a solution to be achieved more quickly.’ In 2012, in *Bancorp Services, L.L.C. v Sun Life Assurance Co. of Canada (US)*¹³, the Federal Circuit considered the patent eligibility of claims describing a method and system

for ‘determining the values required to manage a stable value protected life insurance policy,’ and held that the use of a computer was not sufficiently ‘integral to the claimed invention’ to avoid patent ineligibility under the abstract-idea exception.

Considering protection to software or computer implemented invention, there is always a debate between the expression of software in terms of idea or form of expressing the idea. Derclaye and Leistner¹⁴ tried to make distinction between ideas and expressions in computer programs. An overlap easily occurs since a computer program, which is new, inventive and industrially applicable, will generally be at the same time original. But the simultaneous overlap will be reduced because the patent protects only the ideas whereas copyright protects only the expressions.

A program which would not be patentable could, however, quite easily be copyrightable. The converse is possible but rare. Normally, the idea/expression dichotomy should ensure that apart from this specific overlap, no other copyright creation could also be protected by a patent, and *vice versa*. European Commission’s initiative for the Computer-Implemented Inventions Directive¹⁵ is a positive step in minimizing the confusion. Aerotel/Macrossan¹⁶ settles the situation by looking at the four-step test to apply in terms of patentability.¹⁷

Copyrights protect the form of expression and not the idea itself. However, United States Supreme Court in *Gotschalk v Benson*¹⁸ observed that, ‘phenomenon of nature, though just discovered, mental processes and abstract intellectual concepts are not patentable as they are the basic tools of scientific and technological work’. To assess the patentability of the invention one should look at the invention as a whole and not just at what was novel about it.

Indian Approach towards Software Patent

In India, the Patent Amendment Act 2005 sought to introduce software patents. The amendment proposed in the Patent Amendment Act 2005 for Clause 3(k) was, “*a computer programme per se other than its technical application to industry or a combination with hardware; a mathematical method or a business method or algorithms.*” However, this amendment was rejected by the Indian Parliament, which chose to retain Clause 3(k) as it is. The Ordinance tried to strike a balance between the arguments for and against software patents. But, it was not possible as the ordinance was not converted into statutes and the changes suggested in the ordinance were taken back.

Table 1–Merits and demerits of software patent

S No.	Merits	Demerits
1	Software patent protects idea and it cannot be used only with the permission of the patent holder.	Software can be protect by copyright. The softwa with the programme is considered literary art and it can protected through copyrig as forms of expression.
2	Software Patent protects the inventor as against the copier. The copyright law protects only the form of expressed ideas, but not ideas, concepts, systems, or methods of operation.	Sequential innovation, re and update prevail software industry. Thi Software Patent may ret further innovation a growth.
3	It provides incentives in terms of royalty, licensing fee etc.	The software has sh lifecycle and by the ti patent is granted, t software tends to becom obsolete or outdated.
4	It stimulates innovation. For small and medium enterprises it has become beneficial.	Software patent exercis control over the furth improvements by protecti it for longer term. Thus sometimes becomes hurc in innovation.
5	It increases bargaining capacities of companies.	Rise of bad patents a patent trolls

On reviewing the Draft Patent Manual (2008),¹⁹ it is observed that it seeks to make technical applications of software patentable. The Manual of Patent Office Practice and Procedure by the office of Controller General of patents, Designs and Trademarks accepted on March 2011 in its Chapter 8.03.05.10 explains the guidelines for patents under Section 3(k) of Indian Patent Act. These guidelines give direction that patents cannot be granted to mathematical methods, business methods, algorithms and only computer programmes. Differences are also found in the draft patent manual and this final manual. Provision mentioned in the draft manual is not accepted. As the Patent Act clearly says that computer software *per se* is not patentable, there are differences between pro-software and anti-software patent supporters.

Inventive step is an important aspect of invention. Inventive step is nothing but a step towards the value addition which is not commonly observed in the previous invention and can be considered as new innovation. In the Indian Patent Amendment Act, 2005, a new Section 2(1) (ja) substituted the existing definition of 'inventive step' to mean "*a feature of an invention that involves technical advances as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art*".

