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EDITORIAL NOTE ON THE VOLUME 5 NUMBER 2 ISSUE OF 2016

Editorial Note

Dr. Christy, Yachi Chiang
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Director
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In this issue, the selected articles ranged from legal doctrines exploration to the economic analysis of patent values across various jurisdictions. It is evident that we have kept our promise in the editorial policy to maintain this journal a diversified channel for experts from both legal and non-legal backgrounds. In addition to expressing our appreciation to all the contributors that made this issue possible, we hope to have your support in the future to maintain the goal and quality of this journal.

Dr. Christy, Yachi Chiang

Associate Professor, Graduate Institute of Intellectual Property, National Taipei University of Technology (Taiwan)

Director, Patent Licensing and Technology Transfer Center, National Taipei University of Technology (Taiwan).

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RESEARCH ON THE EFFECTS OF DROIT DE SUITE ON THE FIRST SALE DOCTRINE: AN ECONOMIC ANALYSIS OF LAW[*]

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ABSTRACT

"Droit de Suite" was adopted in the Second Draft of the Amendment to the Copyright Act of China (hereafter, the Copyright Act Amendment of China) on July 6, 2012, and Clause 1, Article 12, of the Copyright Act Amendment of China regulated that authors, their successors, or the legatees of artistic, photographic, and musical works or drafts are eligible to obtain the rights of benefit sharing after their works or drafts are auctioned. From this amendment, we can understand the Chinese government's attempts to ensure healthy auctions and factor in European laws. In fact, Droit de Suite initially emerged from a special law in France in 1920; it was formally ruled in Article 14ter of the 1948 Brussels Amendment of Berne Convention for the Protection of Literary and Artistic Works in 1886. Droit de Suite is designed to protect the interest of authors of artistic works so that they can obtain a certain percentage of the rewards from the proceeds of the auction of their works. However, the "First Sale Doctrine," which is a primary part of the "Right of Distribution" in copyright laws, indicates that authors exhaust their control and rights of distribution over their original and later reproduced works after the initial sale or transfer of ownership of these works. The "First Sale Doctrine" aims to ensure free exchange of works and flow of information to reduce the search costs within the transaction costs. Because, "Moral Rights" (including Droit de Suite) cannot be transferred or inherited by successors, they occupy a dominant status when they conflict with "Economic Rights." Hence, it follows that Moral Rights

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[*] A draft of this article was presented at the "2016 Asian Pacific Copyright Association Conference" held by Asian Pacific Copyright Association, in conjunction with the Law and Technology Centre, University of Hong Kong Faculty of Law in Hong Kong from November 20-22, 2016; the author appreciates the valuable opinions of the participants at that meeting. This draft was revised to incorporate recent literatures on Droit de Suite, First Sale Doctrine, and copyright law.

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can supersede the limits of Economic Rights, including the First Sale Doctrine. In this manner, Droit de Suite blocks the maximum use of copyrighted works, thereby narrowing down the application of the "First Sale Doctrine" using economic analyses. Although Droit de Suite protects the personal benefits gained by authors from auction rewards internally, courts and auction winners bear high external transaction costs, including the high enforcement and control costs of Droit de Suite. Consequently, this study evaluates whether Droit de Suite added under Moral Rights is viable from legal and economic perspectives. In addition, it suggests restricted approaches for Droit de Suite by considering contracts and limited terms in order to internalize its external costs in case states plan to add it within the ambit of Moral Rights in copyright laws.

Keywords: Droit de Suite, First Sale Doctrine, Right of Distribution, Moral Rights, Economic Rights, External Costs.

I. Roles of "Droit de Suite" and the "First Sale Doctrine" in Copyright Law

In the majority of countries' laws and in the primary international copyright conventions, copyright consists of two major factors, "Economic Rights" and "Moral Rights."[1] If we globally effectuate the "Economic Rights" and "Moral Rights" incorporated in copyright law worldwide, we would see that common law countries do not consider the protection of "Economic Rights." However, civil law countries recognize both "Economic Rights" and "Moral Rights." Thus, common law countries and civil law countries differ in how they view the interactions between "Economic Rights" and "Moral Rights" in their copyright laws.[2]

Furthermore, legal copyright systems throughout the world consist of a "Copyright System" (hereafter "former system") and an "Author's Right System" (hereafter "latter system").[3] The former system stresses property value and copyright is used as a tool to protect authors' economic benefits. Countries categorized as former systems include the US, the UK, and others.[4] The latter system emphasizes personality spirits and copyright is used to protect authors' economic benefits from a personality rights perspective. Countries categorized as later systems consist of Germany, France, and others.[5]

Although "Economic Rights" and "Moral Rights" vary in common law countries and civil law countries, "Droit de Suite" is a type of hidden "Moral Right."[6] In fact, "Droit de Suite" was originally designed to secure authors' economic benefits after an auction.[7] Hence, does "Droit de Suite" destroy orders limiting "Economic Rights" such as "Fair Use," the "First Sale Doctrine," etc.? What are the roles of "Droit de Suite" and the "First Sale Doctrine" in copyright law? In order to answer these two important questions, we present the following two subsections of this chapter entitled "What is 'Droit de Suite?'" and "Why is the 'First Sale Doctrine' Important for the Right of Distribution?"

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[1] CHI-YU CHIEN, CASES ANALYSES OF COPYRIGHT LAW 21 (3d ed. 2014).
[2] *Id*.
[3] *Id*.
[4] *Id*.
[5] *Id*.
[6] Cheng-Lin Tsai, A Study on the Droit de Suite under Copyright Law and its Implementation into Taiwan 79 (Jul. 7, 2011) (unpublished LL.M. thesis, Feng Chia University) (on file with author).
[7] Li-Chih Lin, *International Recent Developments of the Resale Royalty Right and It's Future Prospects in the Copyright Law*, 171 JOURNAL OF INTELLECTUAL PROPERTY RIGHTS 132, 135-36 (2013).

A. What is "Droit de Suite?"

"Droit de Suite" is also called the "Resale Royalty Right"[8] and was first introduced by French scholar Albert Vaunois in 1893, who proposed that artists should own the "Droit de Suite" related to their work.[9] In particular, "The Angelus," by Jean-Francois Millet, was sold for only 1,200 Francs but a collector resold the painting for 1,000,000 Francs while Jean-Francois Millet's granddaughter was so poor that she sold flowers in streets. Thus, the French enacted special laws to regulate "Droit de Suite" in 1920.[10] Furthermore, authors of literary works or musical works can earn income long after their works are performed but authors of artistic works seem not to share in the economic benefits when economic value is added to their work.[11]

Whether "Droit de Suite" is an "Economic Right" or a "Moral Right" is a significant issue for its legal effect. Traditionally, "Droit de Suite" was considered a "Moral Right," a perpetual personality right completely separate from the "Economic Rights" of authors.[12] In Germany, a majority of scholars and legal practitioners think that "Droit de Suite" is a special "Economic Right," not merely a "Moral Right" or an exclusive right.[13] In the UK, scholars believe that "Droit de Suite" is an "Economic Right" because it aims to protect economic benefits and that it is actually not a "Moral Right."[14]

Another question is to which subjects does "Droit de Suite" apply? Take the Germany Copyright Act for example. "Droit de Suite" applies to artistic works, which excludes architectural works and applied artistic works because they do not concern aesthetic artistic factors.[15] Contrarily, Section 1, Article 14 of the Berne Convention authorizes member states to freely adopt "Droit de Suite"[16] and new copyright works (e.g., photographic works) are increasing. A majority of German scholars argue that "Droit de Suite" can also applied to "original" copies of literary works and musical works but they should be personally created by the author.[17]

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[8] *Id*. at 132.
[9] *Id*. at 135.
[10] *Id*. at 135.
[11] *Id*. at 136.
[12] *Id*. at 135-36.
[13] Kung-Chung Liu, *A Comparative Study of Moral Rights in Copyright*, 31 NATIONAL TAIWAN UNIVERSITY LAW REVIEW 1, 15 (2002).
[14] Tsai, *supra* note 6, at 77-78.
[15] Liu, *supra* note 13, at 15.
[16] *Id*. at 15.
[17] *Id*. at 16.

Although there have been different approaches to "Droit de Suite" proposed by scholars and legal practitioners in France, Germany, and the UK, the Berne Convention and 59 countries throughout the world had officially recognized "Droit de Suite" by November 2010.[18] "The European Union (hereafter EU), promulgated 'Droit de Suite' legislation in September 2001 and has 27 member states that recognize 'Droit de Suite.'" [19] On July 6, 2012, the National Copyright Administration of the People's Republic of China (PRC) proposed the Second Draft of the China Copyright Act and it included regulations for "Droit de Suite."[20] This indicates that art markets are active in China and in other countries throughout the world.

B. Why is the "First Sale Doctrine" important for the "Right of Distribution"?

The "Right of Distribution" is unlike "Droit de Suite" because it is ambiguous and is purely an "Economic Right." In fact, copyright laws in the world's most influential countries, including the US, Germany, and Korea, regulate the "Right of Distribution."[21] Moreover, the "Right of Distribution" primarily aims to prevent the transfer of pirated and stolen goods but legally duplicated copies are not within its scope.[22]

Theoretically, the "First Sale Doctrine" means that once a legitimate consumer buys a copyrighted work, the copyright holder has exhausted all rights to control the work's downstream distribution. A legitimate consumer is free to give away, lend, or discard a copyrighted work only if he/she does not make copies.[23] Therefore, the scope of the "Right of Distribution" is limited by the "First Sale Doctrine," which is also known as the "Exhaustion Doctrine." However, sound recording rentals and computer programs are not included in the "First Sale Doctrine" due to their frequent exchange or trade in the market.[24] In other words, the "First Sale Doctrine" permits libraries, used bookstores, and record stores to legally exchange or trade these goods. Hence, copyright laws in major countries have relevant regulations concerning the "First Sale Doctrine" such as Section 1,

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[18] Lin, *supra* note 7, at 139.
[19] *Id*. at 137-139.
[20] *Id*. at 141.
[21] HSIUNG-LIN HSIAO, COPYRIGHT LAW 201 (8th ed. 2015).
[22] *Id*.
[23] Reese, R. Anthony, *The First Sale Doctrine in the Era of Digital Networks* 577 (U of Texas Law, Public Law Research Paper No. 57; U of Texas Law, Law and Econ Research Paper No. 004), *available at* https://ssrn.com/abstract=463620.
[24] HSIAO, *supra* note 21, at 204.

Article 109 of the US Copyright Act; Section 2, Article 17 of the German Copyright Act of 1965; and Article 43 of the Korea Copyright Act of 1987.[25]

There are three types of worldwide "First Sale Doctrine" legislation. The first involves the concept of national exhaustion. This prohibits copyright owners from controlling the commercial exploitation of goods in domestic markets, even with their consent, but they can oppose the importation of original goods marked abroad[26] (e.g., Article 59-1 of the Taiwanese Copyright Act).[27] The second type involves the concept of regional exhaustion. This prohibits copyright owners from controlling the commercial exploitation of goods throughout the entire region. Thus, copyright owners cannot stop parallel importations within the region (i.e., EU laws).[28] The final type involves the concept of international exhaustion. Here, copyrights are exhausted once goods have been sold by copyright owners or with their consent in any region in the world[29] (e.g., see the 2013 US Supreme Court case, *Supap Kirtsaeng, dba Bluechristine99 v. John Wiley & Sons, Inc.*[30]). As a result, the legality of the parallel importation of copyright works is decided by various legal policies regarding the "First Sale Doctrine" or the "Exhaustion Doctrine" as adopted by different countries.

Of course, implementation of the "First Sale Doctrine" is to secure a consumer's right to freely give away, lend, or discard copyrighted works if they legally obtain these works. In other words, this diminishes the "search costs[31]" and "bargaining costs[32]" for the users/new owners/licensees of copyrighted works because they do not need to search for the authors to bargain for licensing or to get permission to use copyrighted works. However, national copyright laws that adopt international exhaustion legislation ensures legal parallel importation and this also ensures that "search costs" and "bargaining costs" for market importers and consumers are low. On the other hand, national copyright laws that adopt national

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[25] *Id*. at 201-202.

[26] World Intellectual Property Organization, International Exhaustion and Parallel Importation, http://www.wipo.int/sme/en/ip_business/export/international_exhaustion.htm (last visited Nov. 12, 2016).

[27] Article 59-1 of the Taiwanese Copyright Act regulates that, "A person who has obtained ownership of the original of a work or a lawful copy thereof within the territory under the jurisdiction of the Republic of China may distribute it by means of transfer of ownership." *See* Ministry of Justice, Laws & Regulations Database of The Republic of China: Copyright Act, http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=J0070017 (last visited Nov. 12, 2016).

[28] World Intellectual Property Organization, International Exhaustion and Parallel Importation, *supra* note 26.

[29] *Id*.

[30] 568 U.S. ___ (2013).

[31] ROBERT COOTER & THOMAS ULEN, LAW & ECONOMICS 92 (5th ed. 2007).

[32] *Id*.

exhaustion or regional exhaustion legislation only ensure parallel importation within national or regional territories. This results in high "search costs" and "bargaining costs" for market importers and consumers.

II. Conflicts between "Droit de Suite" and the "First Sale Doctrine"

The relations between "Economic Rights" and "Moral Rights" can be described by the theories of "monism" and "dualism" and "Economic Rights Theory."[33] In the orbit of history, personality right theory was proposed by the German scholar Otto Friedrich von Gierke, who stressed that copyrighted works originate from the author's personality and thus, economic benefits are less important than personality.[34] Then, another German scholar, Josef Kohler, argued that copyright is different from personality rights and that there is economic value in a copyright that should be removed from personality interests. These arguments are the fundamental aspects of "dualism," which is utilized in France.[35]

On the other hand, German scholar Eugen Ulmer proposed that a copyrighted work should contain a single type of rights. Thus, "Economic Rights" and "Moral Rights" were combined. Like the trunk of a tree that takes nutrients to the branches, "Economic Rights" and "Moral Rights" are like the trunk of a tree but in the terms of copyright and we cannot tell them apart. For example, Austria was the first country to adopt "monism" in its copyright act in 1936. Then, Germany enacted a copyright act adopting "monism."[36]

Nevertheless, "Economic Rights Theory" seems so extreme that "Moral Rights" are not included in copyright law because they are not special rights.[37] However, copyright law in civil countries include both "Economic Rights" and "Moral Rights" regardless of whether their copyright laws are "monistic" or "dualistic." Moreover, common law countries pay more attention to "Economic Rights" than to "Moral Rights." Take those in the US copyright industry for example. They believe that enforcing the "Right of Dissemination," the "Right of Attribution," and the "Right of Integrity" can prevent the exchange or trade of copyrighted works and thus, they oppose the enforcement of "Moral Rights."[38]

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[33] HSIAO, *supra* note 21, at 1.
[34] Ming-Wei Yen, The study of inherent conflict between in economic rights and moral rights by the way of economic analysis of law 79 (Jul., 2014) (unpublished LL.M. thesis, National Dong Hwa University) (on file with author).
[35] *Id*. at 79-80.
[36] *Id*. at 81.
[37] HSIAO, *supra* note 21, at 1.
[38] Chung-Hsin Chung, *The Analysis and Amend Suggestion to the Moral Rights*, 185 JOURNAL OF

Based on its meaning and legal nature, "Droit de Suite" was traditionally accepted as a type of "Moral Right" in European copyright systems (i.e., France) and it secured the right of authors to receive a certain percentage of benefits each time an artistic work was auctioned or resold. Not only cannot "Droit de Suite" be transferred and succeeded and be ruled in copyright laws, but also is "First Sale Doctrine" violated. Because people legally own or obtain licenses to copyrighted works, people can freely give away, lend, or discard them. Thus, why do people need to share the benefits of copyrighted works with the original authors? This chapter attempts to analyze the advantages and disadvantages of enforcing "Droit de Suite" and discusses the impacts of "Droit de Suite" that are superior to those of the "First Sale Doctrine" in order to understand the impacts of enforcing "Droit de Suite" in the implementation of the "First Sale Doctrine."

A. Advantages and disadvantages of enforcing "Droit de Suite"

Because there in an increasing trend of investing in artist works, the purpose of establishing "Droit de Suite" is to secure the implementation of the "Rights of Duplication" and "Rights of Distribution" of an original author's rare and characteristic works to avoid unfair benefit-sharing for original authors.[39] In other words, "Droit de Suite" provides authors with a method to receive economic compensation each time their works are sold or auctioned. Although "Droit de Suite" seems to bring economic benefits to authors, is it actually good for authors? Does "Droit de Suite" really balance the benefits among professionals, buyers, and authors?

If we observe the enforcement of "Droit de Suite," we find two advantages. The first is the fair treatment of authors in regards to their copyrighted works. A majority of states (e.g., the UK, New Zealand, Australia, the US, and China) enacted and proposed special laws or copyright laws for the protection of "Droit de Suite."[40] For example, in the EU, selling prices for "Droit de Suite" works range from 3,000 Euros to 500,000 Euros and rates for sharing benefits with authors range from 0.25% to 4%.[41] Therefore, a higher selling price results in a lower rate for "Droit de Suite" in the EU.[42] Even though rates for sharing with authors are different, benefit-sharing is a fair reward for artists whose creations have gained value.[43] The second advantage is that the enforcement of "Droit de Suite"

INTELLECTUAL PROPERTY RIGHTS 5, 15 (2014).

[39] Lin, *supra* note 7, at 162.

[40] *Id*. at 140-148.

[41] *Id*. at 138-139.

[42] *Id*. at 138-139.

[43] *Id*. at 162.

promotes the development of "Copyright Collective Management Groups." Due to decreased control or related costs, states that adopt "Droit de Suite" need a "Copyright Collective Management Group" to pay resell compensation to artists or professionals in the market.[44]

On the other hand, the implementation of "Droit de Suite" also has three disadvantages. First, artists do not get fair resell compensation. When galleries and dealers that purchase copyrighted works need to pay resell compensation, they force artists to reduce the prices of their work. Hence, artists will decrease the production of copyrighted works.[45] A US study indicated that most of the auction benefits will go to a few important artists. Thus, artists will not get fair economic benefits as a result of the enforcement of "Droit de Suite."[46] The second disadvantage is that resale compensation results in a shrinking art market. Due to increased transaction costs and the complicated process of enforcing "Droit de Suite," sellers may decide to exchange, trade, or auction in countries that have not adopted "Droit de Suite" to avoid paying resell compensation.[47] The third disadvantage is that "Droit de Suite" is not equally applied to artists, writers, and composers. France was the first country to adopt "Droit de Suite" as a national law. The French congress enacted "Droit de Suite" legislation to reward artists for the value added to their work.[48] Contrarily, the German copyright act excludes architectural works and applied artistic works from "Droit de Suite" because the value added to these works is not relevant to the art world.[49] We cannot simply consider "Droit de Suite" by this meaning but must examine it through its actual operation in the art market.

