Knowledge Structure of IPR as Reflected by the Content Analysis of Papers Published in Journal of Intellectual Property Rights

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This paper reports analysis of the contents of more than 700 papers published in the Journal of Intellectual Property Rights during 1996-2014 to understand the knowledge structure in the field of IPR. The contents of all the titles are classified into different subject fields related to IPR with the help of title or keywords or abstract of each paper. The analysis indicates that the journal covers almost all the areas specified under Intellectual Property Rights (IPR) as well as the contributions from all over world. It is also reflected that the utility of IPR and the interest of people in this area have increased for better and efficient protection of their work.

Keywords: Intellectual property rights, intellectual property management, knowledge structure of IPR, content analysis, copyrights, trademarks

Journal of Intellectual Property Rights (JIPR), a peer reviewed bi-monthly journal, was started in 1996 by CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR), New Delhi. It was the first journal in the area of intellectual property rights (IPR) from India. The main objectives of this journal are: (i) to enhance IPR related communication among policy makers, organizational agents, academics, and managers for the critical understanding and research on intellectual property; and (ii) to promote the development of this newly cultivated research field. The journal publishes contributed and invited research articles, case studies, laws and reviews on different aspects of IPR, newly emerging trends, policies and treaties adopted at national and international level, technical notes on current IPR issues, national and international IPR related hot topics, book reviews, and conference reports.

At present the journal is abstracted and indexed by Scopus, EBSCO host Electronic Journals Services (EJS), Directory of Open Access Journal (DOAJ), Library and Information Science Abstracts Database (LISA).

In an earlier study, Garg and Anjana1 analyzed papers published in the Journal of Intellectual Property Rights since its inception in 1996 up to 2012 and found that the inflow of papers has increased considerably during the period of study, indicating its popularity among the scientific community as well as the policy makers. Based on this study, it can be concluded that the journal has become a very relevant platform for researches not only for Indian researchers, but for researchers from abroad as one fourth of the papers published during the period of study originated from abroad. Among papers from abroad, US was the largest contributor. Among the performing sectors, academic institutions were the largest contributors to the journal followed by research institutions of the Council of Scientific and Industrial Research (CSIR). However, this study did not examine the contents of the papers published in the journal. The present study is therefore an attempt to analyse the contents of all the papers published in Journal of Intellectual Property Rights during 1996-2014 to understand the knowledge structure of the field of IPR. Content analysis is a method where the content of the message forms the basis for drawing inferences and conclusions about the contents.2 Krippendorff3 defines content analysis as a research technique for making replicable and valid inferences from the data to their context. Content analysis of published articles in a field determines the interests and beliefs of researchers, editors, and perhaps readers and practitioners.4 This study was undertaken with a view to explore important developments that
have taken place during the last one and half decade in the field of IPR as reflected by papers published in the Journal of Intellectual Property Rights. The present study will thus be useful to the researchers working in the area of IPR as it will give glimpse of research studies being performed in this field. This will also help the research community to understand the importance of IPR for better and efficient protection of their work.

Only a few studies dealing with analysis of knowledge structure of intellectual property rights and their management have been published in literature. For instance, Hanef made a survey of the empirical literature regarding the use and management of IPR in the US, Canada, EU, Australia and Japan. In another study Somaya provided a qualitative review of literature on patent strategy and management research. According to him, firms generally adopt three different kinds of patent strategies, namely, proprietary, defensive or leveraging strategies. Recently, Wang et al. examined the development of intellectual property management research. Authors analysed 773 papers downloaded from Scopus and Web of Science for the period 1980-2012 using bibliometrics techniques like co-citation. It has been found that the field of IPM is highly fragmented.

**Methodology**

A database of all 710 papers published in Journal of Intellectual Property Rights during 1996-2014 was created in MS-Excel. The contents of these titles were classified into different subject fields related to IPR with the help of titles or keywords or abstracts of each paper as these reflect the theme and content of the subject examined in a communication. Hence, the analysis is based on these three components. Papers with similar subjects were clubbed together for the sake of analysis of the different fields. The details are discussed here under.