Inventive step is cardinal criteria of patentability that is of great importance for Patent Law of a country. The attempt to redefine this term is interesting for all of us. In the original Act of 1970, 'Inventive Step' was defined as 'a feature that makes the invention not obvious to a person skilled in the art'. The Explanatory note to Article 27 (1) of the TRIPS Agreement states that 'inventive step' is synonymous with 'non-obviousness'. There are large numbers of judicial pronouncements that recognize what constitute 'non obviousness' as a criterion of patentability. US Supreme Court, in its judgment in the case of *KSR International v Teleflex*²⁰ stated that inventive step is a step in applying balanced patentability criteria for granting patents. In his opinion, Justice Anthony Kennedy wrote, "*The results of ordinary innovation are not the subject of exclusive rights under the patent laws. Were it otherwise, patents might stifle rather than promote the progress of useful arts.*"

Indian Manual of Patent Practice talks about inventive step or non-obviousness as a feature of an

invention that involves technical advance as compared to existing knowledge or having economic significance or both, making the invention non obvious to a person skilled in art. Here, the definition of 'inventive step' has been enlarged to include economic significance of the invention. To judge the inventive step, the following question is to be borne in mind- "Would a non-inventive mind have thought of the alleged invention?" If the answer is "No", then the invention is non-obvious. For the purpose of determination of inventive step, the prior art shall include the prior publication in relevant field.

In *Bishwanath Prasad Radhey Shyam v Hindustan Metal Industries*²¹ the Supreme Court of India discussed about inventive step and obviousness of the invention. The Court held that the fundamental principle of Patent Law is that a patent is granted only for an invention which is new and useful. That is to say, it must have novelty and utility. It is essential for the validity of a patent that it must be the inventor's own discovery as opposed to mere verification of what was, already known before the date of the patent.²² The question of 'inventive steps' involve mixed questions of law and facts, and it has to be decided mainly on the facts of the case.

In a case *M/s Aditi Manufacturing Co. v M/S. Bharat Bhogilal Patel* (2012) the Intellectual Property Appellate Board (IPAB) of India revoked the granted patents²³ stating that it is lacking inventive step and all the claims and specification are based on the known inventions.²⁴ The board stated that in this invention, prior arts have the features of the invention and there is nothing new in the features that have been claimed as new. The invention was already known and there is neither any novelty nor any inventive step.²⁴

In *Enercon India Limited, Daman v Aloys Wobben, Germany*²⁵ Intellectual Property Appellate Board discussed the invention containing the steps for controlling the wind turbine based on external ambient conditions by using automatic control units like the computers. The board mentioned that the invention cannot be treated as computer program *per se* or a set of rules of procedure like algorithms and thus are not objectionable from the point of view of patentability.²⁶ Section 3(k) of Indian Patent Act was again discussed by Intellectual Property Appellate board in *Yahoo v Controller and Rediff*,²⁷ and *Accenture Global Service GmbH, Switzerland v Assistant Controller of Patents and Designs, New Delhi and another*.²⁸

Abstract Idea and Judicial Approach towards Software Patent

Many cases tried to solve the issue of abstractness of the software invention by formulating various testes to determine the patentability of computer related invention. But till today there is no confirmed test, rules, procedures or judgments which can determine its patent eligibility. Most of the cases are tried in (USA) since 1970s.

In *Parker v Flook*²⁹ the Court emphasized that not every process is patentable since abstract ideas are not patentable. The Court stated that abstract concepts, mental processes alone are not patentable. However, when the abstract ideas with practical application are associated with any apparatus or hardware, then such types of invention can be held patentable.

Further, the United States Federal Circuit Court in case of *Cyberspace* stated that programming a general purpose computer to perform an algorithm creates a new machine.³⁰ In the case of *Sirf Tech.*, the Federal Circuit found that claims to a ‘method for calculating an absolute position of a GPS receiver and an absolute time of reception of satellite signals’ constituted patentable subject matter as there is no evidence that shows these calculations can be performed entirely in the human mind.³¹

While discussing the English Law, Sherman and Bentley³² argued that in the mid-19th century when traditional doctrine could not properly adapt to technological developments, English Intellectual Property Law became more abstract and forward looking. The law was not only concerned itself with the objects that it was regulating. It was also interested in the shape that the law took. Similarly, the development of a system of analysis—a law and technology theory—that could apply general principles to situations involving technological change could help to promote more informed policy analysis.