B. What "Droit de Suite" impacts are superior to those of the "First Sale Doctrine?"

As we know, "Droit de Suite" is a type of "Moral Right" and the "First Sale Doctrine" is a restriction of the "Right of Distribution," which is a type of "Economic Right." From the perspective of "dualistic" legislation in copyright law, people or licensees who use copyrighted works should not only obey the "First Sale Doctrine," they should also follow "Droit de Suite." There may be conflicts

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[44] Po-Ju Chen, The study of copyright collective management groups in digital era 18 (Jan., 2002) (unpublished LL.M. thesis, National Taiwan University) (on file with author).
[45] Tsai, *supra* note 6, at 85-89.
[46] *Id*. at 86.
[47] *Id*. at 88.
[48] Lin, *supra* note 7, at 136.
[49] Liu, *supra* note 13, at 15.

between the two because "Droit de Suite" is superior to the "First Sale Doctrine."[50] How do we explain such a phenomena? We must review the legal history and interactions between "Moral Rights" and "Economic Rights."

The German scholar Josef Kohler argued that authors' personality interests are different from the economic value of copyrighted works and that personality rights and economic interests become "Moral Rights" and "Economic Rights," respectively, in copyright law.[51] Based on this "dualistic" legislation, copyright is composed of both "Moral Rights" and "Economic Rights" and they are separate and independent from each other.

Compared with "dualistic" legislation, "monistic" legislation supports the idea that "Moral Rights" and "Economic Rights" are not two separate parts of copyright law because they both function together within the legal framework. However, copyright laws that adopt "monism" reveal that even "Economic Rights" cannot be transferred and these laws are not in accordance with the legislation in most countries, which have adopted "dualism."[52] Although the "Economic Rights" in copyright laws that adopt "dualism" can be transferred, "Moral Rights," which are exclusive to authors, cannot be transferred. Due to the ability to transfer "Economic Rights," owners of "Economic Rights" vary and conflicts between "Moral Rights" and "Economic Rights" inevitably occur.

Furthermore, the key value of a copyrighted work is focused on the author's personality interests. Thus, the use of copyrighted works not only causes damage to "Economic Rights" but also causes damage to "Moral Rights." Based on "dualistic" copyright legislation, it goes without saying that "Moral Rights" are superior to "Economic Rights."[53] Take the conflicts between "Rights of Integrity" and "Adaptation Rights" for example. As stated above, "Moral Rights" and "Economic Rights" are independent rights in copyright law. Therefore, users of copyrighted works are authorized to adapt or people getting adaptation rights, which cannot be violated authors' "Moral Rights" and reputation.[54]

Moreover, users of copyrighted works must avoid damaging "Moral Rights," which naturally implies that "Moral Rights" are superior to "Economic Rights" in "dualistic" copyright legislation. In the majority of countries worldwide, "dualistic" copyright legislation indicates that users of copyrighted works should first stress

[50] Yen, *supra* note 34, at 127-129.
[51] *Id*. at 127.
[52] *Id*. at 80-81.
[53] *Id*. at 127-129.
[54] CHIEN, *supra* note 1, at 195.

"Droit de Suite" rather than consider limiting the "First Sale Doctrine" because "Droit de Suite" is superior to the "First Sale Doctrine."

III. Application of Legal and Economic approaches to contradictions between "Droit de Suite" and the "First Sale Doctrine"

In order to analyze the contradictions between "Droit de Suite" and the "First Sale Doctrine," we must understand the pursuit of law and economics. How does law and economics apply to a copyright law analysis? Economics is related to how "efficient" resources are allocated for various alternative uses.[55] Compared with economics, law focuses on "equity" rather than "efficiency."[56] In other words, to apply law and economics methods to conflicts between "Droit de Suite" and the "First Sale Doctrine" is to examine how "Droit de Suite" and the "First Sale Doctrine" are allocated. Thus, in what sense do authors/creators maintain their "Droit de Suite" and the "First Sale Doctrine?"[57]

In 1998, Michael Rushton's study put forth the notion that "moral rights should be kept independent of financial incentives, and they should not be tradable."[58] Rushton's study even pointed out that "the idea that legal restrictions on the transfer of moral rights can be socially efficient relies on the existence of heavy negative externalities that would be created along with the transmission of moral rights."[59] The problem is that keeping "Moral Rights" with authors'/creators' their own, which is prohibited by copyright law yet is the best allocation for alternative use. Do such transfer restrictions on "Moral Rights" really reduce heavy negative externalities for users of copyrighted works? Do we need to impose enforcement/control costs on owners of "Moral Rights" that cause heavy negative externalities for the practical or potential use of copyrighted works?

Furthermore, "Coase Theorem" states that an "efficient" allocation is the result of the distribution of property rights, so long as these rights are properly defined and protected and can be exchanged without transactions costs.[60] In other words, the implication of "Coase theorem" is that the initial allocation of copyrights should be assigned to those members of society that are able to transfer them at low costs. In this way, how does the "First Sale Doctrine," which is the allocation of copyrighted works to users, result in transaction costs? Above all, this

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[55] RICHARD WATT, COPYRIGHT AND ECONOMIC THEORY 15 (2000).
[56] *Id*.
[57] *Id*.
[58] *Id*. at 134.
[59] *Id*. at 134-135.
[60] *Id*. at 17.

chapter attempts to discuss the contradictions between "Droit de Suite" and the "First Sale Doctrine" based on "efficiency," "external costs," and "transaction costs" from legal and economic perspectives.

A. High External Costs of enforcing "Droit de Suite"

One factor that that causes "market failure" is "externalities" (also known as "external costs").[61] Generally speaking, transacting parties must share all of the benefits and costs but certain transaction costs are sometimes covered by other parties. These costs are called "external costs" or "externalities" and include costs related to air pollution or water pollution.[62]

Furthermore, an important question that we must answer is what public policy or legislation promotes the production of "external costs" so that we may reduce them? The answer is that public policy or legislation should support those who seek to maximize their profits and to decrease their reproductions to afford reproductions with social optimal situation.[63] In other words, public policy or legislation must support producers who follow "social marginal cost" lines rather than "private marginal cost" lines. If we implement these actions, such "externalities" will be "internalized."[64]

To apply "Droit de Suite" with an "external costs" approach is important in the analysis of related legislation. Actually, "Droit de Suite" could ensure that authors/creators obtain a certain price after the resale or auction of copyrighted works but people who enforce or control "Droit de Suite" force their reproductions to follow "private marginal cost" lines without considering socially optimal situations in "dualistic" copyright legislation. Nevertheless, "Droit de Suite" secures the basic economic benefits of copyrighted works/art after resale or auction but authors/artists enforce or control "Droit de Suite" from their perspectives without considering social needs. In particular, enforcing or controlling "Droit de Suite" is to inflict "external costs" on society. For example, authors/creators will receive economic benefits by enforcing or controlling "Droit de Suite" but authors/creators must do so through the court system. Thus, users/purchasers of copyrighted works are not willing to use or buy these works due to high enforcement or bargaining costs.

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[61] COOTER & ULEN, *supra* note 31, at 43.
[62] *Id*. at 44.
[63] *Id*. at 45.
[64] *Id*. at 45.

In this way, "external costs" are not "internalized" and are not socially optimal. Thus, we must enforce or control "Droit de Suite" in an optimal way without imposing "externalities" on society, which can be significant if a country's copyright laws recognize "Droit de Suite" as a "Moral Right."

B. To enforce the "First Sale Doctrine" is to ensure low Transaction Costs

When it comes to discussing "Coase Theorem," "transaction costs" play an important role in property exchanges. In short, "Coase Theorem" indicates that property assignations do not affect the "efficiency" of resource allocation if there are no transaction costs in property exchanges because people who use these properties efficiently will obtain property rights through free exchanges.[65] Actually, property assignations do influence the "efficiency" of resource allocation because in real life, there are transaction costs. Hence, laws should assign property rights to people who use them "efficiently," which would result in "efficient" resource allocation.[66]

When we examine the 1984 US Supreme Court case, *Sony Corp. of America v. University City Studios, Inc.,*[67] we see that the "Fair Use Doctrine" permitted the sale of video recorders to record TV shows without paying copyright fees to owners because it broadened the audience of those TV shows. Therefore, the greater the number of people who watched the TV shows, the higher the royalties advertisers had to pay to copyright owners. Obviously, this not only benefitted copyright owners but also reduced transaction costs for users of copyrighted works by implicating the "Fair Use Doctrine," which limits "Economic Rights."[68]

The "First Sale Doctrine" also restricts the "Right of Distribution," which is a type of "Economic Right." In other words, legal owners/licensees of copyrighted works can give away, lend, or discard copyrighted works without limitation. If we observe the "First Sale Doctrine" from the perspective of transaction costs, the implementation of the "First Sale Doctrine" reduces bargaining costs between later users of copyrighted works and the copyright owners; thus, these works can be frequently exchanged[69] and copyright owners will benefit from these frequent exchanges in the market.

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[65] Che-Sheng Hsieh, *General Principle*, *in* LAW AND ECONOMICS 4, 26 (Che-Sheng Hsieh ed., 2007).
[66] *Id*. at 27.
[67] 464 U.S. 417 (1984).
[68] RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 43 (Chih-Chieh Yang trans., Wu-Nan Book, Inc. 2010) (2007).
[69] WATT, *supra* note 55, at 108.

C. Whether "Droit de Suite" or the "First Sale Doctrine" is more "Efficient" in the enforcement of Copyright Laws

As we know, economic analyses are synonymous with "efficiency"; thus, legal and economic approaches are pursued from the perspective of the "efficient" use or enactment of laws.[70] In other words, when resources are allocated in the most efficient manner, it results in at least one member of society in a worse position.[71] Moreover, how "Droit de Suite" and the "First Sale Doctrine" are allocated and in what sense authors/creators retain full ownership of their "Droit de Suite" and the "First Sale Doctrine" after copyrighted works/creations have been exposed to the public should be analyzed from the perspective of "efficiency" using legal and economic approaches.

In fact, "Droit de Suite" ensures that authors/creators obtain certain percentage of the selling price from buyers/auctioneers every time the work is resold or auctioned. Of course, ensuring that authors/creators maintain their "Droit de Suite" is not the best allocation of copyright protection because only authors'/creators' economic benefits are secured and the majority of users, buyers, and auctioneers of copyrighted works/creations are worse off due to high bargaining costs and reduced selling prices.

Although the implementation of the "First Sale Doctrine" restricts the "Rights of Distribution" of the authors/creators of copyrighted works/creations, it does not deprive them of their "Rights of Distribution." It goes without saying that "Droit de Suite" can result in the first buyers/successful bidders being afraid to purchase copyrighted works/creations because they must pay a certain percentage of any resale price to the authors/creators. Because "Droit de Suite" is traditionally categorized as a type of "Moral Right" that is exclusive to authors/creators, "Droit de Suite" maintains a superior status to the "Rights of Distribution," which are referred to as "Economic Rights" in "dualistic" copyright laws. Above all, enforcing "Droit de Suite" is not more efficient than the "First Sale Doctrine." Thus, determining how to limit and manage "Droit de Suite" is significant for balancing the implications of "Droit de Suite" and the "Rights of Distribution" in "dualistic" copyright laws.

[70] *Id*. at 15-16.
[71] *Id*. at 15.

IV. Potential Ways to Manage the Contradictions between "Droit de Suite" and the "First Sale Doctrine"

In order to discuss how to limit "Droit de Suite" to achieve social "efficiency," we must determine whether "Droit de Suite" is an "Economic Right" or a "Moral Right." Some English scholars believe that "Droit de Suite" did not traditionally exist in "Moral Rights" systems. In particular, they believe that "Droit de Suite" is an "Economic Right" because it protects an economic interest.[72] On the contrary, German scholars argue that "Droit de Suite" is not based purely on "Moral Rights," is not an exclusive right, and is a right where authors/creators can ask the owners of copyrighted works/creations for certain royalties.[73] Nevertheless, there are different opinions about whether "Droit de Suite" is a "Moral Right" or an "Economic Right." Actually, based on the orbit of history, "Droit de Suite" should be a type of "Moral Right."[74]

Because "Moral Rights" are exclusive to authors/creators and cannot be transferred or passed down to others, it is very difficult to limit "Droit de Suite" by the "Fair Use Doctrine," the "First Sale Doctrine," and so on. However, "Economic Rights" can be restricted or transferred through the "Fair Use Doctrine," the "First Sale Doctrine," limited terms, licensing, or contracts.

Although "Moral Rights" and "Economic Rights" have the above-referenced differences, in essence, "Droit de Suite" is still a type of "Moral Right." In other words, the key point to managing the contradictions between "Droit de Suite" and the "First Sale Doctrine" is to restrict "Droit de Suite" by the use of contracts and limited terms in order to balance the interests of authors/creators and users/buyers of copyrighted works/creations if countries adopt "dualistic" legislation.

A. Drafting contracts that limit "Droit de Suite"

"Droit de Suite" is traditionally classified as a type of "Moral Right" and "Moral Rights" cannot be passed down or transferred due to their exclusive characteristics. However, when contracts are executed between the users, buyers, and auctioneers of copyrighted works/creations and their authors/creators, are inconvenient uses for copyrighted works/creations reduced by enforcing "Moral Rights" (i.e., "Droit de Suite")?

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[72] Tsai, *supra* note 6, at 77.
[73] *Id*. at 78.
[74] *Id*. at 79.

Of course, there are supporting and opposing arguments regarding whether contracts can regulate authors'/creators' enforcement of "Moral Rights" such as "Droit de Suite." However, "Moral Rights" in copyright law, unlike "Personality Rights" in civil law, protect both "Moral Rights" and "Economic Rights." Thus, it is reasonable for authors/creators to enforce "Economic Rights" more than "Moral Rights" (i.e., "Droit de Suite"). Furthermore, contracts in which authors/creators are restricted from enforcing "Moral Rights" (i.e., "Droit de Suite") are valid.[75]

On the other hand, the application of the legal and economic analyses of contracts should be focus on the questions presented in the following two sections:

1. Why do parties agree to contracts that restrict the enforcement of "Droit de Suite?"

In the agency game, we assume that there are two players in a business setting.[76] The total revenues of the two players are highest when they invest and cooperate with each other and the wealth of the two players is unchanged if they choose not to invest.[77] However, the wealth of Player 1 is transferred to Player 2 when Player 2 chooses to encroach on Player 1's wealth. In other words, laws should enforce contracts where parties have cooperated with each other to maximize profits but laws must also create incentives for people to trust and enforce contracts.[78]

Hence, contracts that restrict the enforcement of "Droit de Suite" are valid and provide incentives to trust and enforce them. If users/buyers/auctioneers (for the purposes of this paragraph, "the former") and authors/creators (for the purposes of this paragraph, "the latter") of copyrighted works/creations cooperatively execute such contracts, the former must not to reduce the price of these works/creations in order to pay a lower amount to the latter. Of course, the latter still owns, enforces, and controls the "Economic Rights." Most importantly, the latter can also earn profits after the former and the latter reach an agreement to reduce bargaining costs.

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[75] Sheng-Chen Tseng & Feng-Rung Huang, *The Research of Moral Right – A Comparative Approach of Taiwan, US and Canada*, 19 PROPERTY AND ECONOMIC LAW JOURNAL 1, 17-20 (2009).
[76] COOTER & ULEN, *supra* note 31, at 203.
[77] *Id*. at 205.
[78] *Id*. at 205.

2. What damages can result from the breach of a contract that restricts the enforcement of "Droit de Suite?"

We assume again that there are two players in the agency game of a business setting, the promisor and the promisee.[79] Theoretically, "Perfect Expectation Damages" are the typical damages for a breach of contract and they refer to the expected revenue that the promisee actually promised in the enforcement of the contract. Furthermore, "Perfect Expectation Damages" provide promisors the incentive to efficiently enforce or breach contracts when the contracts only impact the promisor and promisee. Of course, "Perfect Expectation Damages" also encourage promisors to take measures to avoid breaching contracts. However, "Perfect Expectation Damages" cannot always provide adequate compensation for the contract promisee.[80] Therefore, these imperfect contracts need the courts to efficiently fill the gaps and fix any market failures through the "Default Rules" in order to reduce transaction costs.[81]

On the other hand, "Perfect Expectation Damages" are a good type of damages for the breach of a contract that restricts the enforcement of "Droit de Suite," regardless of whether the authors/creators (for purposes of this and the following paragraph, "the former") or users/buyers/auctioneers (for purposes of this and the following paragraph, "the latter") of copyrighted works/creations are promisors. In particular, the former has the incentive to make a profit through agreements with the latter regarding copyrighted works/creations. In addition, the latter cannot choose to reduce the sale price in order to pay sufficient fees to the former.

Moreover, courts should interpret clauses in ambiguous contracts that restrict "Droit de Suite" enforcements by using the "Default Rule" when the former or the latter is the promisee. However, "Perfect Expectation Damages" are not good damages for breach of contract if the former or the latter is promisee. Thus, courts need to efficiently promote cooperation between the former and the latter. In other words, the former can obtain profits and the latter cannot decrease the sale price to avoid paying the former. Courts should make good use of their judgments to promote cooperation between the former and the latter.

[79] *Id*. at 203.
[80] *Id*. at 212.
[81] *Id*. at 244.

B. Limited terms for the protection of "Droit de Suite"

Although Article 14 of the Berne Convention for the Protection of Literary and Artistic Works (hereafter "Berne Convention") regulates "'Droit de suite' in works of art and manuscripts" regarding the "right to an interest in resale," "applicable laws," and "procedures,"[82] it does not mention the protection term for "Droit de Suite." This is likely because "Droit de Suite" is traditionally a type of "Moral Right." In other words, we must refer to the term of protection for "Moral Rights" when we want to discuss the term of protection for "Droit de Suite."

Moreover, Article 6bis of the Berne Convention states that "Moral Rights" (i.e., "Droit de Suite") shall be maintained after an author's death and at least until the expiration of the "Economic Rights."[83] However, countries whose legislation at the moment of ratification or accession to the Berne Convention does not provide for the term of protection for "Moral Rights" after an author's death, cease to be maintained.[84] Therefore, the world's copyright guidelines, the Berne Convention, indicate that "Moral Rights" (i.e., "Droit de Suite") are not to be enforced after an author's death but they are at least not protected until the expiration of the "Economic Rights."

Take the legislation of the EU and California in the US as an example. The EU member countries' laws state that the term of protection for "Droit de Suite" is the life of the author and 50 or 70 years after his/her death.[85] France was the first

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[82] Article 14ter of the Berne Convention rules that "**Droit de suite in Works of Art and Manuscripts:** *1. Right to an interest in resales; 2. Applicable law; 3. Procedure," and its regulations are that, "*(1) The author, or after his death the persons or institutions authorized by national legislation, shall, with respect to original works of art and original manuscripts of writers and composers, enjoy the inalienable right to an interest in any sale of the work subsequent to the first transfer by the author of the work. (2) The protection provided by the preceding paragraph may be claimed in a country of the Union only if legislation in the country to which the author belongs so permits, and to the extent permitted by the country where this protection is claimed. (3) The procedure for collection and the amounts shall be matters for determination by national legislation." *See* World Intellectual Property Organization, WIPO-Administered Treaties: Berne Convention for the Protection of Literary and Artistic Works, http://www.wipo.int/treaties/en/text.jsp?file_id=283698 (last visited Nov. 12, 2016).