**Results and Discussion**

The 710 papers published during 1996-2014 were broadly classified into various sub-fields. These are: measurement of patent activity in various disciplines, patent laws of different countries, and treaties; aspects of copyright laws especially in digital domain; trademarks; geographical indications; intellectual property rights and related aspects; technological aspects of patents; and TRIPS and related aspects as described below.

**Measurement of Patent Activity**

Under this discipline, 56 papers were published which dealt with patenting activities in different fields of science and technology. These papers covered importance and need of IPR in the growing world of research, patenting activity in various disciplines like nanotechnology, biotechnology, agriculture and removal of effluents. One major domain of coverage is pharmaceuticals and super disintegrates used in tablet manufacturing. Case studies and US patents granted to Indian inventors covering various aspects were also included. The prevalence of patenting activities in Asian regions during late eighties is focused. The field of biotechnology which can be considered as the most growing field is broadly elucidated pertaining to its different domains such as genomics, proteomics, marine-bio-prospecting, stem cell patenting, bio-sensors, nano-based usage for drug delivery application, patenting of biotechnological innovations in different countries and various national and international legislations and treaties on the subject as well as constraints. Also included are US patents granted to Indian inventors, value-added materials from cashew nut shell liquid, patents in sports, patenting activity in Asian region during late eighties, bio-sensors, clove and tamarind based innovations, biotechnology patents by China, liquid crystalline polymers, nanotechnology patents in Iran, national patent performance of 30 OECD countries, basmati rice, catalysts for olefin polymerization, e-waste in India, trends of patents filing by Indian Council of Agricultural Research (India), patents in agriculture in India, patenting activity in India, and patent system measurements along with its review, critique and proposal.

**Patent and Patenting**

Under this sub-discipline, 76 papers were published which dealt with different aspects as described below. Patent amendments in India in light of TRIPS and WTO, research planning using patent databases, patent activity in India, Sri Lanka and various other countries, patent dispute resolution in Taiwan, patent indicators, patent insurance, patent exhaustion doctrine, patent laws and invalidation procedure of Chinese patents, patent laws and research exemptions, large innovating firms and their patent management systems, patent pools and pooling, patent trolls, patent valuation, technical and legal aspects of plant patenting, commercialization rate of patented technologies, technology transfer of
medical devices, patents and their commercial use, patent and food security, patent applications and best mode of their disclosure, guidelines for examining pharmaceutical applications in India, patent specification and interpretation of claims, and technology matrix for patent classification.

**Patent Infringement**
Under this category, papers covered patent infringement aspects in the pharmaceutical industry, patent infringement issues, disputes and legal advices, how to minimize the risk of infringement, infringement by ANDA filing, and various other related issues.

**Patenting in Emerging Fields of Technology**
This category covered patents in software industry, biotechnology, and life science related issues, agriculture, microorganisms, biological material, genetic inventions, internet and e-commerce, living organisms in India, US and Europe, and nanotechnology (issues and challenges).

**Copyright Laws**
Under this discipline, 54 papers were published on different aspects of copyright laws. Also included are its changing trend due to growing importance and activities in this expanding digital world.

In this discipline, papers covered protection of copyrights in education sector, copyright (Amendment) Act 1999, copyright and compulsory licensing, copyright and neighbouring rights, copyright and tort law for internet service providers, copyright laws of employer’s vs author’s right, different models of copyright issues, copyright laws and jurisdiction of courts, copyright legislation, and general article on copyright laws and patents, copyright laws in different countries like India, European Union, China and Russia and various international legislations to protect them from infringements. Also, included are cases and laws of copyright infringement in different countries, like China, US and India, covering different sectors like software, public performance of sound recordings, permission rights, mobile technology, cyber space, e-publishing, internet, educational institutions, and sovereign immunity.