The United States Federal Circuit Court decided on the issue of software patent in various cases like *Arrhythmia Research Technology Inc. v Corazonix Corp.*,³³ *re Alappat*,³⁴ *re Donaldson*,³⁵ *re Schrader*,³⁶ and *re Grams*.³⁷ In *re Lowry*,³⁸ the Court noted that Lowry did not attempt to claim information content or the attributive data model in the abstract, but rather specific structural elements. These structures were physical entities and it has increased the efficiency in computer operation. In *re Beauregard*,³⁹ it was held that the computer programs embodied in a tangible

medium such as floppy diskettes are patentable subject matter under 35 U.S.C. §101.⁴⁰

In *Akamai Techs. Inc. v Limelight Networks, Inc.*,⁴¹ the U.S. Court of Appeals of Federal Circuit discussed on the issue - ‘If separate entities each perform separate steps of a method claim, under what circumstances would that claim be directly infringed and to that extent would each of the parties be liable?’

In *re Warmerdam*,⁴² the Court found that the method claims drawn to the steps of locating the medial axis and creating the bubble hierarchy was not patentable subject matter as there was no showing that one skilled in the art would have any difficulty in determining whether a machine having a memory storing a bubble hierarchy is within the scope of the claim.

In the case *State Street Bank & Trust Co. v Signature Financial Group, Inc.*⁴³ the Court ruled that a data processing system for managing a financial services configuration of a portfolio claimed in ‘means plus function language’ and producing a numerical result was a statutory subject matter. In this case the Federal Circuit focused on the essential characteristics of the subject matter and its usefulness. It further stated that the business methods are subject to the same legal requirements for patentability as applied to any other process or method. In *AT & T Corp. v Excel Communications, Inc.*⁴⁴ the Court found the invention is patentable subject matter because the claimed process uses Boolean algebra to produce a useful result without pre-empting others from using mathematical principle.

In *re Nuijten*,⁴⁵ the Court found that the claims cover transitory electrical and electromagnetic signals propagating through some medium, such as wires, air or a vacuum, and are not encompassed by any of the four statutory categories enumerated in the patent statute; process, machine, manufacture or composition of matter. The Court explained that the signals comprising a fluctuation in electric potential or electromagnetic fields is not chemical union, nor a gas, fluid, power or solid, and is therefore not a composition of matter.

In *re Comiskey*,⁴⁶ the Court held that mere recitation of a practical application as a form of post solution activity does not render an abstract idea patentable. The claims, free from machine, of this invention were related to methods for mandatory arbitration resolution. The Court stated that the claims were seeking to patent the use of human intelligence in and of itself, and as such they are unpatentable.

Further in *Bilski v Kappos*,⁴⁷ the US Supreme Court rejected the patent claim of Bilski for its risk management method and stated that the machine or transformation test is not the sole test to determine the patentability of such type of inventions. While affirming the federal court decision and declining the patent, the Court stated that in the upcoming information age, the machine or transformation test should not be the sole criteria for determine patentability.⁴⁸ In this case, even though the Court rejected the patent, it did not define the clear meaning of abstract idea, which leaves the door open for software patent.⁴⁹

Again the same issue came up before the US Supreme Court in the year 2014 and in *Alice Corporation Pty. Ltd. v Cls Bank International et al.*⁵⁰ The Court rejected the patent on a computer implemented scheme for mitigating “settlement risk”. The question of law was whether claims to computer-implemented inventions-including claims to systems and machines, processes, and items of manufacture-are directed to patent-eligible subject matter within the meaning of 35 U.S.C. § 101. While considering the patentability of computer implemented invention the court discussed two steps for determining the patent eligibility of the invention. The first method involves finding out whether the method claims purport to improve the functioning of the computer, and second method requires to find out whether the claims are suggesting any other improvement in other technology or technical field. In the alleged invention of intermediate settlement the invention lacks both these steps. The court said that the representative method claim lacks any express language to define computer’s participation. The Court emphasised on the fact that the use of generic computer implementation is not an additional feature and thus the invention is not patentable.⁵⁰

Although, in *Alice*, the Court rejected the patent for use of generic computer, it again failed to provide specific answers to abstract idea. Technical improvement in the functioning of the computer is one of the criteria for determination, but how to determine the technical improvement is a new question. If we suppose that the computer is used to calculate complex calculations which are not easily possible with calculators, and thereby improves the functionality of computer, then whether such invention is patentable subject matter or can it be considered as mere use of computer as a generic

device. Whether only hardware improvements in computer are patentable? What about improvements in the software? Thus so many questions remain unanswered, even after *Flook*, *Benson* to *Alice*. Courts are trying to find out solutions in the background of changing technology, approaches and opinions.