[83] Article 6bis(2) of the Berne Convention regulates that, "(2) The rights granted to the author in accordance with the preceding paragraph shall, after his death, be maintained, at least until the expiry of the economic rights, and shall be exercisable by the persons or institutions authorized by the legislation of the country where protection is claimed. However, those countries whose legislation, at the moment of their ratification of or accession to this Act, does not provide for the protection after the death of the author of all the rights set out in the preceding paragraph may provide that some of these rights may, after his death, cease to be maintained*." See id*.

[84] *Id*.

[85] Tsai, *supra* note 6, at 76.

country to adopt "Droit de Suite" as a national law and its copyright law regulates that the "Droit de Suite" for artistic works is protected from when an artist begins selling his/her works/creations to 70 years after his/her death. In the California Resale Royalties Act, the term of protection for "Droit de Suite" is the life of the author and if an author died after January 1, 1983, his/her legal successors and estate managers continue to own the rights of "Droit de Suite" 20 years after the author's death.[86]

On the other hand, the regulations of the Berne Convention do not clearly mention the term of protection for "Droit de Suite" but they state that the term of protection for "Moral Rights" (i.e., "Droit de Suite") is not triggered until the expiration of the "Economic Rights." To sum up, the terms of protection for "Droit de Suite" in the above countries' legislation are equal to or less than the terms of protection for "Economic Rights." Compared with the majority of civil law countries, the term of protection for "Moral Rights" is deemed to be the life of the author. Thus, the terms of protection for "Moral Rights" are obviously longer than those of "Droit de Suite."

Whether or not the terms of protection for "Droit de Suite" are equal, less, or more than those of "Economic Rights," are they "efficient"? We will analyze this question in the following two subsections.

1. Analyzing the terms of protection for "Economic Rights" using legal and economic approaches

Stephen Breyer's research in 1970 supported the argument that there are no moral justifications to support an increase in the legal protection of copyright and that copyright laws create monopolies in creations and distribution of original works, which raise market prices and reduce the consumption of protected works.[87]

In fact, a majority of books are retired from print due to a lack of profits after three to five years and only one book in every one hundred remained in print beyond the fifty six-year maximum protection period. Therefore, increasing the

[86] California Civil Code Section 986(a)(7) (California Resale Royalties Act) rules that, "Upon the death of an artist, the rights and duties created under this section shall inure to his or her heirs, legatees, or personal representative, until the 20th anniversary of the death of the artist. The provisions of this paragraph shall be applicable only with respect to an artist who dies after January 1, 1983." *See* California Legislative Information, California Law, Text Search, Code Section, Text Search: CIVIL CODE - CIV, http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=CIV&sectionNum=986 (last visited Nov. 12, 2016); *Id*.

[87] WATT, *supra* note 55, at 120.

protection periods for "Economic Rights" would result in greater social costs than benefits.[88] Furthermore, transaction costs for "Economic Rights" will also increase if the term duration for the protection of "Economic Rights" is increased. Extending the term for the legal protection of "Economic Rights" is necessary to get permission to reproduce books and this may impose obstacles to the transaction of copyrighted works/creations.[89]

2. Analyzing the terms of protection for "Droit de Suite" using legal and economic approaches

Of course, in examining the terms of protection for "Droit de Suite" using legal and economic approaches, we can refer to the discussion above regarding the terms of protection for "Economic Rights." In particular, the enforcement of "Droit de Suite" ("Moral Rights") only ensures that the original authors/creators can receive profits after the resale or auction of their copyrighted works/creations.

However, the externalities of implementing "Droit de Suite" not only allow authors/creators to obtain certain benefits from resale or auction but they also impose social costs on users/buyers/auctioneers of copyrighted works/creations. On the other hand, limited terms for the protection of "Droit de Suite" are "efficient" in copyright law and this balances the rights and interests between authors/creators and users/buyers/auctioneers of copyrighted works/creations.

C. Summaries

The purpose of enforcing "Droit de Suite" is to compensate for the unfair treatment of artists and other copyright owners such as composers and musicians through resale royalties.[90] However, there are gaps between ideals and realities. In other words, adopting legal and economic methods to analyze "Droit de Suite" is not only from the perspective of "equity" but also from the perspective of "efficiency."

First, "Perfect Expectation Damages" are excellent damages for the breach of contracts that limit "Droit de Suite" and these damages provide incentives for users/buyers/auctioneers of copyrighted works/creations when they are promisors. Such incentives mean that users/buyers/auctioneers of copyrighted works/creations do not need to reduce the sale price in order to pay royalties to the authors/creators. On the other hand, these damages also provide incentives for authors/creators of

[88] *Id*. at 121.
[89] *Id*. at 121-122.
[90] Lin, *supra* note 7, at 136.

copyrighted works/creations if they are promisors. These incentives mean that authors/creators of copyrighted works/creations can continue to enforce their "Economic Rights" and obtain other benefits through agreements with users/buyers/auctioneers of their copyrighted works/creations. As a result, choosing to execute contracts that limit "Droit de Suite" is "efficient."

Second, increased terms for the protection of "Economic Rights" may result in high transaction costs because author/creator permission is necessary before reproducing copyrighted works/creations. Thus, longer terms for author/creator monopolies present obstacles to the transaction of copyrighted works/creations. In the same way, legislation for terms of protection for "Droit de Suite" should adopt limited protection terms regardless of the terms of the Berne Convention or the law of other countries. Because enforcing "Droit de Suite" results in externalities, social costs are imposed on the users/buyers/auctioneers of copyrighted works/creations. To sum up, adopting legislation with limited terms of protection for "Droit de Suite" is "efficient" for copyright law.

V. Conclusion

The main goals of enacting copyright laws are not only to promote the protection of the rights of copyright owners but also to achieve national, cultural progress. In other words, determining how to balance public interests (i.e., users/buyers/auctioneers of copyrighted works/creations) and private interests (e.g., authors/creators of copyrighted works/creations) is important for copyright legislation. The "Fair Use Doctrine," the "First Sale Doctrine," and "Limited Term Protection" are the primary methods of restricting the "Economic Rights" of authors/creators of copyrighted works/creations.

In addition, authors/creators of copyrighted works/creations own both "Economic Rights" and "Moral Rights." Compared with common law countries' copyright legislation, copyright laws in civil law countries focus more on "Economic Rights" than "Moral Rights." For example, France was not only the originator of "Moral Rights" but was also the first country to introduce "Droit de Suite" as a type of "Moral Right." In fact, "Droit de Suite" ensures that authors/creators of copyrighted works/creators can obtain royalties after resale or auction. For example, Clause 1, Article 12 of the 2012 Copyright Act Amendment of China ruled that authors, successors, or legatees of artistic, photographic, and musical works or drafts can obtain the rights of benefit-sharing after the works or drafts are auctioned.

Regardless of the national exhaustion, regional exhaustion, or international exhaustion adopted in "First Sale Doctrine" legislation, the "First Sale Doctrine"

secures the right of consumers to freely give away, lend, or discard copyrighted works/creations if they legally obtain such works/creations. However, it is pity that "Droit de Suite," as a type of "Moral Right," cannot be bequeathed or otherwise transferred. Thus, "Droit de Suite" is superior to the "First Sale Doctrine" in the enforcement of conflicts where they are implicated.

Actually, enforcing "Droit de Suite" ensures that authors/creators of copyrighted works/creations can obtain royalties after their works/creations are resold or auctioned but this results in high external costs because of long and/or complicated procedures (i.e., litigation). On the other hand, enforcing the "First Sale Doctrine" limits the "Rights of Distribution" of copyright owners and prohibits them from abusing these rights. Hence, the distribution of works/creations does not require author/creator permissions. This keeps transactions costs low for the distribution of such works/creations in the market. With regard to legal and economic analyses, "Droit de Suite" enforcement is not more "efficient" than enforcement of the "First Sale Doctrine."

Thus, the advantages of enforcing the "First Sale Doctrine" and not enforcing "Droit de Suite" consist of preventing external costs and decreasing transactions costs. Due to the "efficiency" of restricting "Droit de Suite" enforcement, balancing interests between authors/creators and users/buyers/auctioneers of copyrighted works/creations is significant.

"Perfect Expectation Damages" are excellent damages for the breach of contracts that limit "Droit de Suite" and they provide incentives for users/buyers/auctioneers (for purposes of this paragraph, "the former") and authors/creators (for purposes of this paragraph, "the latter") of copyrighted works/creations when they are promisors. Moreover, the former does not need to reduce the sale price in order to pay royalties to the latter when the former is the promisor. In addition, the latter continues to enforce its "Economic Rights" and receive benefits through agreements with the former. As a result, this essay proposes that executing contracts that restrict "Droit de Suite" is "efficient" in the exchange of copyrighted works/creations in the market.

Furthermore, legislation for the terms of protection for "Droit de Suite" should adopt limited protection terms. Because "Droit de Suite" enforcement results in externalities, this imposes social costs on all users/buyers/auctioneers of copyrighted works/creations. Above all, adopting legislation with limited terms of protection for "Droit de Suite" is "efficient" in copyright law.

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PATENT DISPUTES BETWEEN SMART CAR MANUFACTURERS AND NON-PRACTICING ENTITIES (NPES)

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ABSTRACT

Smart cars in the vehicle market continue to show substantial growth, which has been driving the automotive industry to focus on advancing related technologies by integrating technologies from various areas. As information and communications technology (ICT) melds with automotive technologies, the rapidly increasing activities of non-practicing entities (NPEs) have caused concern. An NPE is any entity that earns or plans to earn the majority of its revenue from licensing or enforcing its patents. In this study, we analyzed US litigation data on smart car patents to suggest preventive measures that can facilitate strategic decision-making for efficiently confronting NPEs. We performed correlation analysis to identify the factors that relate to disputes against NPEs in the

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automotive sector. Next, we analyzed the patent acquisitions of NPEs to interpret the characteristic patterns of lawsuits. Finally, we showed that our network analysis of patent litigation provides insights for establishing successful strategies against unanticipated patent disputes.

Keywords: Patent Dispute, Smart Car, NPE, PAE, Litigation, Intellectual Property

I. Introduction

Interest in smart cars in the vehicle market has rapidly expanded since these advanced vehicles evolved toward autonomic driving and active accident prevention (Robert, 2000). Smart cars have actively integrated information and communications technology (ICT) into automobile technologies to introduce a new era of autonomous vehicles (Ralph et al., 2008). Various types of sensors, radio frequency (RF) devices, processors, software, actuators, and human-interface components have merged into vehicle control systems to achieve the safety, convenience, and sensibility needed to realize the goals of smart cars (Robert, 2000). Therefore, smart cars have been considered the future answer to the paradigm shifts in automobiles, and related technologies will continue to evolve with market growth (Adrian, 2006).

Worldwide automobile sales are estimated to grow at an average yearly rate of 6%, and the share of smart cars in the automobile market is expected to reach 65% by 2016. From 2014 to 2016, smart car sales have been estimated to grow at an average yearly rate of 38%, establishing the basis for the claim that smart cars are providing new growth opportunities for the automobile industry.

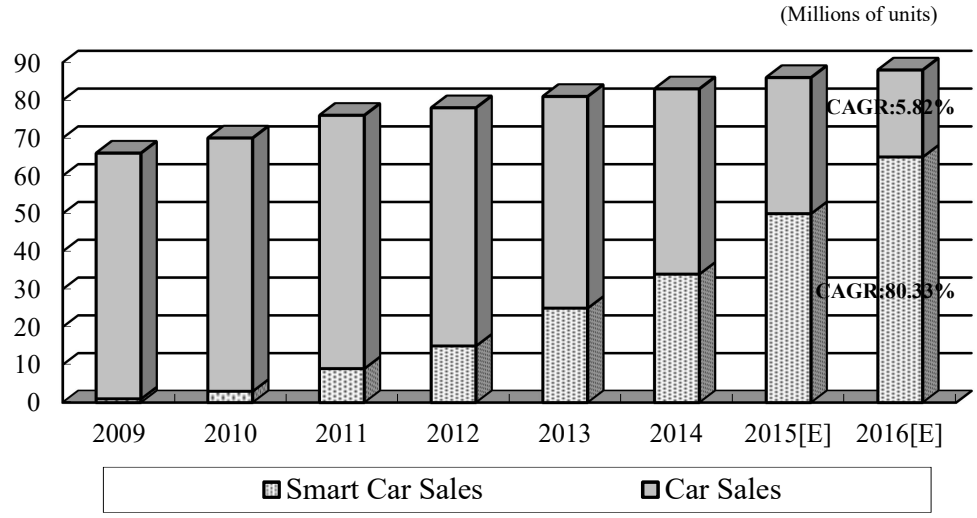


Figure 1: Smart cars in the vehicle market[1]

[1] Mirae Asset Research Center/Smart Cars in the Vehicle Market (2015)

Smart car technologies have been steadily evolving to fulfill the needs of a new era that requires integrated forms of diverse, advanced technologies, such as communications and sensors. Companies in the automobile industry have been actively forming partnerships with companies in various industries to surpass industrial and technological boundaries. As technological integration proceeds, however, the automobile industry has been subject to intense patent litigation. Recent analysis indicates that most litigation has been initiated by non-practicing entities (NPEs). NPEs are used to mostly focus on ICT for filing patent litigation; however, ICT patents have led NPEs to broaden their areas of interest to include the automobile industry, where ICT is actively melding with automobiles to achieve breakthroughs in advanced vehicle controls and conveniences, which are considered aims of smart cars.

NPEs have continuously evolved to sustain their businesses by designing swift and effective patent disputes. For example, NPEs can file complaints with the ITC (International Trade Commission) for injunctions on the products of targeted companies. Once the complaints are filed with the ITC for injunctions, targeted manufacturing companies can choose either to pay the NPEs for reconciling settlements, or prepare effective and timely countermeasures under the threat of import prohibition. Since the only possible countermeasure is to nullify the related patent, this scheme has been considered an effective way of imposing pressure on the targeted manufacturer and driving the reconciling settlements in their favor.

To the best of our knowledge, patent disputes have mainly been studied within the electrical and electronics industries; most prior studies discuss prevention through reconcilement by cross-licensing or patent nullifications via intensive claim analysis. However, such ex-post measures have exposed critical weaknesses in confronting NPEs, which have established powerful patent portfolios by aggressively acquiring patents, with the aim of launching patent disputes and litigation. Therefore, there is a need for studies that suggest effective and strategic means for preventive actions.

In this study, we focus on developing strategic measures for smart cars in the vehicle industry, which has seen ongoing growth, by suggesting effective tools to reduce the threat of patent disputes from NPEs. For this purpose, we used patent lawsuit data on US smart cars from major global automakers to perform correlation analysis; this allowed us to extract the factors that make companies vulnerable to NPEs. Next, we investigated patent assignee histories to capture the behavioral patterns during preparations for patent lawsuits. We conducted network analysis to identify and suggest the effective use of indices for monitoring the characteristics of NPEs in patent litigation.

Our study is composed as follows. In Section 2, we define smart car technologies, and discuss patent disputes initiated by NPEs. In Section 3, we examine patent disputes on smart cars using correlation and network analysis to identify the behavior of NPEs preparing lawsuits. In addition, we propose proactive countermeasures to prevent patent disputes from NPEs. Our conclusion is provided in Section 4.

II. Smart car technologies and NPEs

In Section 2, we describe smart car technologies to discuss the links through which NPEs have been entering the automobile industry. Smart car technologies can be categorized, as shown in Figure 2.

A. Smart Car Technologies

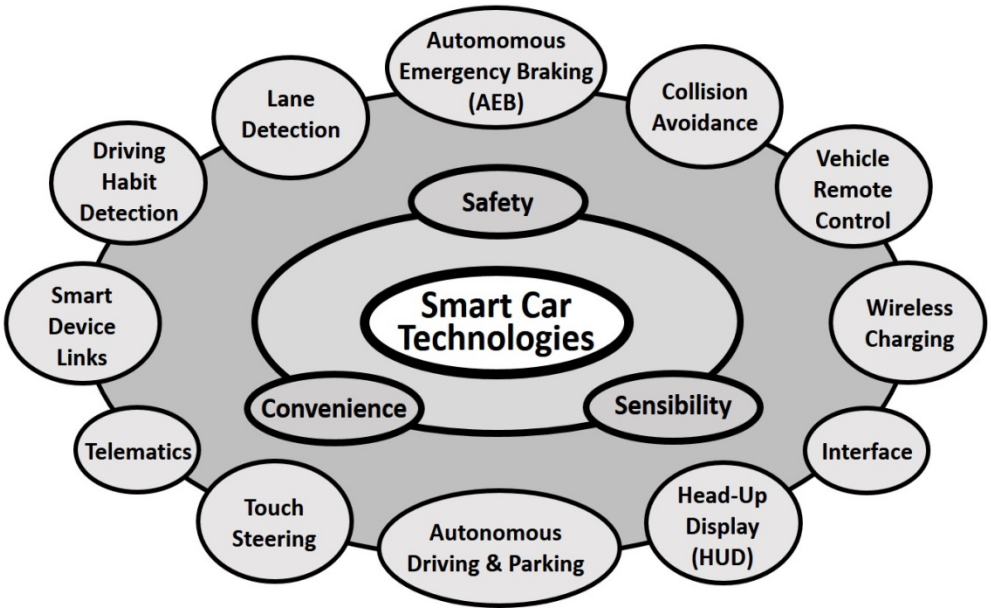


Figure 2: Categories of smart car technologies[2]

Smart car technologies require advanced technologies from various areas such as communication, mechatronics, and material science. However, smart car technologies have been mostly developed by automobile companies to integrate

[2] These categories of smart car technology were defined by the International Standards Organization Technical Committee 204 (ISO/TC204)

advanced functionalities into vehicles. ICT has become significant in facilitating the functionalities that are vigorously embedded in automobiles. The functionalities can be grouped in terms of objectives, which lead to the following categories of technology for smart cars:

1. *Preventive technologies*, which use cutting-edge sensors and high-speed computation to prevent potential traffic accidents. This technology aims to reduce the causes of traffic accidents by monitoring drivers' conditions, such as negligence or drowsiness, as well as driving habits.

2. *Advanced driver assistance systems (ADAS)* and *vehicle dynamic control (VDC)* keep cars under control and protect passengers, especially during accidents. ADAS may require vehicle-to-vehicle (V2V) or vehicle-to-infrastructure (V2I) systems, with car data networks to accomplish advanced control; this hints at the possibility of increased investment in smart cars from diverse business areas. VDC has been widely applied in automobiles in the form of anti-lock braking systems (ABS) and vehicle stability control (VSC); it is expected that VDC will integrate data networks to actively prevent accidents.

3. *Technologies that enhance driving efficiencies*, which include advanced steering and engine control systems. The advanced steering systems require intelligence in steering systems to compensate for external disturbances in dynamic control functionality.

For our analysis in the next section, we created a smart car technology tree, derived from the "Issue Report on Smart Car IP Utilization and Risk Response" Bae, J.W. (2014); this tree categorizes the technology patents that apply to smart cars. Based on the technology tree, we used the USPC (United States Patent Classification) system to extract each category of technology, in order to identify the pieces of litigation that involve smart car technology issues.