**Copyright Protection in Different Sectors**
The papers covered copyright protection in the area, like cinematographic films, databases, various designs in European Union, digital technology, folklore, case law reports, films in US and Greece, computer software in India, 4G peer-to-peer technology, copyright protection and John Doe orders in India.

**Trademarks**
The number of papers related to trademarks was 19. These dealt with examination in pharmaceuticals and implications in self medication in Brazil, trademark infringement, trademark issues in digital era, trademark law and comparative advertising, trademark laws and registrability of small sports merchandise and building designs, trademark law in Europe, trademark laws and parallel imports, trademark licensing and franchising, trademark licensing and quality control, trademarks in India and Sri Lanka, non conventional and requirement of graphical representability.

**Geographical Indications**
Under this discipline, 24 papers were published. These discussed their classification, importance and protection under TRIPS. Various products protected by this form of IPR such as Komal Chaul (a rice variety), Iranian carpets, Pokkali rice, indigenous health drinks, Kashmiri handicrafts and Indian handicrafts in general and bananas. Some articles were of general nature like geographical indications and their protection in India, Malawi and Brazil and some other countries.

**Intellectual Property Rights and Related Aspects**
There were 164 papers on different aspects of IPR. These are described below.

**IPR and Its Impact**
India's position on patenting in biotechnology in present scenario, role of NGOs in customs enforcement, E-commerce/business, protection of genetic resources, protection of traditional knowledge and folklore, role of IPR during recession, role of IPR in economic growth, socio economic benefits, impact on sports and entertainment industry, enforcement for agriculture technology transfers, impact on additives & raw materials, finished goods, software industry, small and medium enterprises, fashion industry, human rights, US foreign direct investment in emerging economies, competition law, FDI inflows/outflows, indigenous culture/knowledge, innovation in SMEs in OECD countries, integrated circuits in India, technological upgradation, open source software, Indian pharmaceutical industry and
patents, protection of plant varieties and farmers’ rights in the United States, and China, protection of biodiversity of India, commercialization of various agriculture technologies, economic development of developing countries, global health, sharing of biological research material for R&D, and medical biotechnology.

*Intellectual Property Management (IPM)*

The papers under this category dealt with IPM in India, Taiwan, European Union, and at industrial technology research institutes, for various inventions in the university, agriculture by PIPRA, and public agricultural research systems in India. The papers also covered management system for enhancing a firm’s strategies, and for management in a digital environment.

*Intellectual Property Protection (IPP)*

The papers covered protection of Ayurvedic products, Iranian nanotechnology, printed circuit designs, software programmes, software contracts in India, software related crime prevention, traditional knowledge, cultural preservation and access to knowledge, databases in general and bioinformatics and its databases in particular, opposition of IPR, software in Iran, internet domain names, seed industry, plant variety and farmers’ rights. Also included are trademark in pharmaceutical industry, Pashmina, biological material, trade secrets, plant variety protection (PVP) and food security for developing countries, PVP applications in China, impact of awareness programmes on farmers, protection by UPOV convention, protection in India, protection of indigenous plants and animals, protecting performers’ rights, protection of celebrity rights, protection of databases in India, digital rights, trade secrets. The subjects like internet service provider in India, research results in Spain, trade secret in EU legislation, traditional handicrafts, well-known marks, graphic & fictional characters were also covered.

*Miscellaneous Aspects of IPR*

The area, like intellectual property rights in India and its implication in agricultural, education, territorial jurisdiction in European Union, China and the West, scientifically capable developing countries, public perception of IPR, experiences of adoption and implementation of IPR in selected countries, business value, financing, licensing and audit of IPR, infringement and litigation, ownership model in academia, lacunae and overlaps in IPR, IPR and competition laws, consortium standard patent pools, strategy for drug discovery, and securitization of IPR were covered under this category. Traditional knowledge and patent strategy, traditional knowledge database, traditional knowledge digital library, traditional knowledge, intellectual property rights and biodiversity conservation have also been covered. Also included are an overview of IPR and genomics, IPR and India, IPR and international conventions, international cooperation in science and technology, total quality management, review of multidisciplinary studies on IPR, IPR law and FLOSS, plagiarism and data security. The issues of traditional & indigenous knowledge relating to the use of natural products such as neem, aloe vera, clove and tamarind were also analyzed.