Software Industry and Innovation

The changing decisions and criteria about software patents have an effect on the software industry. An Empirical study conducted in 2004⁵¹ on the patentability of computer programmes in the USA has shown that there is no empirical evidence on the relation between the number of software patents and R&D investments. It reveals that the patenting of software is not a useful way to stimulate innovation. This study undermines one of the major arguments in support of the patent regime and the growth of Software Industry.

After liberalization of economy, many large corporations both of Indian and foreign origins started expanding their base and started growth rapidly. The growth of these companies did not depend on the manufacturing, but it was created with their significant development in research and development (R&D). Percentage share of these companies is *inter alia* dependent on the domestic IP registrations and their success is to a large extent attributable to the Intellectual Property they own. In competition with foreign players Indian organizations are also using their IPR portfolios to create a niche for themselves and to gain a competitive edge. Several such companies have incorporated business intelligence tools and IP management systems to safeguard their businesses and intellectual capital and also to avoid infringement on other’s intellectual property. However, innovation- seeking R&D is still at a low level in the country. This therefore, poses a huge challenge to the future development of globally competitive technology.

Not only big giant companies but Micro, Small and Medium Enterprises (MSMEs) form the economic backbone of the Indian economy. They constitute about 50% of the country’s industrial production (about 13 million MSMEs in India) and employ over 30 million people by forming over 40% of India’s total merchandise exports.⁵² The intellectual capital of MSMEs in India is often embedded in processes/routines, and the existing methods for managing the intellectual property are highly diverse ranging from formal to informal protection methods.⁵³

In a research conducted by Deutsche Bank it has been observed that SMEs are crucial providers of path-breaking innovations, but would be most adversely affected by patentability.⁵⁴ The majority of them are deterred by the costs of patenting themselves, but would have to navigate around software patent portfolios of large corporations.⁵⁵

Nguyen and Maine examined the growth of technology companies (such as, Google, Microsoft, Facebook, Infosys, TCS) which brings to forefront the intersection of intellectual property with other laws.⁵⁶ They found that the technological innovation, particularly in the area of software innovation, is crucial to economic growth and provides invaluable social returns. In 2011, Nortel Network auctioned off its patents and patent applications to a consortium of key technology companies consisting of Apple, EMC, Ericsson, Microsoft, Sony and Research in Motion for a cash purchase price of US\$ 4.5 billion. The sale includes more than 6,000 patents and patent applications spanning wireless, wireless 4G, data networking, optical, voice, internet, service provider, semiconductors and other patents.⁵⁷ In a major battleground in the global patent war between makers of mobile phones, tablet computer devices and their operating software the Finnish mobile phone maker Nokia won patent infringement case in German Court against Taiwan's HTC.⁵⁸

Mobile technology raised a lot of conflicts between Apple, Samsung, HTC, Nokia, Ericsson and Micromax. The list doesn't stop here. In *Apple v Samsung*⁵⁹ (2012) the Jury found that Samsung infringed 5 of Apple's patents related to design and functionality and ruled against Samsung asking them to pay damages to Apple. In January 2014, Judge Lucy Koh of the US District Court of Northern California found that Samsung's Android-based handsets infringe on Apple's US Pat No. 8,074,172 for an autocomplete feature that automatically generates word suggestions based on what the user is typing.⁶⁰ In another case between Nokia and HTC, the German Court held that there was infringement of Nokia Patent EP1148681 on a "method for transferring resource information" by HTC.⁶¹

In 2013, Ericsson filed a patent infringement case against Micromax, India's largest domestic handset maker, in the Delhi High Court and claimed about Rs.100 crore in damages.⁶² It has been observed that there has been a rise in the number of lawsuits between mobile companies in the Delhi High Court. These are some of the examples of dispute between law and

technology.

Indian Patent Office and Computer Related Inventions

The Indian Patent Office published its draft guidelines on July, 2013 for examination of computer related inventions to foster uniformity and consistency in the examination of such inventions.⁶³ These guidelines incorporate various provisions of the patentability of computer related inventions. These are the guiding principles to be adopted by the examiners while examining applications related to computer related inventions and software. The documents also says that these guidelines are not treated as rule and if there is ever any conflict, the provisions of the Patent Act, 1970 and rules made there under will prevail. The document inter alia defined 'per se' but the definition is not enough to clear the ambiguity between patentability of software applications.