Table 1: Smart car technologies and the USPC system[3]

LV1	LV2	LV3	USPC
Smart Car	**Safety**	Autonomous Emergency Braking	701/301;701/117;
		Lane Sensing	701/023;180/179;318/587; 701/300;701/532;
		Collision Detection/Avoidance	340/901;340/435;340/436;340/903; 340/904;348/118;348/148;
	Convenience	Driving Habit	701/032.5;340/439;701/033.4; 701/033.6; 701/033.9;
		Autonomous Vehicle	701/023;180/167;701/002;
		Connect Smart Device	342/357.31;701/532;
		Telematics	701/538;340/988;340/990; 340/995.26;701/540;701/541;
		Remote Control	340/988;340/426.14;340/426.16;340/ 426.28;342/457; 455/404
		Wireless charging	320/109;180/313;322/002R; 361/235;701/022;
	Sensitivity	Voice Recognition	704/273;704/274;704/275;
		Action Recognition System	382/104;348/154;701/045;
		Head Up Display	345/007;250/330;348/115; 348/E05.09;
		Touch Steering	362/501;070/239;070/278.1; 362/085;362/394;
		Haptic	345/156;345/157;345/161; 715/701;715/702;
		Eye/Face Recognition	382/118;382/171;382/173;382/257;

[3] Issue Report on Smart Car IP Utilization and Risk Response (Bae.J.W, 2014)

B. Current status of smart car patent disputes

Advancements in smart car technologies have accelerated the fusion of technologies among various kinds. Among them, as we observe from the categories of smart car technologies, ICT has been the main driver of progress and innovation. ICT has brought intelligent functionalities to automobiles, and enabled the existence of smart cars by providing breakthroughs in electrical applications. However, ICT has also brought the threat of intense litigation in the automobile industry, and a sharp increase in technology patent disputes. In the US, the number of patent litigations related to smart cars increased approximately tenfold, from 40 in 2009 to 381 in 2013. Of these cases, we have paid attention to the NPEs whose activities were mostly in the realm of ICT.

Among the entirety of patent lawsuits over US smart cars in 2013, NPEs initiated 353 cases, escalating their portion of patent litigations to 92.6%. These figures imply a shift in patent litigation in the automobile industry, where manufacturing companies have been considered less involved in patent disputes compared to companies in other industries. The composition of patent litigation relationships should be examined in greater detail.

The number of defendants in patent lawsuits over smart cars increased by 153%, from 137 in 2009 to 347 in 2013, whereas the number of plaintiffs rose slightly, from 31 in 2009 to 39 in 2013. The composition of defendants and plaintiffs depicts the aggressiveness of NPEs against global automobile companies since smart car concepts were first developed. Therefore, concerns have been raised over the passive reactions from smart cars in the vehicle industry for developing appropriate strategies against NPEs, which are equipped with litigation competencies and experience.

C. NPEs

The term “NPE” characterizes entities that focus on pursuing profits through lawsuits, rather than using patents to foster innovation.[4] The patent law system

[4] The US Federal Trade Commission (2011)
Category 1 NPEs: All other entities that do not manufacture products that practice the asserted patents, including inventors who may have done R&D or built prototypes but do not make a product covered by the asserted patents and therefore rely on licensing to meet the domestic industry requirement; research institutions, such as universities and laboratories, that do not make products covered by the patents, and therefore rely on licensing to meet the domestic industry requirement; start-ups that possess IP rights but do not yet manufacture products that practice the patent; and manufacturers whose own products do not practice the asserted patents.
Category 2 NPEs: Entities that do not manufacture products that practice the asserted patents and whose business model primarily focuses on purchasing and asserting patents.

incentivizes innovation, with the ultimate goal of promoting the progress of science and technology. The Patent Act encourages inventors to disclose their inventions by compensating them with a limited form of monopolistic capabilities. This right allows the patentee to demand that others refrain from infringements and claim compensation for losses caused by unauthorized infringements. However, there has been increasing concern over the trend of utilizing intellectual property merely as a means to profit from litigation. Additionally, there has recently been more concern over the possible degradation of creative intentions among innovating entities, which may lead the patent system's fundamental aim to regress.

Rather, they defend their rights against infringement. These entities profit from payments opportunistically or on purpose by companies that inadvertently infringe on NPEs' intellectual property rights (Henkel and Reitzig, 2008). There is a fear that in most cases, these small entities use courts as a mechanism to extract economic rents from large companies (Ball and Kesan, 2009; Bessen et al., 2011).

Table 2: Previous research

Author	Summary
Hagiu (2013)	Hagiu claims that it highlights the importance of the intellectual property loyalty market, which allows for the trading of knowledge in a time when knowledge is property, as the current manufacturing-oriented industry transforms into an intellectual economy.
Sandburg (2010)	A patent troll is defined as a "company that does not currently invent patents or is not willing to do so regarding a patent right, and is trying to earn a tremendous amount of money using a patent that was never utilized in most cases in the past."
Tyler (2014)	Tyler claims that patent trolls can organize inventions and bring about orderly, cumulative development of innovation in the process of purchasing patents and creating a portfolio.
Femil (2010)	Femil claims that patent trolls have an advantage in supporting funds to get rights transferred from an individual inventor who cannot produce or commercialize products.
McDonough (2009)	McDonough claims that patent trolls are not illegal, since they are exercising their exclusive rights, and that they very much contribute to revitalizing intellectual property.

Aeppel (2010)	Aeppel claims that the abuse of patent rights increases lawsuit expenses, and that thoughtless lawsuits hamper economic development and cause excessive, unnecessary litigation.

In the past, patent disputes among automakers or research institutes could be reconciled or cross-licensed and resolved at a minimum cost. However, as industries have evolved through omnidirectional integration, patented technologies have become valuable in areas that used to be considered less relevant. NPEs have been establishing strong portfolios by aggressively acquiring patents, with the aim of profiting from claiming patent rights.

As ICT has been integrated into automobile technologies, the automobile industry has become the new target of NPE profits from ICT patents. NPEs are expected to search for assailable points in patent portfolios of targeted automakers with experience in ICT. Thus, a significant portion of patent litigation initiated by NPEs against automakers is over automotive applications, in which the fusion between ICT and automobiles is most actively observed. Since 2010, NPEs have been purchasing automobile patents with ICT elements, such as vehicle controls.

One of the most aggressive NPEs is Beacon Navigation GMBH (Beacon), which has filed 64 patent litigations against 14 automakers (2014). American Vehicular Sciences LLC (AVS), another active NPE, acquired 255 patents from other NPEs in 2013, and filed 29 patent lawsuits against 6 automakers in 2012.[5] It is highly possible that the patents acquired by NPEs will be used for litigation. As we observed in the cases of Beacon and AVS, NPEs have been establishing their portfolios by purchasing patents from various sources, including NPEs; therefore, NPEs are making rapid progress in preparing for a full-scale patent war against automakers, which rationalizes the claim that proactive risk management strategies for manufacturing companies needed.

III. Analysis

In Section 3, we analyzed the behavior of NPEs by focusing on their actions prior to filing patent disputes. We discuss such behavior based on our findings for deriving further understandings of NPEs.

[5] http://english.etnews.com/news/article.html?id=20140417200005

A. Correlation analysis

Table 3 shows the list of the top ten global automakers in order of net profit margins. For our analysis, the cases that involve the companies in Table 3 were extracted from data on US patent disputes from 2009 to 2014, and are displayed in Figure 3. We performed correlation analysis on these automakers to identify the factors that relate to patent lawsuits against NPEs.

Table 3: Global automakers ranked in terms of net profit ratios[6]

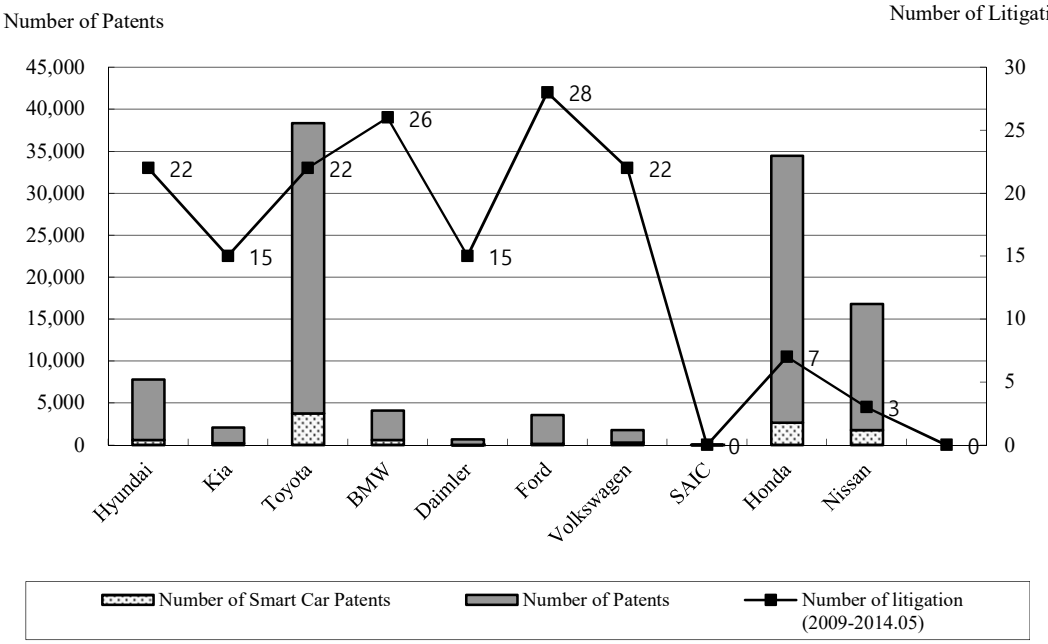
[Unit: $100 million]

No	Company	Nationality	Net profit margin (2013)	Sales account	Net income	Number of employees
1	Hyundai	Korea	9.78%	798	78	59,831
2	Kia	Korea	8.03%	435	35	33,456
3	Toyota	Japan	7.37%	2,556	189	333,498
4	BMW	Germany	6.99%	1,010	71	11,351
5	Daimler	Germany	3.30%	1,566	91	275,384
6	Ford	US	4.87%	1,469	72	181,000
7	Volkswagen	Germany	4.60%	2,615	120	572,800
8	SAIC	China	4.57%	882	40	105,953
9	Honda	Japan	4.17%	1,177	49	19,338
10	Nissan	Japan	3.79%	1,040	39	166,881

In our correlation analysis, we included the total number of patents, smart car patents, sales, net profits, employees, and patent lawsuits. We used the USPC to extract 15 technology classes from the 45 patents with the highest number of citations in the smart car technology tree, in order to classify smart car patents from all of the 99,471 patents of the listed companies. We limited our considerations to US patent registrations assigned to the companies in Table 4. Following an analysis of patent litigation, the author found that corporations in Japan have made various efforts to secure patents in the US. Corporations in Germany are frequently sued because they have several technologies that infringe on US patents, and they have not made adequate efforts to secure patent rights in the US.

[6] The World's Largest Companies 2014, Forbes

Figure 3: The number of patents and lawsuits of global automakers



Notes: Downloaded from the Wisdomain patent database; Patent litigation data was excerpted from PatentBlast

Notably, the correlation coefficients shown in Table 4 show that the patent lawsuits have negative correlations with the number of smart car patents, and positive correlations with net income or sales. Overall, the results imply that companies should be more prepared with stronger patent portfolios as they improve their financial performance.

Table 4: The correlative coefficients between patent lawsuits and company factors[7]

Correlation Coefficients		Number of Smart Car Patents	Number of Patents	Number of Litigations
Smart Car Patents	Pearson Correlation	1	.980**	-.332
	Sig.(2-tailed)		.000	.382
	N	9	9	9
Patents	Pearson Correlation	.980**	1	-.360
	Sig.(2-tailed)	.000		.341
	N	9	9	9
Lawsuits	Pearson Correlation	-.332	-.360	1
	Sig.(2-tailed)	.382	.341	
	N	9	9	9

The results of the analysis lead to deductions about the behavioral characteristics of NPEs in filing patent litigations. As shown in Table 4, NPEs exhibit preferences in selecting which companies to sue, implying that the NPEs consider manufacturing firms to be the main targets of litigation. Thus, a company with a stronger patent portfolio would be considered a less attractive target for NPEs, since a lawsuit against such a company may take longer, cost more, or be dismissed without any desired outcome. On the other hand, a company with a greater net income may expect an increased risk of being targeted since it can have more solvencies; furthermore, NPEs can attribute a manufacturing company's performance to the contributions of its patents. By filing a dispute for patent infringement, the plaintiff can request court injunctions against the rights of the accused companies to manufacture and sell the relevant products.

[7] Correlative coefficients are statistically significant at $p=0.01$

B. The analysis of NPEs' litigation patterns

Patent acquisitions are the core activity of NPEs at the onset of patent lawsuits. Generally, the activities of NPEs are incursions in that the accusations are secret until the brink of lawsuit filings. Regardless of a patent's practical and technological importance, patent rights invest the holder with the ability to apply for injunctions against the right to conduct any activities on relevant products, including manufacturing and selling, until the filed litigations conclude in favor of the manufacturing companies. Therefore, NPEs could keep their acquisition traces as minimal as possible to make it virtually unworkable for targeted counterparties to detect their moves in advance and perform neutralizing actions, such as bypassing or nullifying patent claims. We analyzed the assignee histories of patents acquired by NPEs for litigation to find a notable pattern that describes such concealment strategies.

As shown in Figure 4, Beacon displays the archetypical concealment, which includes delegating to other entities for acquiring and transferring patents. Generally, small NPEs or shell companies perform patent acquisitions, mainly to screen the warnings of pending litigations. For patent lawsuits in 2013, Beacon, which is known as an aggressive NPE, delegated other companies to acquire patents, and had assignees frequently transferred until the patent disputes began.

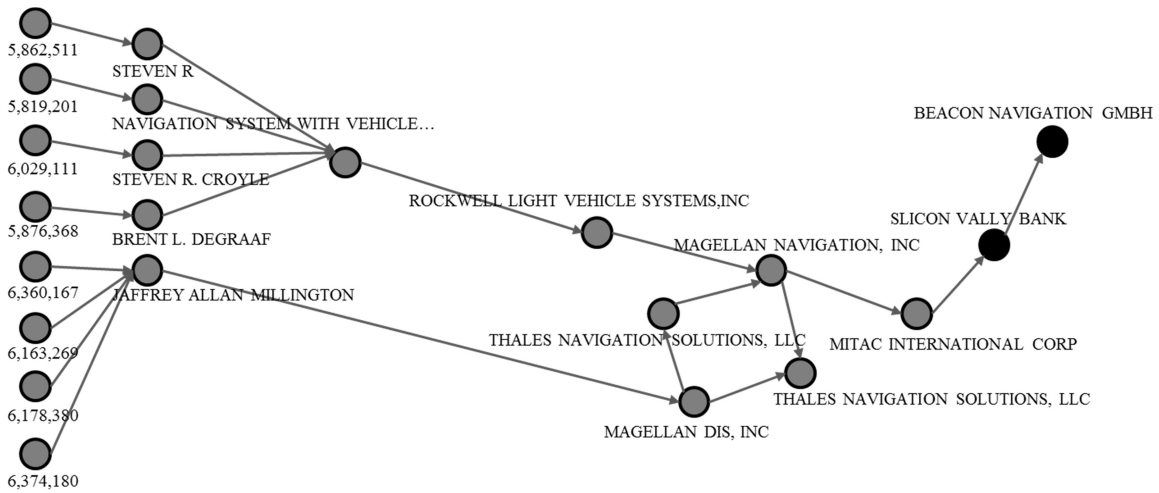


Figure 4: Beacon's patent acquisition channels[8]

[8] Beacon acquired eight navigation patents for 126 lawsuits in 2013.

Notably, as shown in Figure 4, Silicon Valley Bank participated as one of the assignees during the concealment process. We presume that the purpose of including this capital bank was to handle a financing problem; in other words, to obtain litigation funds from the financial institution by loaning or mortgaging the acquired patents. Such a financing strategy that requires strong reliance on banks or capital banks is typical, especially among NPEs, which secure a relatively small number of patents for lawsuits and aggressively initiate disputes against manufacturing companies.

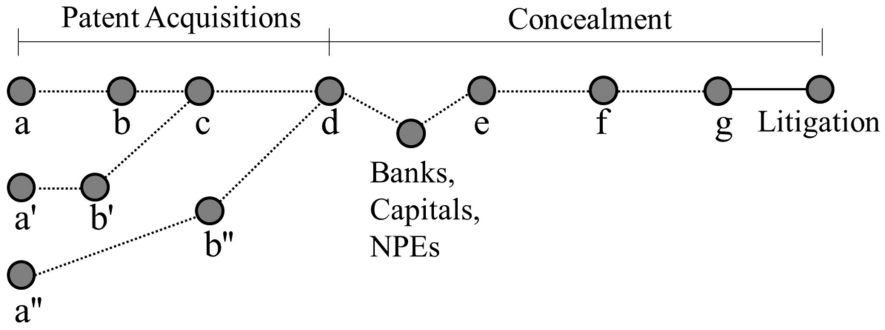


Figure 5: Generalized patent acquisition patterns of NPEs

As generalized in Figure 5, NPEs proceed with patent concealment after acquisition, which involves banks or capital banks as mid-assignors, presumably to insure that their investments are used for patent litigations. We tracked the patent assignee transfer histories during concealment; Table 5 shows the results of the analysis. Compared to the general practice of US patent assignee changes in the automobile industry of 2.3 times on average, the patent assignees of NPEs change 6 times on average; this implies that frequent assignee changes can be used for early detection of patents being collected for future litigation.

Table 5: The NPEs that filed lawsuits against the top 10 automobile companies

NO	Types[9]	NPEs	Total number of litigations	Number of patents under litigation	Days of patent litigation after purchase	Number of changes in the assignor	Mid-Assignors	
							Bank/ Capital	NPEs
1	Assaultive	PJC Logistics, LLC.	5	1	16	17	√	
2		Beacon Navigation GmbH.	19	8	15	13	√	
3		Delaware Radio Technologies, LLC.	6	3	6	17	√	
4		Signal IP, Inc.	5	2	5	6	√	
5		Innovative Display Technologies, LLC.	5	6	1	6		√
6	Inventive	Joao Control& Monitoring Systems, LLC.	5	7	450	2		
7		Novel Point Tracking, LLC.	12	1	236	1		
8		American Vehicular Sciences, LLC.	21	22	180	3		
9		Affinity Labs of Texas, LLC.	5	6	95	4		
10	Hybrid	Clear With Computers, LLC.	3	3	45	3	√	√

Notes: Patent litigation data taken from PatentBlast (as of May 2014)

In Table 5, we categorize the NPEs that filed patent disputes against the top ten global automobile companies, as listed in Table 3, based on the patterns of how litigation formed. The "assaultive" NPEs purchased patents to initiate disputes within relatively short periods of time, with vigorous use of concealment. On average, assaultive NPEs filed 8 lawsuits against the top ten global automakers, 8.6 days after undergoing 12 assignee changes on 4 patents. The "inventive" NPEs had research and development (R&D) competencies and facilities for autonomously

[9] 2013 NPE Litigation Report, RPX

creating intellectual properties to initiate litigation within relatively longer periods of time. This concealment strategy is uncommon among inventive NPEs, which indicates that speed is one of the compelling attributes for concealment. We speculate that inventive NPEs choose to secure dominant positions in disputes with superior patent portfolios; in contrast, assaultive NPEs rely heavily on the aggressive nature of litigation.