*Technological Aspects*

Twenty six papers were published on different aspects of technology like technological competences of Asian firms, technological forecasting and applicability of patent information, technological protection measures in India and China, technology forecasting and patent management in bio-industry, technology management strategies in Punjab (India), technology transfer system for plants, agreements and EU guidelines, commercialization for strengthening R&D industry links, technology transfer licensing and challenges, technology transfer from higher technical institutions to the industry in India, technology transfer and its impact on economic growth, technology transfer and lessons to India from the United States.

*TRIPS and Related Aspects*

The number of papers that dealt with TRIPS and related aspects was 66. These covered areas like impact on drug prices, impact of TRIPS on Thai and Indian pharmaceutical industry and patients, its impact on industrial designs and layout-designs, implications of TRIPS for developing countries, impact on public health, impact on affordable drugs, impact on health equipment, negative effects of TRIPS, impact of raw materials (crude drugs) used in Indian systems of medicine on IPR.

Also covered are TRIPS Agreement & its main features, an overview of TRIPS Agreement, TRIPS Agreement and actions taken by India, TRIPS Agreement and dispute settlement, TRIPS Agreement and intellectual property rights of animal genetic
resources, TRIPS Agreement and modernization of IP legislation, TRIPS Agreement and settlement of IPR disputes, TRIPS Agreement and waiver solution in public health and pharmaceutical domain, TRIPS Agreement for patentability of bio-resources, TRIPS Agreement and its relation to traditional knowledge, seed patents, etc.

Issues also covered papers on TRIPS and compulsory licensing, TRIPS and copyright, TRIPS and data protection, TRIPS and exclusive marketing rights, TRIPS and Indian Patent Act, TRIPS and modernization of intellectual property legislation, TRIPS and North-South agreements on trade and intellectual property, TRIPS and patent amendments in India, TRIPS and protection of agricultural innovations, TRIPS and public health, TRIPS and the Doha Declaration, TRIPS and strategies of Indian pharmaceutical industry. Also covered are debate on ever greening of patents and IPA 2005, Doha Round & public health, dispute settlement process, TRIPS & affordable healthcare, concept of OSDD & patent pools, counterfeit drugs, impact of Indian Patents Act, 2005 on Indian pharmaceutical industry, Indian Patents Act, 2005 and potential for disputes and litigation, prevailing issues and emerging trends, protection of bio-resources and traditional knowledge, and recent happenings in WTO.

Miscellaneous

More than 200 papers could not be classified in the above stated categories. Listing of all the papers under this category is not possible. Hence, only some important issues discussed within the papers have been mentioned. Of these, more than 20 papers were on case studies related to IP laws. Others dealt with topics like Ambush marketing, Bayh-Dole Act, brand valuation, crowd sourcing, Doha Declaration, drug price competition, Markush Structure, non patentability of scientific discoveries, etc.

Conclusion

In recent years, the number of studies being conducted on several aspects of intellectual property rights and its management has increased considerably. Intellectual property covers various domains such as patents, copyrights, trademarks, geographical indications, designs, trade secrets, layout designs of integrated circuits, etc. Thus, one can say that the field of IPR and its management is multidisciplinary and highly fragmented. It integrates knowledge from law, science, economics and management. In order to protect the innovations of innovators and also to put a firm feet in the global world, India has worked out various laws and treaties.

The analysis indicates that the papers published in the journal covered nearly all aspects of intellectual property rights to provide in depth knowledge to students, academia, researchers and policy makers in India and abroad. It is assumed that the present study will help the community of researchers in the field of IPR to better understand the structure of the field.

References