The draft guidelines emphasise on technical advance and novel hardware for grant of patent to computer related inventions. However, in all the negative examples illustrated in the guidelines nowhere does it mention in which type of invention patents are granted. This is the major criticism in the guidelines. The requirement of novel hardware is also criticised by many law firms, patent agents and the industry. In most of the cases the software is based on the existing hardware so as to improve performance and functionality of the existing software. According to the guideline, the patent cannot be granted in such types of cases as there is no novel hardware.

In spite of these guidelines it is observed that many patents in the field of computer and electronics have been granted by Indian Patent Office (IPO). The data given in the Annual Report of IPO is produced below to get an idea. However, this data doesn't reflect the exact number of software or business method patents.

Indian Patent Office publishes an Annual Report which gives the idea of status of Intellectual Property

Table 2—Status of patent application related to computer/electronics from 2007-2008 to 2012-2013

Year	Application filed	Application granted
2007-2008	4842	1357
2008-2009	7063	1913
2009-2010	7646	1195
2010-2011	9594	892
2011-2012	4225	584
2012-2013	4424	510

Source: Annual Report 2012-2013, published by Indian Patent Office⁶⁴

regime in India. The data given in Table 2 and 3 have been collected from the ‘Annual Report 2012-2013’ of the Office of the Controller General of Patents, Designs, Trademarks and Geographical Indication, Government of India. Table 2 shows the Status of Patent Applications related to Computer/Electronics from the year 2007-08 to 2012-13. Table 2 is significant to understand the trends of the patent application filed and granted from 2007. Fig.1 shows the graphical representation for the number of applications filed and granted and trends thereto. Table 3 gives a brief idea of the top five Indian applicants for patents in the field of information technology. The table clearly shows that Indian software giants like Infosys and TCS have filed more than 150 applications in 2011-12 and 2012-13, respectively.

Fig. 1 shows that there is a decreasing trend in the filing. There was a rise of about 50% in the number of filing of applications in the year 2008-09 which continued for the next two consecutive years. Although there was an increase in the number of filings in 2010-11, a sharp decrease of about 50 % was observed in the filing of application in the year 2010-11. The number of applications granted has also been declining from the year 2010-11. In the year 2009-10 a total number of 1195 patents were granted against the 892 in 2010-11, 564 in 2011-12 and 510 in 2012-13. Though, India is considered as Software Hub, the figures show that there is less number of patent applications filed and very few out of them are granted.

Table 3–Top 5 Indian applicants for patents in the field of information technology

S. No.	Name of companies	Applications filed (2011-12)	Applications filed (2012-13)
1	INFOSYS	156	81
2	Samsung India Software Operations Private Limited	88	135
3	TEJAS Networks Ltd.	40	40
4	HCL Technologies Ltd.	22	36
5	INEDA Systems Pvt. Ltd.	21	Not in top five
6	TATA Consultancy Services Ltd.	Not in top five	162

Source: Annual Report 2012-2013, published by Indian Patent Office⁶⁵

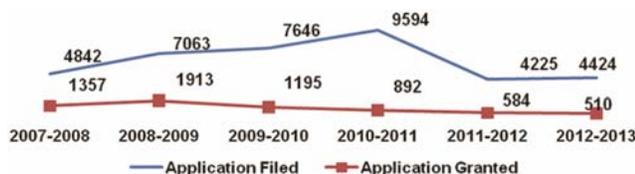


Fig 1– Trend of patent application relating to computer/electronics

Overview of Patent Applications Relating to Computer Technology

There is no separate classification for the field of software technology. Therefore, applications related to computer technology which mainly considers inventions related to software are considered for understanding of the empirical analysis. This data primarily shows that there has been rise in the filing of patent applications relating to inventions in computer technology. Even according to International Patent Classification there is no specific classification of software inventions.

World Intellectual Property Office (WIPO) publishes World Intellectual Property Indicators in which the data relating to patent application relating to computer technology all over the world has been given. It is observed that every year around 1,30,000 applications are filed all over the world and it shows consistency from 2007 to 2011. In the recently published data on International IP filing figure of WIPO, computer technology is listed in the top five field of technology in PCT filings.⁶⁶

Table 4 gives the details of the number of published application worldwide in the field of computer technology. It is observed that more than around 8 lacs applications related to the field of computer technology were published all over the world from 2007 to 2012. The number of applications filed in the year 2007 were 1,23,504 and it increased by around 10000 in the year 2008 to 134493. But, after 2008 there is no considerable rise in the figures. It may be because of the changes in the approach of patent office towards patenting of computer related invention and the decisions by the US Supreme Court in cases like *Bilski*, *Prometheus* and *Alice* etc. The economic recession is also one of the factors for the decrease in the number of patent filings from 2009 onwards. However, the figure of 2011 and 2012 shows an increase in the number of filings.