Despite the limited number of instances, "hybrid" NPEs made the best use of leverage by incorporating both the strategies of assaultive and inventive NPEs. Hybrid NPEs operate R&D capabilities to keep patent portfolios engineered and maintained; however, the litigation involves capital banks during concealment. Surmising from the types of NPEs, incorporating financial institutions during concealment can impose time constraints on litigation, depending on the nature of the funds available.

C. Predicting patent lawsuits

Based on the patterns of patent lawsuits over smart cars, we searched for patents registered in the US using the search queries below.

Table 6: Search queries to predict patent lawsuits

Queries	A) and B)
A)	Patents whose assignors have changed more than 6 times
B)	When mid-assignors or assignors have assignees on the list of banks, capital banks, and NPEs
* Detailed search formula (Number of changes in assignors >= 6) and ((Mid-Assignors == *BANK* or Mid-Assignors ==*Capital* or Mid-Assignors == NPEs list) or (Assignors == *BANK* or Mid-Assignors ==*Capital* or Mid-Assignors == NPEs list))	

The number of US patents that were retrieved from the aforementioned queries was 2,240 (from January 2008 to May 2015), 122 of which were classified as patents in the automobile industry. Among them, 12 patents had already experienced lawsuits and accounted for 10 percent of the automobile-related patents in this study. Using the aforementioned queries makes it possible to identify the patents that showed similar patterns to the ones facing lawsuits.

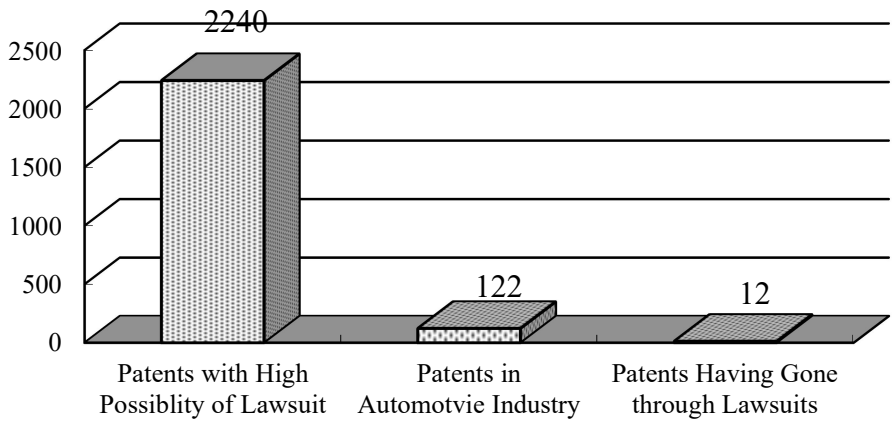


Figure 6: Predictions of patent lawsuits

Monitoring patents facing lawsuits makes it possible to respond to lawsuits brought by NPEs in advance, including making an invalidation case. Moreover, when variables such as forward citation counts by examiners, whether rights are transferred to tax havens, and certain types of law firms, are used with the OR condition(a type of search query), the prediction rate of patent lawsuits could increase by more than 10 percent.

IV. Conclusion

In this paper, we studied patent litigations on US smart cars initiated by NPEs, focusing on their patent acquisition and litigation patterns. We performed a correlation analysis to determine the overall preferences of NPEs in selecting litigation targets, and analyzed patterns in patent acquisition to reveal the characteristics of NPEs in terms of litigation strategies, with which we categorized NPEs as “assaultive,” “inventive,” or “hybrid.” We showed that the patent acquisitions of the assaultive and hybrid NPEs are followed by patent concealments, for which the NPEs delegate other entities, including financial institutes or shell companies, to change patent assignees frequently. The assaultive NPEs, generally funded by banks or capital banks, compel targeted manufacturers to make decisions under time constraints and injunction threats. The inventive NPEs are capable of generating intellectual property with their own R&D capabilities. Compared to the assaultive NPEs, the inventive NPEs usually hold more comprehensive patent portfolios, and invest more time in preparing for patent disputes. The hybrid NPEs, despite being scarce, own R&D capabilities and plan disputes by including banks, capital banks, or other NPEs in patent concealments.

Understanding NPEs and analyzing the intentions of their disputes can facilitate reasonable outcomes with minimal risks and costs; however, identifying NPEs or shell companies may not be possible without extraordinary investments in a database. Our findings suggest that the signals from banks and capital banks, which may be actively involved in litigation plans and processes of concealing the patent assignee, should be observed. Our network analysis on patent litigation data on US smart cars shows the prospective advantages of network centrality indices in monitoring NPEs to establish counteracting strategies in an expedited manner.

For practical implications, we suggest calculating the degree and betweenness centrality indices in order to capture the dispute intentions and litigation competencies of NPEs. By continuously updating degree centralities, NPEs in the litigation network can be rapidly identified, the intentions of disputes can be captured, and decisions of the corresponding mode of countermeasures can be facilitated. Additionally, continuous monitoring and analysis of the betweenness centralities of the entities in the litigation network can expedite the establishment of comprehensive dispute tactics. Manufacturing companies have been responding to the demands from NPEs in a diversified manner, which is depicted by the betweenness centralities. Therefore, betweenness centrality analysis can be a valuable source of information for selecting appropriate tactics.

By exercising intellectual property rights, NPEs make the best use of the legal system by first filing patent infringement lawsuits against multiple companies and demanding indemnifications. Normally, the accused manufacturers consider accepting the offer over the risk of having court injunctions against them, despite the excessive claim for compensation. Therefore, actual lawsuits may not be the most desirable outcome for both NPEs and manufacturers.

In 2012, the US government initiated the America Invents Act (AIA) to impose consolidated regulations on patent disputes; this has decelerated the rate of litigations. Our study shows that automakers and original equipment manufacturers (OEMs) have generally been passive in responding to patent disputes; however, NPEs may encounter a new environment. Inferring from the observations of cases with financial institutions, it is possible to conclude that NPEs could evolve by forming coalitions with other entities, including OEMs and automakers. Prospective studies could consider these evolutionary aspects in conjunction with intellectual property markets, in order to suggest strategies for developing manufacturing industries, including smart cars in the vehicle industry.

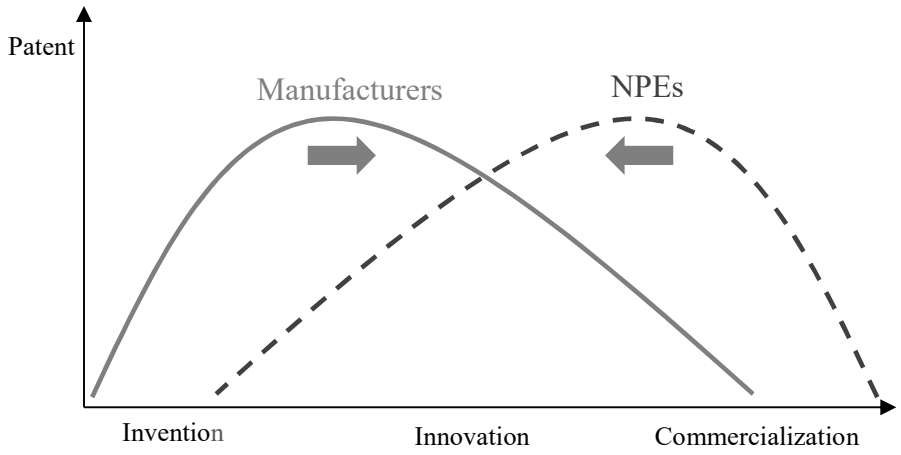


Figure 7: NPEs and manufacturing businesses

Patents have recently emerged as a new investment product and capital flows have increased in the patent business because core businesses are expected to file for patents in the future. Historically, there have always been fierce patent disputes in new markets. In essence, those who try to advance into the market use patents as weapons; at the same time, those who occupy the market use patents as shields. As demonstrated above, as NPEs and manufacturing businesses supplement each other and become similar in terms of their structure and how they litigate, NPE businesses will continue to evolve regarding the buying and selling of intellectual property.

It is unfortunate that I was not able to include all existing automobile manufacturers in this study. General Motors was not included because its net profits turned out to be low since it had too many affiliates. In addition, the study would be improved if the number of patents held by automakers in their countries, as well as the US, were considered. In the future, should I investigate this matter further, I would include more automobile companies.

Appendices

Network analysis

We analyzed the networks of the data on patent disputes over US smart cars in order to comprehend litigation relationships. The links between the nodes are directed so that the litigation relationships between entities can be described as follows: An outgoing arc indicates that the entity is the litigator, while an inbound arc depicts the defendant. The indices we used for interpreting the results from the network analysis are degree centrality, closeness centrality, and betweenness centrality.

(1) *Degree centrality* measures the direct relationships of a node with respect to the other nodes within the network. Degree centrality only considers the direct connectivity within the network; thus, only the relation within a local range can be analyzed.

(2) *Closeness centrality* incorporates both direct and indirect connections to measure the relational position of a node within the entire network. Generally, closeness centrality represents the influence of a node within the network in terms of information flow.

(3) *Betweenness centrality* portrays the role of a node in terms of the contributions to the mutual connections as a mediator between the nodes in the network.

We used the software Gephi (v0.8.2) for our network analysis of patent litigation data on US smart cars to obtain the results, as shown in Figure 8. In interpreting the results, we found that cases of technology patent disputes among the major automakers and OEMs are scarce, and most lawsuits filed by the automakers and OEMs are for trademark infringements. The major automakers were accused of 212 cases of technology patent infringement from 2009 to 2014, mostly filed by entities listed as NPEs.[10]

In Table 5, we categorized Beacon as “assaultive” and AVS as “inventive,” considering that AVS operates R&D facilities. Both NPEs have been triggering a series of litigations against automakers and OEMs. From 2009 to 2014, AVS and

[10] Comparison and confirmation between the NPE list of PatentFreedom, and the NPE list by the Korea Intellectual Property Protection Association (KIPRA)

Beacon filed 30 and 59 patent litigations, respectively.[11] Our degree centrality results, as shown in Table 7, indicate that the two NPEs have been engaged in 40 patent disputes against the top ten global automakers, as listed in Table 3.

Table 7: Degree centralities of NPEs

Types	NPEs	Degree Centralities	
		In-Degree	Out-Degree
Assaultive	PJC Logistics, LLC	0	5
	Beacon Navigation GmbH	0	19
	Delaware Radio Technologies, LLC	0	6
	Signal IP, Inc.	0	5
	Innovative Display Technologies, LLC	0	5
Inventive	Joao Control & Monitoring System, LLC	0	5
	Novel Point Tracking, LLC	0	12
	American Vehicular Sciences, LLC	0	21
	Affinity Labs of Texas, LLC	0	5
Hybrid	Clear With Computers, LLC	0	3

The degree centrality of an entity is the total number of in-bound and out-bound connected arcs. Table 7 shows the in-degree and out-degree centralities of the NPEs. Observing the litigation data through network analysis, the NPEs show distinct characteristics compared to other entities. Including AVS and Beacon, the NPEs listed in Table 7 have zero in-degree centralities, which implies that the NPEs have not been sued, even on counterclaims. Therefore, the degree centralities from the network of litigations could be used as indices to monitor the nature and intentions of NPEs, in order to decide how to reply expeditiously before establishing further countermeasures.

As observed in Table 8, the NPEs with higher possibilities of holding key patents can be deduced by considering the degree centralities with the number of patents used for litigation filings.

[11] The patent litigation data were rearranged according to the civil action number, and overlapping data have been removed.

Table 8: NPEs' dispute filings and patent holdings

Types	NPEs	Disputes Files (a)	Patent(s) in disputes (b)	(a)/(b)
Assaultive	PJC Logistics, LLC	5	1	500%
	Beacon Navigation GmbH	19	8	238%
	Delaware Radio Technologies, LLC	6	3	200%
	Signal IP, Inc.	5	2	250%
	Innovative Display Technologies, LLC	5	7	71%
Inventive	Joao Control & Monitoring System, LLC	5	7	71%
	Novel Point Tracking, LLC	12	1	1200%
	American Vehicular Sciences, LLC	21	22	95%
	Affinity Labs of Texas, LLC	5	7	71%
Hybrid	Clear With Computers, LLC	3	3	100%

In contrast, the results shown in Table 9 imply that automakers have been handling the litigations in a receptive way, including those not initiated by NPEs. BMW has an exceptionally high number of litigation filings; however, BMW did not accuse any of the NPEs.

Table 9: Litigations related to major automakers

NO.	Automakers	Accused cases(a)	Litigation Filings(b)	(a)/(b)
1	Hyundai Motor Corp.	22	1	5%
2	Kia Motor Corp.	15	3	20%
3	Toyota Motor Corp.	22	0	0%
4	BMW AG	26	52	200%
5	Daimler AG	15	1	7%
6	Ford Motor Co.	28	2	7%
7	Volkswagen Group	22	5	23%
8	SAIC Motor Co., Ltd.	0	0	-

By definition, the betweenness centrality of a node in directed (i.e., organized) litigation networks represents the number of in-bound and out-bound arc pairs, which are intermediated by the node. Toyota, the company with the highest number of smart car patents, has been accused in 22 patent infringement cases. However, Toyota has not responded with countermeasures, and has a zero out-degree centrality, which consequently produces a zero betweenness centrality. Further investigation shows that Toyota acquired patents US8394618, US8324295, and US7290627 from the NPEs that presumably filed lawsuits that used these patents in order to close the cases without further dispute. Therefore, Toyota is considered to use the exemplary strategy of "technology absorbing." In contrast, BMW has been active in patent disputes and has the highest betweenness centrality. As shown in Table 10, the betweenness centrality indices of automakers is spread over a relatively broad range, from 0 to 958, which implies differences in the tactics that automakers use to counteract lawsuits against them.

Table 10: Betweenness centralities of automakers in the network of litigations

NO.	Automakers	Betweenness Centralities
1	Hyundai Motor Corp.	11
2	Kia Motor Corp.	34
3	Toyota Motor Corp.	0
4	BMW AG	958
5	Daimler AG	9
6	Ford Motor Co.	38
7	Volkswagen Group	80
8	SAIC Motor Co., Ltd.	0
9	Honda Motor Co., Ltd.	20
10	Nissan Motor Co., Ltd.	0

The implications of the betweenness centralities suggest that they are effective indices for inferring relationships among the entities and litigation competencies. For example, analyzing the betweenness centralities of the accused entities in the litigation network can establish efficient counteracting tactics against NPEs. Examining the litigation history of NPEs by focusing on the accused entities can provide ample information for litigation strategies. NPEs search for vulnerabilities in the patent portfolios of targeted companies in order to successfully litigate. Therefore, an analysis of litigation histories and outcomes can suggest lucrative

counteractions, including coalitions with other entities. In contrast, the NPEs that engaged in lawsuits against BMW can be considered competitive.

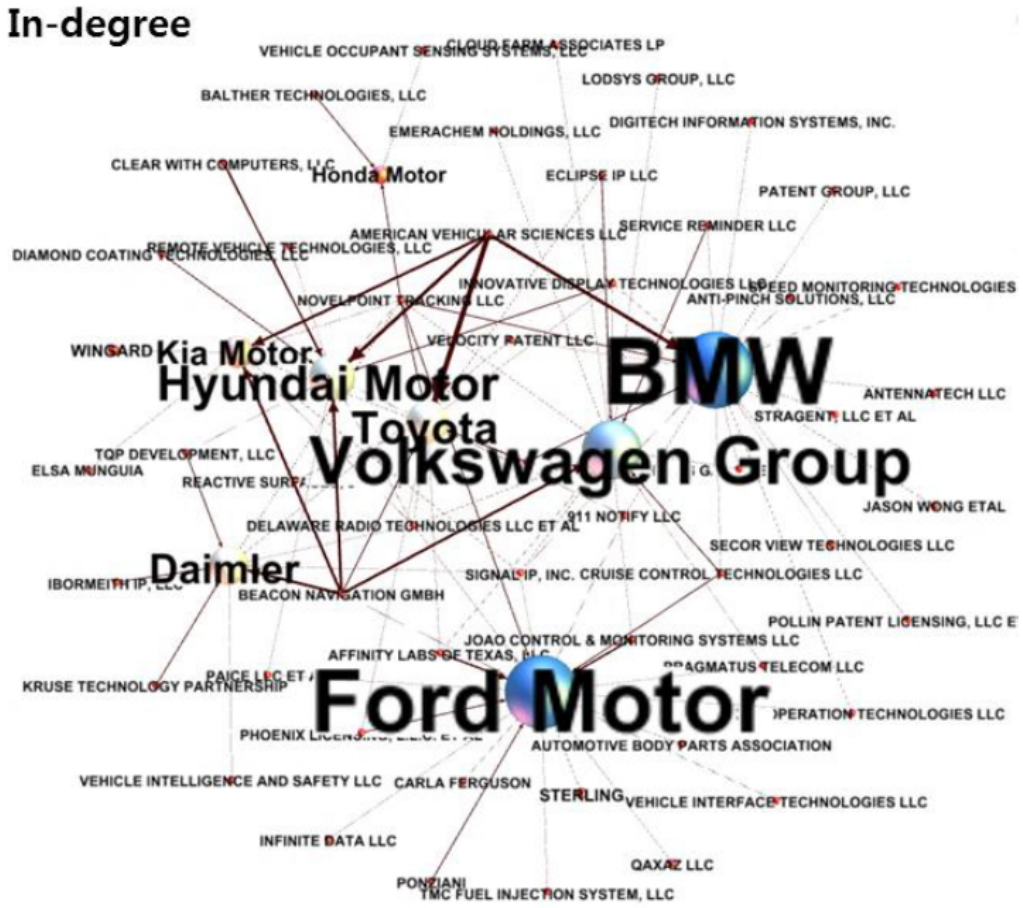


Figure 8: The network of patent lawsuits on US smart cars (in-degree)[12]

[12] Graphic results by Gephi0.8.2 (Layout option: Fruchterman Reingold drawing method)

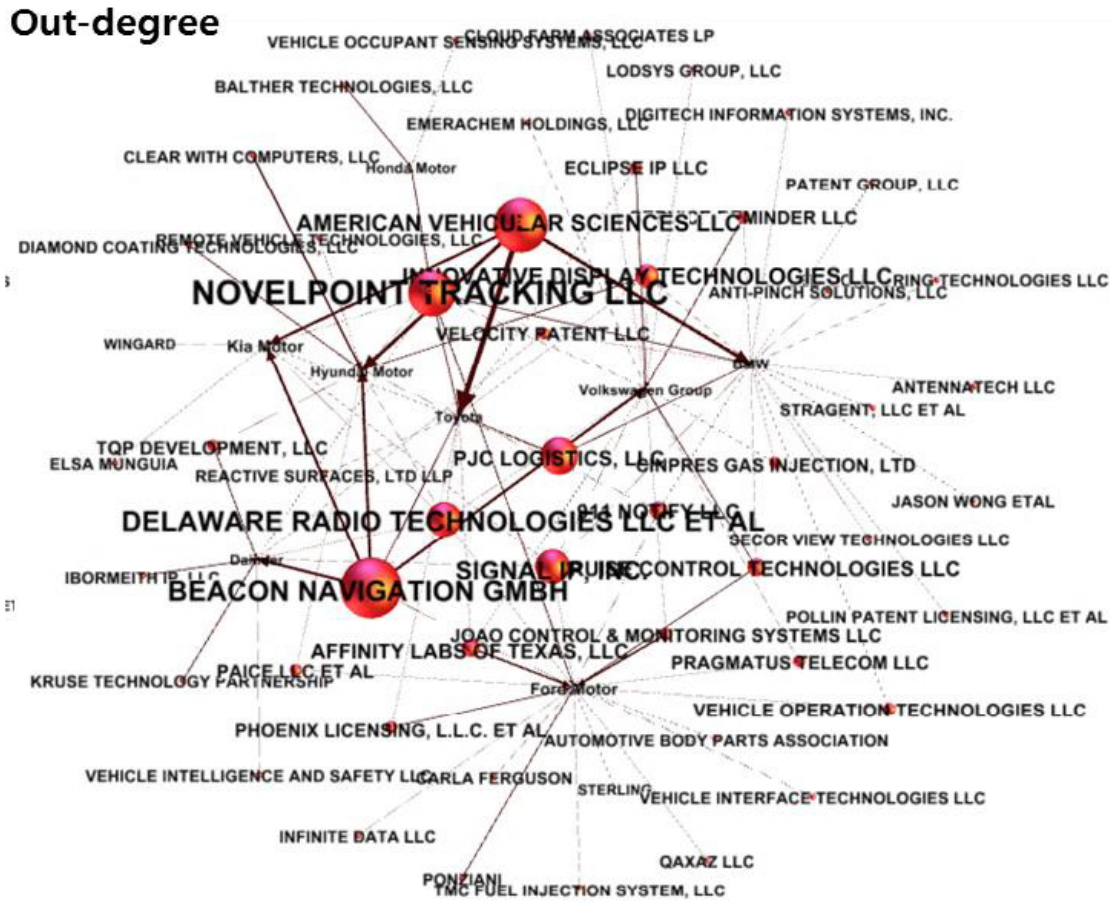


Figure 9: The network of patent lawsuits on US smart cars (out-degree)

In Figure 10, we show the examples of litigation networks of AVS and Beacon.

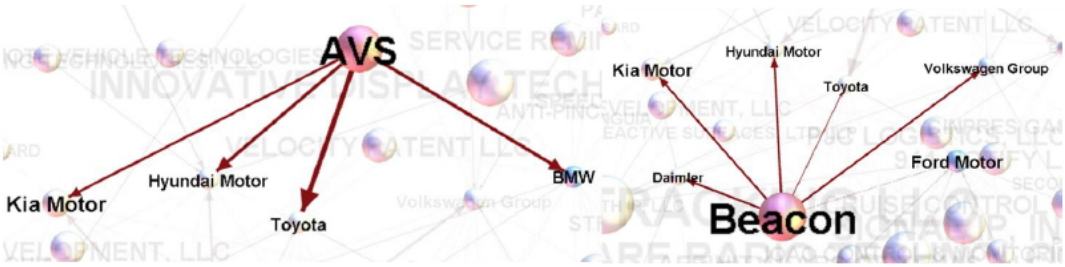


Figure 10: Patent dispute networks of AVS and Beacon

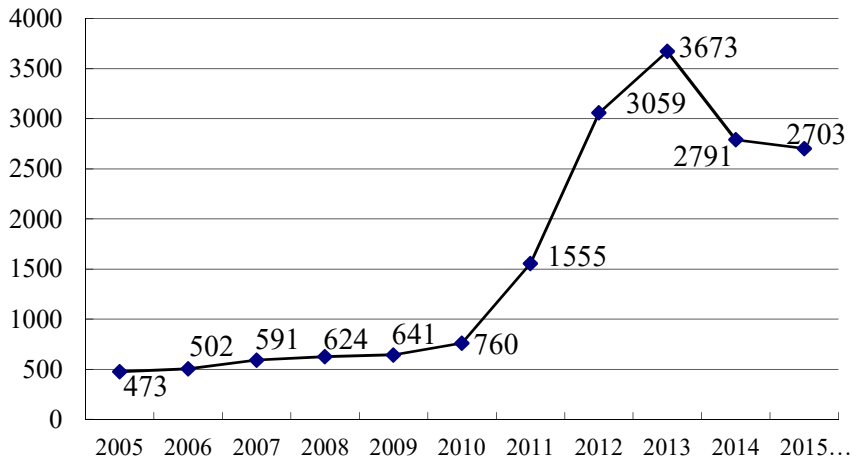


Figure 11: Operating company parties in NPE lawsuits over time
Source: RPX corp. Data captured as of January 10, 2016.

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INFORMATION TECHNOLOGY ACT IN INDIA: E-COMMERCE VALUE CHAIN ANALYSIS

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ABSTRACT

Growth of e-commerce in India is posing significant legal and regulatory challenges. Deficiencies exist despite significant amendments and introduction of secondary legislation. This paper has been written with an object to highlight deficiencies in information technology legislation governing e-commerce in India. Content analysis of information technology and other relevant legislation/literature revealed that, the IT Act partially address issues like legal validity of electronic transactions, security, content regulation, intermediary liability and jurisdiction, whereas areas like junk mail and spamming, intellectual property, payment, taxation of e-commerce transactions, and consumer protection are unaddressed. This paper fulfills the identification of ten major components of e-commerce value chain vis-à-vis the Information Technology Act and signalizes key deficiencies. Information in this paper is useful for policy and decision makers in government and e-commerce businesses.

Keywords: E-commerce, India, Legal, Regulatory, IT Act

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I. Introduction

E-commerce technologies have changed the structure and environment of business worldwide.[1] Electronic commerce is gaining popularity over traditional commerce because it offers versatility and advantages to business and customers. For an e-commerce merchant world's online population is its potential market. It creates boundary less virtual marketplace, without any geographical limitations, reaching global audiences.[2,3,4] Market entry costs for a merchant are unusually lower compared to traditional commerce.[5] Further online sellers can increase their profitability through reduced staff and less distribution costs.[6,7,8] E-commerce helps reaching customer and suppliers directly, thereby cutting down intermediaries and associated costs[9] and product and service can be made available to remote areas.[10] Through information rich content which is higher quality and accurate, online sellers can engross the consumer in a way similar to a face to face communication.[11] E-commerce Technologies can acquire great deal of personal and online buying behavior information about consumers, like page view, site visit, time spent, content of wish list and shopping cart etc.,[12,13] this information can be used for personalization and customization.[14,15,16,17] Better customer service through online technologies yields more customer satisfaction and loyalty.[18] From

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[8] Rajaraman, supra note.
[9] Joseph, supra note.
[10] Schneider, supra note.
[11] Jeffrey Rayport & Bernard Jaworski, Introduction to E-commerce (2 ed. 2003).
[12] Joseph, supra note.
[13] Prateek Kalia, Determining effect of webographics on customer's purchase frequency in e-retail, 21 J. Internet Bank. Commer. 1–24 (2016), http://www.icommercecentral.com/open-access/determining-effect-of-webographics-on-customers-purchase-frequency-in-eretail.php?aid=78448.
[14] Laudon and Traver, supra note.
[15] Chaffey, supra note.
[16] Schneider, supra note.
[17] Prateek Kalia, Service quality scales in online retail: methodological issues, Int. J. Oper. Prod. Manag.
[18] Joseph, supra note.

a buyers perspective, e-commerce technology put control and information in customers hands,[19,20] buyers can compare and select from wider assortment of product and services,[21,22,23] customer can buy anything, anytime, anywhere 27x7x365 at their convenience,[24,25] customers can search products, check descriptions and compare prices more accurately on web with less effort.[26] Consumer can ask question, submit a query or enter into a conversation. All this happens on a bigger global platform.[27] Through various platforms like blogs, live chat rooms, social networking etc., buyers can discuss their opinion regarding product or services offered by merchant.[28,29] Organizations across the globe can understand the power of e-commerce and integrating it in their business, this has resulted in tremendous growth of e-commerce worldwide (Table 1).

Buyers at North America and Western Europe are already conversant with digital mode of shopping. Now emerging markets of Asia-Pacific are getting strength out of their huge population base of first time buyers. This can be seen from the rise of China, which is emerging as undisputed leader of digital global market. China is second only to US and holds 60% of Asia Pacific e-commerce. Apart from China, India and Indonesia will drive e-commerce in Asia Pacific region.[30,31]

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[19] *Id.*

[20] Prateek Kalia, Tejinderpal Singh & Navdeep Kaur, *An Empirical Study of Online Shoppers' Search Behaviour with Respect to Sources of Information in Northern India*, 56 PRODUCT. A Q. J. NATL. PRODUCT. COUNC. 353–361 (2016).

[21] CHAFFEY, *supra* note.

[22] SCHNEIDER, *supra* note.

[23] RAJARAMAN, *supra* note.

[24] CHAFFEY, *supra* note.

[25] ELIAS M AWAD, ELECTRONIC COMMERCE – FROM VISION TO FULFILLMENT (3 ed. 2012).

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[27] Laudon and Traver, *supra* note.

[28] CHAFFEY, *supra* note.

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Table 1. B2C e-commerce sales growth worldwide (% change), by region and country, 2011-2017

Region /Country	2011	2012	2013	2014	2015	2016	2017
Middle East and Africa	**70.00%**	**43.00%**	**31.00%**	**25.00%**	**17.20%**	**15.00%**	**13.00%**
Asia-Pacific	**37.20%**	**32.80%**	**23.10%**	**29.00%**	**20.90%**	**16.70%**	**14.20%**
Indonesia	104.50%	85.00%	71.30%	45.10%	37.20%	26.00%	22.00%
China*	103.70%	94.10%	65.10%	51.20%	30.60%	22.60%	18.30%
India**	47.20%	39.70%	34.60%	27.10%	23.70%	18.20%	16.60%
South Korea	17.60%	6.00%	6.90%	9.30%	8.30%	8.20%	7.30%
Australia	11.00%	10.50%	6.00%	5.70%	5.10%	5.00%	4.20%
Japan	27.10%	13.20%	7.20%	7.10%	6.70%	5.60%	5.00%
Other	23.90%	12.40%	12.70%	12.00%	11.90%	11.00%	10.20%
Latin America	**38.50%**	**33.00%**	**22.10%**	**21.70%**	**12.70%**	**10.40%**	**8.40%**
Mexico	46.70%	47.30%	29.60%	23.80%	15.40%	13.30%	10.30%
Brazil	32.90%	21.80%	16.50%	19.10%	8.50%	6.90%	6.00%
Argentina	40.60%	31.00%	14.90%	24.00%	18.00%	12.00%	10.00%
Other	44.50%	46.20%	28.60%	23.40%	15.20%	12.70%	9.80%
Central and Eastern Europe	**41.60%**	**30.10%**	**20.90%**	**19.40%**	**11.00%**	**7.00%**	**6.10%**
Russia	43.00%	30.10%	21.10%	19.30%	10.80%	6.90%	5.20%
Other	40.80%	30.10%	20.70%	19.40%	11.20%	7.10%	6.60%
Western Europe	**17.10%**	**17.10%**	**14.00%**	**11.90%**	**9.90%**	**8.30%**	**7.50%**
Italy	32.10%	25.50%	22.60%	20.30%	16.80%	12.40%	12.00%
Spain	22.40%	18.80%	16.20%	13.80%	11.90%	10.00%	8.00%
Sweden	22.00%	18.40%	16.20%	13.30%	10.30%	9.00%	8.40%
Norway	21.80%	17.10%	15.30%	13.30%	10.50%	7.40%	6.40%

Finland	20.10%	16.10%	14.70%	11.20%	9.00%	7.20%	6.30%
UK	14.20%	13.70%	13.70%	12.20%	10.20%	8.20%	7.30%
Germany	17.40%	23.40%	12.80%	9.40%	6.90%	6.50%	6.10%
Denmark	16.50%	14.30%	12.40%	10.60%	8.90%	6.50%	5.90%
Netherlands	20.20%	14.00%	12.40%	10.10%	9.00%	6.70%	5.70%
France	12.20%	12.30%	11.00%	9.10%	8.00%	7.60%	7.10%
Other	19.60%	20.30%	14.70%	12.10%	10.10%	8.90%	8.00%
North America	**15.00%**	**14.00%**	**12.50%**	**11.90%**	**11.40%**	**10.90%**	**10.30%**
Canada	12.00%	14.30%	14.20%	13.60%	12.60%	11.00%	10.00%
US***	15.20%	14.00%	12.40%	11.80%	11.30%	10.90%	10.40%
Worldwide	**23.30%**	**21.70%**	**17.10%**	**18.30%**	**14.50%**	**12.40%**	**11.00%**

Source: Emarketer.com (2013)

In India, technology adoption by masses is fueling success of domestic e-commerce players and luring international business like Amazon and Alibaba into Indian market.[32,33] Electronic retail is emerging as fastest growing segments of e-commerce. In an effort to capture customers in an underdeveloped e-commerce ecosystem, many e-commerce business are either fine tuning their business models[34] or putting large portions of their investments in building infrastructure like fulfillment and logistics on their own.[35] Undoubtedly, benefits of e-commerce technologies are significant but the Indian e-commerce market has witnessed a dotcom burst earlier in 2000[36] and basic challenges such as poor internet penetration,[37,38,39,40] infrastructure constraints,[41] paucity of funds,[42] low credit

[32] PWC, ECOMMERCE IN INDIA: ACCELERATING GROWTH, http://www.pwc.in/en_IN/in/http://www.pwc.in/assets/pdfs/publications/2015/ecommerce-in-india-accelerating-growth.pdf-accelerating-growth.pdf (last visited Mar 2, 2015).
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card penetration,[43,44] complex tax laws[45] etc. are still present. In addition to these constraints there is one most important factor, which is causing poor implementation of e-commerce in India is poor legislation.[46] Many studies have identified government dimension as key factor for e-business adoption decision by a company.[47] Durbhakula and Kim proposed three indicators of government dimension, which include E-government development, E-participation, and Government policy & vision.[48] Similarly Rodríguez-ardura, Meseguer-artola and Vilaseca-requena mentioned importance of legal framework, for development of electronic commerce in a country.[49]

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[43] Goutam Das, CASH-ON-DELIVERY : NECESSARY EVIL, http://businesstoday.intoday.in/story/cash-on-delivery-impact-on-e-commerce-companies-customers/1/202680.html (last visited Nov 22, 2014).

[44] Himanshu Agarwal, CASH ON DELIVERY : SHOULD INDIAN ONLINE RETAILERS PERSIST WITH IT? (2014), http://trak.in/ecommerce/cash-on-delivery-cod-online-payment-mode-indian-stores/ (last visited Nov 22, 2014).

[45] Alok Patnia, IS INDIAN GRANDFATHERED TAX LAWS A ROADBLOCK FOR E-COMMERCE IN INDIA ?, http://taxmantra.com/is-indian-grandfathered-tax-laws-a-roadblock-for-e-commerce-in-india.html/ (last visited Nov 22, 2014).

[46] Sumanjeet, *supra* note.

[47] A. Papazafeiropoulou & A. Pouloudi, *The Government's Role in Improving Electronic Commerce Adoption*, *in* PROCEEDINGS OF THE 8TH EUROPEAN CONFERENCE ON INFORMATION SYSTEMS (2000), http://aisel.aisnet.org/ecis2000/188.

[48] Venkata Vijay K Durbhakula & Dan J Kim, *E-business for Nations : A Study of National Level E- business Adoption Factors Using Country Framework*, 6 J. THEOR. APPL. ELECTRON. COMMER. RES. 1–12 (2011).

[49] Inma Rodríguez-ardura, Antoni Meseguer-artola & Jordi Vilaseca-requena, *Factors Influencing the Evolution of Electronic Commerce : An Empirical Analysis in a Developed Market Economy*, 3 J. THEOR. APPL. ELECTRON. COMMER. RES. 18–29 (2008).

This paper is critically examining the IT Act 2000 and the IT (Amendment) Act 2008 with an object to point out shortcomings in e-commerce laws in India. Present paper is divided into six sections. Section 2 briefs about origin and basic objectives of the IT Act in India. Section 3 outlines identification of 10 key deficiency areas in e-commerce law in India vis-à-vis e-commerce value chain. Section 4 evaluates e-commerce law on 10 identified deficiency areas. Section 5 discusses Online Dispute Resolution (ODR) as an alternative approach and section 6 presents concluding remarks.

II. Origin of IT legislation in India

With more number of nations adopting electronic governance and enormous growth of electronic commerce, 1990's witnessed advent of computerization and globalization. Till that time almost all of the trade and transactions were done through documents which were subsequently transmitted or sent through post or telex. Paper hardcopies were used as evidence and records. As electronic communication and email become prevalent in international trade, an immediate and impending need for recognition of electronic records was felt.[50]

A model law on electronic commerce was framed by the United Nations Commission on International Trade Law in 1996, which was adopted after resolution A/RES/51/162, dated 30 January 1997 in the United Nations general assembly. Understanding for the need of uniformity of the law as alternative to paper-based methods of communication and storage of information, it was recommended in the resolution, that all states while enacting or revising their laws, should give favorable consideration to the said model law.[51]

"*E Commerce Act 1998*" was the first draft of the legislation made by the Ministry of Commerce, Government of India following the UNCITRAL model law on electronic commerce.[52] When a separate Ministry for Information Technology came into existence, this legislation was re-drafted as "*Information Technology Bill 1999*". After being placed in parliament in December 1999 and passed in May 2000, this draft got assent of the President on June 9, 2000. On October 17, 2000 vide

[50] IIBF, CYBER LAWS IN INDIA, http://www.iibf.org.in/documents/Cyber-Laws-chapter-in-Legal-Aspects-Book.pdf (last visited May 10, 2014).

[51] UNCITRAL, UNCITRAL MODEL LAW ON ELECTRONIC COMMERCE (1996), http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/1996Model.html (last visited Sep 10, 2014).