The European Patent Office (EPO) in its annual report also gives the data for filed and granted applications relating to computer technology. The data has been compiled and produced below in Table 5.

Table 4–Number of published patent applications worldwide in computer technology

Year	2007	2008	2009	2010	2011	2012
Published applications	123504	134273	132793	129710	134396	152692

Source: 2014, World Intellectual Property Indicators published by WIPO¹

Table 5—Patent applications filed and granted related to computer technology by EPO from 2004 -2013

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Filed patent applications	8,953	9,054	8,696	8,650	9,026	7,780	8,685	8,216	8,588	9,137	9,869
Granted patents	2,075	1,871	2,452	2,440	2,595	2,288	2,437	2,553	2,487	2,562	2,243

Source: Statistical data published by European Patent Office²

It is observed from the table 5 that in the span of ten years there has been no considerable rise in the number of patent applications relating to computer technology. EPO does not grant patents for computer programs or software related inventions that make no such technical contribution. The policy of European Patent Office towards the software patent differs from USPTO.

If we compare this data with the available data by IPO (provided in Table 2) it is found that there is more variation in the figures of IPO. But the figures of WIPO and EPO are consistent. It can be said from the figures of Table 5 that around 8000 to 9000 applications have been filed each year. The number of patents granted is also around 2500.

The EPO, in its guidelines, emphasised on the technical contribution of software related invention. If claimed subject-matter relating to a computer program does not have a technical character, it should be rejected under Article 52 (2) and (3) of EPC. Even though computer programs as such are excluded from patentability by Member States' patent laws and the European Patent Convention (EPC), still thousands of patents relating to computer-implemented inventions have been granted by the European Patent Office (EPO) and by national patent offices.

Canadian Patent Office and Software Patent

Till 2005, the Canadian Patent Office did not allow patent to software related invention. In 2005, Manual of Patent Office Practice (MoPOP) was amended and a separate Chapter 16 on computer implemented invention was added. This Chapter was again revised in October 2010. The Chapter states that the computer implemented invention can be claimed as method which includes art, process or method of manufacture, machine or product.⁶⁹ The manual states that while determining the patentability it is important to determine whether the programme is novel, and provides inventive technological solution to a technological problem.⁷⁰

The issue of patentability of computer software was discussed in 1981 in the case of *Schlumberger Canada Ltd. v Commissioner of Patents*.⁷¹ In this case

the Federal Court held that computer programmes are not patentable as “a computer is or should be used to implement a discovery and does not change the nature of that discovery”.⁷² According to Seaman, the position on software patent is inconsistent and uncertain. It lacks practical and concurrent approach of legislative, judiciary and executive branches of the government towards software patent. This has substantially impacted the industry, stakeholders and legal professionals.⁷³

The Federal Court of Appeal (FCA) got a chance to decide the patentability of business methods in the case of *Canada (Attorney General) v Amazon.com*.⁷⁴ Though Amazon has a patent for its one click invention in USA, New Zealand and Australia, the court declined to use it as a base for determining criteria of the case in Canada. The court said that the invention failed three tests: (1) it did not add to human knowledge anything that is technological in nature; (2) it was merely a business method and a business method is not patentable; and (3) it did not cause a change in the character or condition of a physical object.⁷⁴ The Court also analysed three questions: (1) must a patentable subject matter be scientific or technological in nature?; (2) can a business method ever be patentable subject matter?; and, (3) must a patentable art cause a change in the character or condition of a physical object?⁷⁵

After this case, the patentability of business methods became a controversial topic for Canadian Patent Law by affirming that business methods were not automatically excluded from patentability. The Court redirected the Commissioner of Patents to re-examine the patent. The Canadian Intellectual Property Office (CIPO) re-examined the patent again and finally granted the business method patent to Amazon. This decision paved way for the viability of business method and software patents.