[52] Subhajit Basu & Richard Jones, *Indian Information and Technology Act 2000: review of the Regulatory Powers under the Act*, 19 INT. REV. LAW, COMPUT. TECHNOL. 209–230 (2005).

notification number G.S.R 788(E) "*IT Act 2000"* was finally notified.[53,54] To give provision for new breed of cybercrimes and to bring harmonization with model law on electronic signatures the IT (Amendment) Bill 2006 was introduced by the Government in the House of Commons (Lok Sabha) [55] on 15th December 2006. This bill was passed by both the houses of parliament on 23rd December 2008. Later the IT (Amendment) Act 2008 received the assent of the President on 5th February 2009 and was notified in the Gazette of India.[56]Broadly, essence of the act can be captured under following broad headings: [57,58,59,60,61,62,63]

- Promote e-commerce: To grant legal recognition for electronic commerce transactions, electronic records, digital signatures, electronic fund transfers between banks and financial institutions, facilitating electronic storage of data etc.
- Promote e-governance: Facilitating electronic filing and acceptance of digitally signed documents with Government departments.
- Regulation of certification authorities: Appointment of an appropriate government certifying authority for wider acceptance and enforcement of digitally signed documents, licensing to CAs, recognition of foreign CAs.
- Cyber contraventions and jurisdiction related: Delineating offenses and contraventions and outlining justice dispensation systems for cybercrimes, appointing adjudicating officers and establishing Cyber Appellate Tribunal
- Consequential amendments in other acts: To amend the Indian Penal Code, the Indian Evidence Act 1872, the Banker's Book Evidence Act 1891, and the Reserve Bank of India Act 1934.

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[53] SANJAY PANDEY, CURBING CYBER CRIME : A CRITIQUE OF INFORMATION TECHNOLOGY ACT 2000 AND IT ACT AMENDMENT 2008 (2008), http://www.softcell.com/pdf/IT-Act-Paper.pdf.

[54] C M Abhilash, *E-Commerce Law in Developing Countries: An Indian Perspective*, 11 INF. COMMUN. TECHNOL. LAW 269–281 (2002).

[55] Our Parliament, , http://parliamentofindia.nic.in/ls/intro/p1.htm (last visited May 12, 2015).

[56] Press Information Bureau, INFORMATION TECHNOLOGY (AMENDMENT) ACT, 2008 COMES INTO FORCE PRESS INFORMATION BUREAU, GOVERNMENT OF INDIA (2009), http://pib.nic.in/newsite/erelease.aspx?relid=53617 (last visited Oct 8, 2014).

[57] ICAI, INFORMATION TECHNOLOGY (AMENDMENT) ACT 2008, http://www.icaiknowledgegateway.org/littledms/folder1/chapter-10-information-technology-amendment-act-2008.pdf (last visited Oct 10, 2014).

[58] IT Act 2000, , http://deity.gov.in/content/view-it-act-2000 (last visited Oct 8, 2014).

[59] M Ajmal Edappagath, *Cyberlaws in Information Age*, *in* ASIA-PACIFIC REGIONAL WORKSHOP ON EQUAL ACCESS OF WOMEN IN ICT 1–7 (2001).

[60] DIDAR SINGH, ELECTRONIC COMMERCE: ISSUES OF POLICY AND STRATEGY FOR INDIA (2002), http://www.eldis.org/vfile/upload/1/document/0708/doc14597.pdf (last visited Mar 10, 2014).

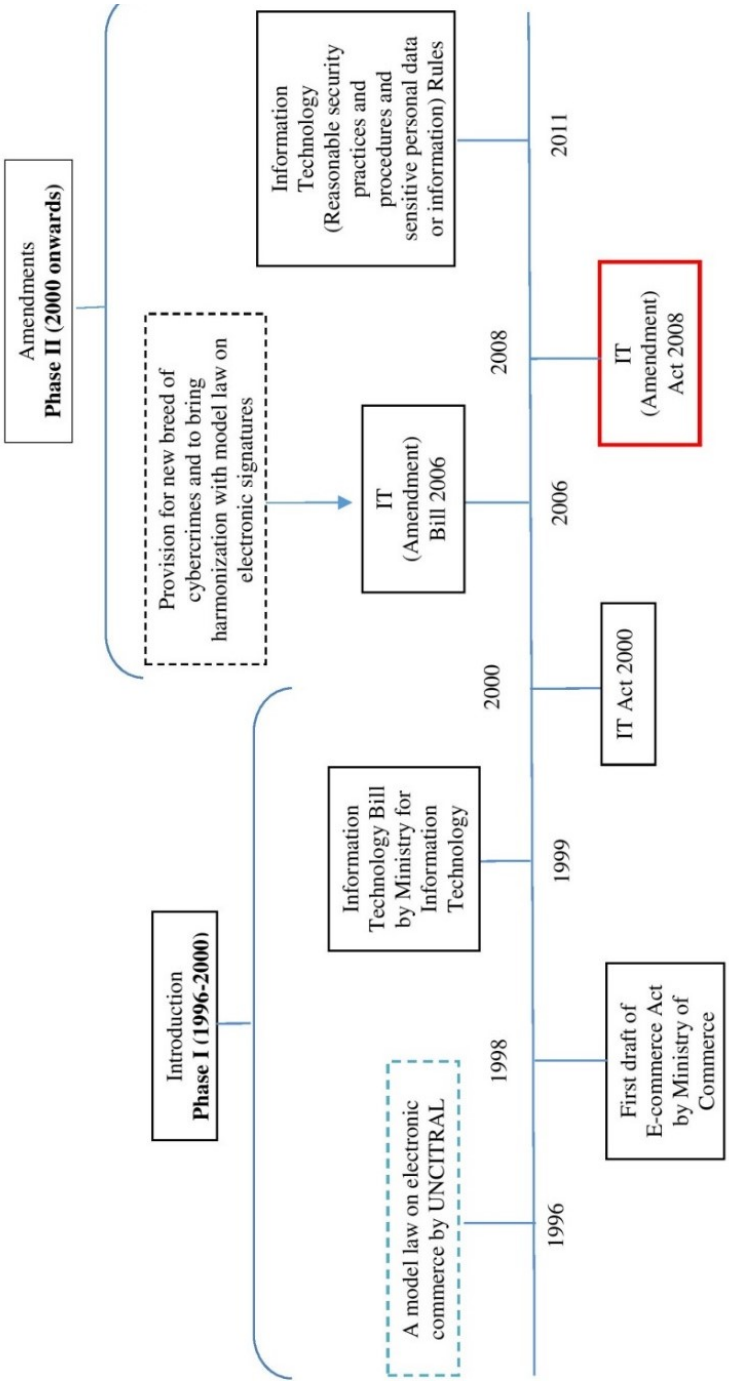
[61] RAJARAMAN, *supra* note.

[62] Basu and Jones, *supra* note.

[63] JOSEPH, *supra* note.

Evolution of E-commerce law in India is graphically depicted in the figure 1 below:

Figure 1: Evolution of E-commerce legislation in India



III. Identification of legal parameters/issues in e-commerce value chain

Series of interdependent activities of a business are present in its value chain and it depicts how value is added through various activities to the company in general. From e-commerce point of view, a company can add competitive advantage to its value chain through incorporation of communication technology within its business model. In today's business environment e-commerce facilitates cost reduction, product quality improvement, building loyal customer base and efficiency in sale of goods or services. Canvassing various elements of e-commerce value chain, experts can achieve holistic improvement of the firm, for example, information is collected and shared between e-merchants and buyers through websites, online payment flow is facilitated through invoicing, customers can receive customized products through independent shippers and inventory and warehousing can be kept minimum.[64] This e-commerce process comprises of various business processes to support electronic buying and selling of goods and services, as shown in figure 2.

Figure 2. Business processes supporting electronic buying and selling of goods and services.

Selling process	Market/ product research	Market stimulation/ education	Terms negotiation	Order receipt	Order selection and priority	Order billing/ payment management	Order scheduling/ fulfillment delivery	Customer service and support
Buying process	Product discovery	Product evaluation	Terms negotiation	Order placement	Order tracking	Order payment	Product receipt	Product service and support

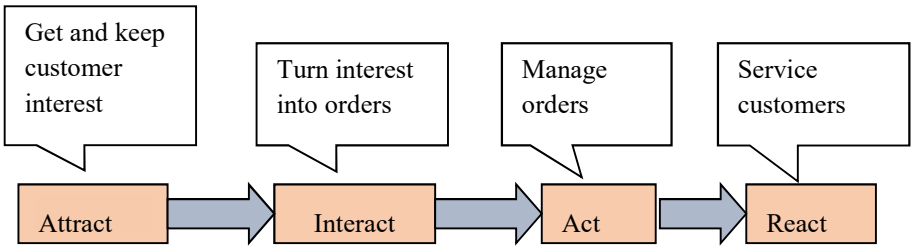
Source: O'Brien & Marakas (2007)

O'Brien and Marakas mentioned nine key components of an e-commerce process architecture i.e. access control and security, profiling and personalizing, search management, content management, catalogue management, payment, workflow management, event notification and collaboration and trading.[65] In case of B2C which is specially customer driven commerce,[66,67] an understanding of

[64] AWAD, *supra* note.
[65] JAMES A O'BRIEN & GEORGE M MARAKAS, MANAGEMENT INFORMATION SYSTEM (Seventh Ed ed. 2007).
[66] Peter Elkind, *The hype is big, really big, at Priceline*, FORTUNE 140, 1999, at 193, http://archive.fortune.com/magazines/fortune/fortune_archive/1999/09/06/265311/index.htm.
[67] Alan R. Hevner, Rosann W. Collins & Monica J. Garfield, *Product and project challenges in*

customer decision process, to predict consumer behavior is essential. Hsia, Wu and Li identified five customer activities and seller responses in customer decision process i.e. need recognition, information search, evaluation of alternatives, choice and post purchase.[68] The e-commerce value matrix proposed by them include activities like, sending and receiving information, evaluation of alternatives, payment delivery, return, logistics and other post purchase activities. Joseph referred to a generic value chain for internet commerce,[69] which is mentioned in figure 3.

Figure 3. Generic value chain for internet commerce.



Source: Joseph (2012)

- Attract - This is first step of generic internet commerce value chain, and includes steps to draw customers towards primary site through paid advertisement on other websites, television, e-mail print or other form of advertising and marketing efforts.

- Interact - Second step is content oriented and includes converting customer interest into orders. Content may be distributed through e-mail or World Wide Web or other media like CD-ROMs. Content can be editorial (changing frequently or infrequently) or technical (static or dynamic).

- Act - When the customer has searched a product or service as per his requirements. This step tries to capture the order and includes; *Order processing*, here customer can change quantities of order in his shopping

electronic commerce software development, 33 ACM SIGMIS DATABASE 10–22 (2002).

[68] Tzyh L. Hsia, Jen H. Wu & Eldon Y. Li, *The e-commerce value matrix and use case model: A goal-driven methodology for eliciting B2C application requirements*, 45 INF. MANAG. 321–330 (2008).

[69] JOSEPH, *supra* note.

cart and buyer is presented itemized order form including all charges like sales tax and shipping costs, so that he can make payment. *Payment,* here buyer can make payment for the order through variety of payment options available on internet commerce. *Fulfillment*, here order is forwarded to traditional order processing system.

- React - Once sale is completed, customer may face certain difficulties that may require further service

The e-commerce value chain involves various legal challenges at different stages. These parameters/issues in e-commerce are identified on the basis of literature review, summary of which is presented in Table 2. Each parameter/issue is discussed in detail in section 4.

Table 2. Legal parameters/issues in e-commerce.

Legal Parameter	Definition	Reference
Legal validity of e-transactions	Validity of contract formation, communication, acceptance and revocation of proposals expressed in electronic form or by means of an electronic record.	(Basu & Jones 2005; Sumanjeet 2010; Anon 2000; Chaffey 2013; Schneider 2012; Awad 2012)
Security & privacy		
Authentication and identification	Authentication refers to establishing the identity of the purchaser. A subscriber may authenticate any electronic record by electronic signature or electronic authentication technique.	(Chaffey 2013; Anon 2000; Anon 2008)
Privacy	Privacy is moral right of individuals to avoid intrusion into their personal affairs	(Sumanjeet 2010; Joseph 2012; Rajaraman 2011; Chaffey 2013; O'Brien & Marakas 2007; Schneider 2012; Awad 2012; Laudon & Traver 2007; Basu & Jones 2005)
Data protection	A body corporate processing, dealing or	(Sumanjeet 2010; Joseph

	handling any personal data or information in a computer resource which it owns, controls or operates, has to implement and maintain reasonable security practices to prevent wrongful loss or gain to any person.	2012; Rajaraman 2011; Anon 2008; Chaffey 2013; Laudon & Traver 2007; Basu & Jones 2005)
Security of systems	A body corporate processing, dealing or handling any personal data or information in a computer resource which it owns, controls or operates, has to implement and maintain reasonable security practices to prevent wrongful loss or gain to any person.	(O'Brien & Marakas 2007; Anon 2008)
Junk mail and spamming	Spam is unsolicited e-mail (usually bulk mailed and untargeted)	(Sumanjeet 2010; Basu & Jones 2005; Rajaraman 2011; Chaffey 2013)
Content regulation	Website not knowingly host or publish or transmit any information that is grossly harmful, harassing, blasphemous, defamatory, obscene, pornographic, paedophilic, libelous, invasive of another's privacy, hateful, or racially, ethnically objectionable, disparaging, relating or encouraging money laundering or gambling, or otherwise unlawful in any manner.	(Sumanjeet 2010; Basu & Jones 2005; Rajaraman 2011; Chaffey 2013; Schneider 2012)
Intellectual property rights	Protects the intangible property created by corporations or individuals that is protected under copyright, trade mark and patents law.	(Sumanjeet 2010; Basu & Jones 2005; Joseph 2012; Rajaraman 2011; Chaffey 2013; O'Brien & Marakas 2007; Schneider 2012; Awad 2012; Laudon & Traver 2007)
Payment	Online payment services poses complex practical challenges as it includes	(Sumanjeet 2010; Basu & Jones 2005; Chaffey 2013;

	technological capabilities of service providers, commercial relationships, issues of regulation and law (buyer and seller protection), security considerations including identification issues, such as authentication and verification, and co-ordination among a variety of parties with different and sometimes competing interests.	Kalakota & B.Whinston 2009)
Taxation of e-commerce transactions	Tax jurisdiction determines how to tax e-commerce transaction in national or international scenario.	(Sumanjeet 2010; Basu & Jones 2005; Chaffey 2013; Schneider 2012; Awad 2012)
Intermediary liability	Intermediary, with respect to any particular electronic records, means any person who on behalf of another person receives, stores or transmits that record or provides any service with respect to that record and includes telecom service providers, network service providers, internet service providers, web-hosting service providers, search engines, online payment sites, online-auction sites, online-market places and cyber cafes.	(Sumanjeet 2010; Rajaraman 2011; Anon 2008; Anon 2011a; Joseph 2012)
Jurisdiction	Legitimate scope of government power to settle disputes related to e-commerce.	(Sumanjeet 2010; Rajaraman 2011; Schneider 2012)
Consumer Protection	Governs the relationship between consumers and goods/ service providers.	(Sumanjeet 2010; Joseph 2012)

IV. E-commerce value chain analysis of IT Act

Under this study evaluation of e-commerce law in India has been done on the basis of ten relevant parameters/issues which are identified on the basis of literature review of e-commerce law in India, books and reputed journals. Identified parameters/issues are legal validity of electronic transactions, security, junk mail and spamming, content regulation, intellectual property issues, payment, taxation of e-commerce transactions, intermediary liability, jurisdiction issues and consumer protection issues. Subsequent subsections discuss if these identified parameters/ issues have been addressed under e-commerce legislation in India, related acts and amendments are also identified (Table 3).

Table 3. The Information Technology Act vis-a-vis legal parameters/issues in e-commerce.

Sno.	E-commerce value chain	ITAct 2000	IT(A) Act 2008	Other relevant Act/Rules
1	**Legal validity of e-transactions**	-	Section 10A	Indian Contract Act 1872
2	**Security**			
	Authentication and identification	Section 3	Section 3A	-
	Privacy	Sections 67 & 72	Sections 66E, 67, 67A, 67B & 72A	-
	Data protection	-	Section 43A	Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules 2011
	Security of systems	Sections 65 & 66	Section 66	Information Technology (Reasonable security practices and procedures and sensitive personal data or information)

				Rules 2011
3	**Junk mail and spamming**	-	Section 66A	-
4	**Content regulation**	-	Sections 66A, 67 & 67A	Sections 292, 469, 499, 501 and 503 of IPC 1860 Indecent Representation of Women (Prohibition) Act 1986 Information Technology (Intermediaries Guidelines) Rules 2011
5	**Intellectual property issues**	Sections 43 & 65	-	Trade Marks Act 1999, Copyright Act 1957, Copyright Rules 1958, Patents (Amendment) Act 2005
6	**Payment**	-	-	Payment and Settlement Systems Act 2007
7	**Taxation of e-commerce transactions**	-	-	Income Tax Act 1961, Service Tax Rules 1994, Finance Act 1994, Central Sales Tax Act 1956, Customs Act 1962, Central Excise Act 1944
8	**Intermediary liability**	Section 79	Sections 69A, 69B, 72A & 79	Information Technology (Intermediaries Guidelines) Rules 2011, Copyright (Amendment) Act 2012, Patents (Amendment) Act 2005
9	**Jurisdiction issues**	Sections 1(2) & 75	-	Section 3 of IPC 1860
10	**Consumer Protection**	-	-	Consumer Protection Act 1986

A. Legal validity of electronic transactions

Commonly e-contracts can be of three kinds; *browse wrap*, which is binding on the contracting party by mere use of the website. Second is, s*hrink wrap,* here

contracting party read the term and conditions after opening the box in which product is packed. Another most popular e-contract is *click wrap,* under which contracting party accepts this contract by clicking on "I accept" tab.[70,71] Like any other contracts, e-contracts should fulfill the requirements as per the Indian Contract Act 1872.[72] The IT Act 2000 fortifies validity of e-contracts; further the IT (Amendment) Act 2008 clearly states under section 10A that "Where in a contract formation, the communication of proposals, acceptance of proposals, the revocation of proposals and acceptances, as the case may be, are expressed in electronic form or by means of an electronic record, such electronic contract shall not be deemed to be unenforceable solely on the ground that such electronic form or means was used for that purpose."

In the present formulation of the IT Act, industry bodies like Confederation of Indian Industries (CII) and National Association of Software and Services Companies (NASSCOM) have reported difficulties associated with the formation of online contracts and legal enforceability of online contracts involving international parties.[73] To deal with unconscionable standard form online agreements, jurisprudence in India is not well developed. However, there have been instances in which Indian laws and Indian courts have dealt cases where unequal bargaining positions were negotiated between parties (LIC India vs. Consumer Education & Research Center, 1995 AIR 1811; Lily White vs. R Munuswami, AIR 1966 Mad 13). As compared to conventional contracts, e-contracts face three major issues, first, contract has to be physically signed, and this problem has been resolved with the use of electronic signatures. Second, age of anyone transacting online can't be verified, whereas the Indian Contract Act 1872 clearly states that contract is not enforceable against minor. Third, paying stamp duty as in case of physical documents is not workable in case of e-contracts.

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[70] EDWARD A. PISACRETA, SETH H. OSTROW & KENNETH A. ADLER, INTELLECTUAL PROPERTY LICENSING: FORMS AND ANALYSIS (Lslf ed. 2015).

[71] Michelle Garcia, *Browsewrap : A Unique Solution to the Slippery Slope of the Clickwrap Conundrum*, 36 CAMPBELL LAW REV. 31–74 (2014), http://scholarship.law.campbell.edu/cgi/viewcontent.cgi?article=1573&context=clr.