Annual report of CIPO provides data of computer related applications in its Annual Report. The data from Annual Report 2012-13 and 2013 -14 have been collected and compiled in Table 6. It has been observed that in the year 2009-10 around 6060 applications were filed and 2540 were granted. The

Table 6- Computer related patent applications filed and granted by Canadian (CIPO) Patent Office

Year	2009-10	2010-11	2011-12	2012-13	2013-14
Filed	6060	5758	5693	5978	6304
Granted	2540	2427	3045	3447	3994

Source: Data Compiled by Author from the Annual Reports published by Canadian (CIPO) Patent Office⁷⁶

numbers of granted applications were increased from 2011. In the year 2013-14 total 6304 applications were filed and 3994 applications were granted.

Conclusion

India is one of the fastest growing economies among China, Brazil, Russia, South Africa and Mexico. It is expected to be the third largest economy of the world after US and China by 2035.⁷⁷ As a cost effective and labour intensive economy, India has benefited immensely from outsourcing of work from developed countries, and has maintained a reasonably good manufacturing and export oriented industrial framework.⁷⁸ Innovation and new invention will play a crucial role in making India one of the most attractive destinations for investments and business.

Though issue of software patent was discussed and decided by the US Supreme Court in *Alice Corporation Pty. Ltd. v CLS Bank International* it has again failed to answer the question as to how to determine an abstract idea. In response to the judgment, USPTO has published preliminary examination instructions for subject matter eligibility of computer implemented abstract ideas.⁷⁹ The instruction stated to follow a two part test for analysis for abstract ideas which was set forth in *Mayo*. The first one is to determine whether the claim is directed to abstract idea and second to determine whether any element or combination of elements in the claim is sufficient to ensure that the claim amounts to significantly more than the abstract idea itself.

In 2013 Emmett J. of Federal Court of Australia in *Research Affiliates LLC v Commissioner of Patents*⁸⁰ said "for a method to be patentable, it must produce a product in which a new and useful effect may be observed. In the case of computer programs, it is necessary to look to the application of the program to produce a practical and useful result, so that more than mere information is involved." The New Zealand Patent Act, 2013 came into effect in September, 2013. It clearly states that the computer programme is not an invention⁸¹ and not a manner of manufacture.

Even though there are different views from different countries, there is unanimity on the fact that abstract idea and natural law should not be patented. But nowhere has it been defined what an abstract idea is or when it becomes abstract or when it becomes technically useful so as to become subject matter of patent.

Technical Advance

Technical advance or technical contribution is the most important factor while considering the patent to software related invention. This term is not defined in any statute. Software related invention has technical advance or technical contribution when the programme provides any solution to a technical problem or if the programme has been used to achieve any technical control over a technical process or the programme is used to operate any technical instrument. In this case examiner has to specifically look into the the invention and its claims.

Abstract Idea

Abstract Idea has not been defined anywhere. It is also difficult to define it in a particular set of words. Also, its definition may not be universally accepted. Despite this, to understand the nature of software patent it is necessary to define the term 'abstract idea'. Abstract idea can be explained in a patent application in terms of words, phrase or by formula. Idea based on or extracting any fundamental principal or mathematical principal can be considered as an abstract idea.

In case of software related patent application, patent examiner has to scrutinise the patent application so as to understand the limitations of the abstract idea. If the limitations are necessary then the abstract idea can be considered as non patentable. Thus, in such cases greater creativity is required than a person ordinarily skilled in art. A mere abstract idea is not patentable. However something more added to abstract idea which gives it some significant technical effect may be considered as patentable subject matter.

Thus, in comparison to the world scenario and current developments in patenting of software and computer technology, India has to rethink on its policies. Indian Patent Office published draft guideline for examination of computer related inventions but more clarification is required with other positive examples. There is a need to create awareness about IPR laws among the engineers, entrepreneurs, SMEs and technical institutions so as

to increase the number patent applications. All companies should have their own separate innovation department which is primarily focuses on IP management, valuation and prosecution. The importance of the software and computer technology in creation of revenue of companies is growing. Therefore, it is important to hold right over the technology by promoting the innovative environment and culture.

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 - a Step 1: Construe the claim; actually assess what the claim is saying.
 - b Step 2: Identify the actual contribution embodied in that claim.
 - c Step 3: Ask whether that contribution covers the excluded area.
 - d Step 4: If it passes that test — and it can pass that test even if it partially covers the excluded area — then assess whether the contribution is technical.
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