[72] The Indian Contract Act 1872, , http://comtax.up.nic.in/Miscellaneous Act/the-indian-contract-act-1872.pdf (last visited Feb 23, 2015).

[73] Rajiv Rastogi, *India: Country Report on E-Commerce Initiatives*, *in* INITIATIVES FOR E-COMMERCE CAPACITY BUILDING OF SMALL AND MEDIUM ENTERPRISES 133–146 (2002), http://s3.amazonaws.com/zanran_storage/www.unescap.org/ContentPages/7133916.pdf.

B. Security

Due to intangible and virtual nature of internet, parties involved in transaction with each other have great concern regarding their security and privacy. Four most relevant issues related to security are spotlit here.

1. Authentication and identification

Various technologies are available today which ensure document authentication and identity of the parties transacting online. It's very important to establish person's capacity, authority and legitimacy to enter a contract or to authenticate electronic record. Section 3 of the IT Act 2000 discuss about authentication of electronic records. Further, a new section i.e. 3A was inserted in the IT (Amendment) Act 2008 and digital signatures were substituted with "electronic signatures".

2. Privacy

While completing an online transaction, a lot of personal information is collected i.e. user's identity, preferences, patterns of search and financial information. This may give rise to two primary privacy concerns, i.e. misuse and unauthorized access of personal information.[74] The IT Act 2000 partially covered privacy issue under section 72, which mentioned about penalty for breach of confidentiality and privacy; section 67 talks about publication of obscene information in electronic form. Privacy was further discussed in the IT (Amendment) Act 2008 and provision were chalked out pertaining to punishment for violation of privacy (Section 66E), punishment for disclosure of information in breach of lawful contract (Section 72A), punishment for publishing or transmitting obscene material in electronic form (Section 67), punishment for publishing or transmitting of material containing sexually explicit act etc. in electronic form (Section 67A) and punishment for publishing or transmitting of material depicting children in sexually explicit act etc.., in electronic form (Section 67B). Concept of violation of privacy is dealt with limited sense under the IT (Amendment) Act 2008, in a way that privacy of a person is deemed to be violated where images of private body areas are captured.

[74] Nishith Desai Associates, E-COMMERCE IN INDIA, http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research Papers/E-Commerce_in_India.pdf (last visited Feb 19, 2015).

3. Data protection

Since the IT Act 2000 was not addressing data protection issues; a provision of "compensation for failure to protect data" was introduced under newly inserted section 43A under the IT (Amendment) Act 2008. Later, Reasonable security practices and procedures and sensitive personal data or information rules 2011 provided framework for protection of data in India.[75] To protect SPDI in the electronic medium, The Data Protection Rules also set guidelines and compliances for body corporate or any person on its behalf handling SPDI, regarding transfer, collection, disclosure of information and reasonable security practices and procedures to protect it.

Data protection and privacy were unaddressed in Indian legislation, but after Kharak Singh vs. State of UP, AIR 1963 SC 1295 and People's Union of Civil Liberties vs. the Union of India, 1997 (1) SCC 318, Supreme Court of India recognized the "right to privacy" as subset to "right to life and personal liberty".

4. Security of systems

As sensitive information like passwords, personal details etc. are kept on servers of e-commerce companies; security of such information becomes crucial. These security threats can be external (from hackers, viruses and Trojan horses) or internal (companies own technical staff and employees). The IT Act 2000, list out about hacking with computer system (Section 66) and related penalties. Similarly, section 65 brings up about tampering with computer source documents. Section 66 was amended in the IT (Amendment) Act 2008 to observe computer related offences, but still system security was not adequately addressed. Reasonable security practices and procedures and sensitive personal data or information rules 2011 lists out security practices and standards, and suggests comprehensive documented information security programme and information security policies that contain managerial, technical, operational and physical security control measures that commensurate with information assets being protected with the nature of business.

[75] Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules 2011, , http://deity.gov.in/sites/upload_files/dit/files/RNUS_CyberLaw_15411.pdf (last visited Feb 23, 2015).

C. Junk mail and spamming

Spam, which is also known as Unsolicited Bulk Email (UBE) or Unsolicited Commercial Email (UCE) refers to electronic mail advertisements that are addressed to a recipient with whom the initiator has no existing business or personal relationship and they are not sent at the request of or with the express consent of the recipient.[76,77] Spammers find it most cheap and efficient mean of contacting potential customers with wide coverage area.[78] India is ranked fifth in the rating of countries most often attacked by phishers.[79] India contributes almost 3.43% of unwanted mail, and is ranked 6th as source of world's spam.[80]

There has been no discussion on issue of spamming in the IT Act 2000. It only refers to punishment meted out to a person, who after having secured access to any electronic material without the consent of the concerned person discloses such information to any other person. Since illegality of spamming is not considered, spam legislation is non-existent in India.[81] Although it has not been specifically mentioned but it can be interpreted in the provisions mentioned in section 66A of the IT (Amendment) Act 2008 that, sending of menacing, annoying messages and also misleading information about the origin of the message is punishable with imprisonment up to three years with fine. The Indian chapter of the Coalition Against Unsolicited Commercial Email (CAUCE) is an ad hoc, all volunteer organization, created by netizens, dedicated to control the spam problem before it snowballs into a crisis.[82]

In India, first judicial order to curb unsolicited emails was Panatone Finwest Ltd vs. McCoy Infosystems Pvt Ltd, in which Delhi High Court restrained McCoy

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[76] Priyanka Vora, "SPAM! SPAM! SPAM!" THE NEED FOR AN ANTI-SPAMMING LAW IN INDIA, http://thegiga.in/LinkClick.aspx?fileticket=wMpHW5Ur8JA=&tabid=589 (last visited Feb 24, 2015).

[77] MICHAEL D. SCOTT, INTERNET AND TECHNOLOGY LAW DESK REFERENCE (8th ed. 2007).

[78] David E Sorkin, *Unsolicited Commercial E-Mail and the Telephone Consumer Protection Act of 1991*, 45 BUFFALO LAW REV. 1001–1032 (1997), http://repository.jmls.edu/cgi/viewcontent.cgi?article=1242&context=facpubs.

[79] Tatyana Shcherbakova, Maria Vergelis & Nadezhda Demidova, SPAM IN AUGUST 2014 (2014), https://securelist.com/analysis/monthly-spam-reports/66647/spam-in-august-2014/ (last visited Feb 25, 2015).

[80] Neha Madaan, INDIA RANKED 6TH IN SOURCE OF WORLD'S SPAM, http://timesofindia.indiatimes.com/tech/tech-news/India-ranked-6th-in-source-of-worlds-spam/articleshow/45514042.cms (last visited Feb 25, 2015).

[81] Rahul Donde, SPAM : IS IT TIME TO LEGISLATE ?, http://www.legalservicesindia.com/articles/spamli.htm (last visited Feb 25, 2015).

[82] M Tariq Banday & Jameel A Qadri, *Spam-Technological and Legal Aspects*, 13 KASHMIR UNIV. LAW REV. 1–25 (2006), http://arxiv.org/ftp/arxiv/papers/1112/1112.5621.pdf.

Infosystems Pvt Ltd and its proprietor from transmitting unauthorized and unsolicited UBCE into the resources of VSNL. [83]

D. Content regulation

Content regulations and compliance is extremely important for e-commerce ventures as these ventures distribute content or act as platform for distribution or exchange of third party information/content. Section 79 of the rules made under the IT (Amendment) Act 2008, intermediaries must observe due diligence to oversee appropriateness of all the contents. Moreover, the "intermediaries" of data are required to adhere to various duties and obligations and observe due diligence while dealing with information of third parties and in effect data that intermediaries themselves choose to publish.[84] To regulate content there are sufficient legislations in India which are discussed below.

1. Issue of Obscenity

Content of specific nature on the internet is prohibited by The Intermediary Guidelines Rules and an intermediary, such as a website host, is required to block such content.[85] According to the Intermediaries Guidelines Rules, intermediaries can be liable and: "shall not knowingly host or publish any information or shall not initiate the transmission, select the receiver of transmission, and select or modify the information contained in the transmission" for any information from "users" that is "grossly harmful, harassing, blasphemous, defamatory, obscene, pornographic, paedophilic, libelous, invasive of another's privacy, hateful, or racially, ethnically objectionable, disparaging, relating or encouraging money laundering or gambling, or otherwise unlawful in any manner whatever".[86] These rules indirectly allow the Indian government to control content being published on the Internet. Although Indian government is unable to control content on the Internet, but by controlling the ISPs, it is giving itself enough powers to control access of its citizens to that content.[87] In a landmark case Avnish Bajaj vs. State

[83] PTI, DELHI HC RAPS FIRM OVER SPAM MAIL, http://www.rediff.com/money/2004/jan/13spam.htm (last visited May 19, 2015).

[84] Neha Chauhan, NEW STRINGENT IT RESTRICTIONS ON ONLINE CONTENT, CYBER CAFES, PERSONAL DATA USE EXPLAINED, CRITICISED, http://www.legallyindia.com/201106062140/Regulatory/new-stringent-it-norms-on-privacy-online-content-cyber-cafes-explained-criticised (last visited Feb 26, 2015).

[85] Chakshu Roy & Harsimran Kalra, RULES & REGULATIONS REVIEW, http://www.prsindia.org/uploads/media/IT Rules/IT Rules and Regulations Brief 2011.pdf (last visited Feb 22, 2015).

[86] Chauhan, *supra* note.

[87] Nikhil Pahwa, HOW THE INDIAN GOVERNMENT PLANS TO REGULATE ONLINE CONTENT & BLOGS,

(N.C.T.) of Delhi, Avnish Bajaj, CEO, Bazee.com was arrested after an obscene MMS was listed for sale on Bazee.com. Avnish was arrested under section 67 of the IT act 2000.[88]

There are certain issues with the Intermediary Guidelines Rules; first, right to free speech is violated by blocking of content on the internet. Second, these rules differ from the requirements governing content of other media like newspapers and television.[89] Third, there are practical difficulties involved in bulk-blockage of internet content such as porn, as server of such websites reside outside India's jurisdictional limits and government has no locus standi to regulate content uploaded to these servers.[90]

Obscenity issue is highlighted under section 292 of IPC, according to which "a book, pamphlet, paper, writing, drawing, painting, representation, figure or any other object, shall be deemed to be obscene if it is lascivious or appeals to the prurient interest or if its effect, or where it comprises two or more distinct items, the effect of any one of its items, is, if taken as a whole, such as to tend to deprave and corrupt person, who are likely, having regard to all relevant circumstances, to read, see or hear the matter contained or embodied in it". Violation would lead to imprisonment for a term up to 2 years and fine up to INR 2000 for the first time offenders and in case of second or subsequent conviction, imprisonment term increase to 5 years and fine up to INR 5000.

The Indecent Representation of Women (Prohibition) Act 1986 defines "indecent representation of women" as "the depiction in any manner of the figure of a woman; her form or body or any part thereof in such way as to have the effect of being indecent, or derogatory to, or denigrating women, or is likely to deprave, corrupt or injure the public morality or morals".[91] This central law, which existed well before introduction of Sections 67 and 67A of the IT (Amendment) Act 2008 has been overshadowed by these two later provisions which were meant

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http://www.medianama.com/2011/02/223-indias-draft-blogger-guidelines/ (last visited Feb 26, 2015).

[88] S Muralidhar, AVNISH BAJAJ VS STATE (N.C.T.) OF DELHI, http://indiankanoon.org/doc/309722/ (last visited May 20, 2015).

[89] Roy and Kalra, *supra* note.

[90] SFLC_ADMIN, SUPREME COURT DIRECTS ANTI - PORN PETITION TO BE PLACED BEFORE CYBER REGULATIONS ADVISORY COMMITTEE, http://sflc.in/supreme-court-directs-anti-porn-petition-to-be-placed-before-cyber-regulations-advisory-committee/ (last visited Feb 26, 2015).

[91] Indecent Representation of Women (Prohibition) Act 1986, , http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/genericdocument/wcms_300630.pdf (last visited Feb 26, 2015).

specifically for digital publication.[92] Individually, the IT Act offers very limited help to women depicted on the internet.

2. Cyber Defamation

The term defamation is used to define the injury that is caused to the reputation of a person in the eyes of a third person. The injury can be done by words oral or written, or by signs or by visible representations. Cyber defamation is publishing of defamatory material against another person with the help of computers or internet.[93] Cyber defamation can be committed through World Wide Web, discussion groups, intranets, mailing lists and bulletin boards and e-mails. Liability may fall on the primary publisher (e.g. web site content providers, e-mail authors etc.) or secondary party (internet service providers or bulletin board operators).[94]

Section 66A of the IT (Amendment) Act 2008 clearly mentions punishment for sending offensive messages through communication services, causing insult, injury or criminal intimidation. Origin of such messages shall be punishable with imprisonment for a term which may extend to three years and with fine.

Section 499 of IPC has a provision of punishment of defamation as imprisonment for up to two years and/or with fine. Section 469 of IPC says that whoever commits forgery, intending that the document or electronic record forged shall harm the reputation of any party, or knowing that it is likely to be used for that purpose shall be punished with imprisonment of either description for a term which may extend to three years and shall also be liable to fine. Under section 501 of IPC printing or engraving matter known to be defamatory is also an offence and attracts punishment. Section 503 of IPC defines the offense of criminal intimidation by use of emails and other electronic means of communication.

In addition to other laws governing content in all media include provisions (including those for defamation, incitement to offence, obscenity etc.) in the Indian

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[92] Debarati Halder, *Examining the scope of Indecent Representation of Women (Prevention) Act, 1986 in the light of cyber victimisation of women in India*, 11 NATL. LAW SCH. J. 188–218 (2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2270061.

[93] Helplinelaw.com, CYBER DEFAMATION IN INDIA, http://www.helplinelaw.com/employment-criminal-and-labour/CDII/cyber-defamation-in-india.html (last visited Feb 27, 2015).

[94] Vivek Kumar Verma, CYBER DEFAMATION & LIABILITIES OF INTERNET SERVICE PROVIDERS (ISPS) AND INTERMEDIARY IN INDIA & UK WWW.CORPORATRIX.WORDPRESS.COM 1–7, https://indiancaselaws.files.wordpress.com/2014/04/cyber-defamation-liabilities-of-internet-service-providers-isps-and-intermediary.pdf (last visited Feb 27, 2015).

Penal Code, the Cinematograph Act, the Copyright Act, the Broadcasting Regulations, the advertising code, etc..[95] Despite all these legislation India's is still facing trouble with monitoring of social media.[96]

E. Intellectual property issues

Intellectual property refers to creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce.[97] In the 20th century technological developments have transformed the majority of wealth-creating work from physical-based to knowledge-based. In this global environment work force, knowledge and expertise can be transported instantly and competitive advantage gained by one company can be eliminated overnight.[98] Under the agreement and obligations created by Trade Related Intellectual Property Rights (TRIPS), India has compiled the necessary statutes and amended the existing statues. Not just computer software but underlying design, contents, links, original text, audio, graphics on a web page are copyrighted and protected under Article 10 of the TRIPS agreement and Article 4 and 5 of WIPO Copyright Treaty.[99] Main form of intellectual property vis-a-vis e-commerce are *Copyrights*, which include content, design, software underlying the website and its platform; *Trademarks*, which include logos, taglines or words through which an e-commerce business is known. It also includes protecting trademarks of brands it sells through its platform; *Patents*, includes software functionality and methods underlying e-commerce.[100] The IT Act 2000 from the perspective of laws of copyright do not offer any concrete framework to tackle with specific copyright violations on the internet. However some aspect of copyright can be inferred from Section 43 of the Act which relates to penalty for damage to computer, computer system, etc.[101]

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[95] The Hoot, CYBER RIGHTS FAQS, http://www.thehoot.org/web/home/cyber6.php?cid=52&sid=6276 (last visited Feb 26, 2015).

[96] Anita Babu, INDIA'S TROUBLE WITH MONITORING OF SOCIAL MEDIA CONTINUES, http://www.business-standard.com/article/current-affairs/india-s-trouble-with-monitoring-of-social-media-continues-114121500487_1.html (last visited Feb 26, 2015).

[97] WIPO, WHAT IS INTELLECTUAL PROPERTY?, http://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf (last visited Feb 28, 2015).

[98] BITS-Pilani, INTELLECTUAL PROPERTY RIGHTS, http://www.bits-pilani.ac.in/uploads/Patent_ManualOct_25th_07.pdf (last visited Feb 28, 2015).

[99] Aradhana Pandey, Ravi Mishra & Saumya Tripathi, IPR AND ENFORCEMENT MECHANISM, http://www.legalserviceindia.com/article/l260-IPR-And-Enforcement-Mechanism.html (last visited Mar 20, 2015).

[100] WIPO, INTELLECTUAL PROPERTY ISSUES RELATED TO ELECTRONIC COMMERCE, http://www.wipo.int/export/sites/www/sme/en/e_commerce/pdf/ip_ecommerce.pdf (last visited May 12, 2015).

[101] Pandey, Mishra, and Tripathi, *supra* note.

Similarly, there is mention regarding tampering with computer source documents in Section 65 with an object to protect the intellectual property (computer source codes) invested in the computer.[102]

Some of the major issues related to intellectual property rights in e-commerce are related to design of platform through third party, use of third party content on the website, use of hyperlinking, deep linking framing and meta tagging in pursuit of marketing goals and issue related to domain names. Here issues related to domain are highlighted and elaborated further.

A domain name is fantastic navigator to a company on the internet and the virtual image of business. It performs same functions online, as performed by trademark in the offline business dealings and transactions. As trademarks or service marks, the domain names are registered and protected at the entire global level supremely by only one organization known as ICANN (Internet Corporation for Assigned Names and Numbers), along with the National Trademark Law. There is no legislation in India which explicitly refers to dispute resolution in connection with domain names but under the Trade Marks Act of 1999 and the Trade Marks Rules of 2002 (and all amendments made in these so far), any person or business or professional entity may obtain protection to his/her/its newly created domain name in entire India.[103] One of the most crucial type of domain dispute prevalent around the world is *cyber-squatting*, a situation where, a mark or personal name as a domain name over internet is registered by the registrant with an intention to sell the names back to businesses to attain profit when they want to set up their own websites.[104,105,106] First cybersquatting case in India was Yahoo Inc. vs. Aakash Arora & Anr, AIR 2000 Bom 27, [107] there have been other case like Rediff

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[102] Pradnya Pahurkar, OFFENCES & PENALTIES UNDER THE IT ACT, 2000, http://www.legalservicesindia.com/article/article/offences-&-penalties-under-the-it-act-2000-439-1.html (last visited Mar 20, 2015).

[103] Hemant Goyal & Mohit Porwal, INDIA : PROTECTION OF DOMAIN NAME AS A TRADEMARK, http://www.mondaq.com/india/x/327272/Trademark/Protection+of+Domain+Name+As+A+Trademark (last visited Feb 28, 2015).

[104] Thekla Hansen-Young, *Whose Name is it, Anyway ? Protecting Tribal Names from Cybersquatters*, 10 VIRGINIA J. LAW TECHNOL. 1–18 (2005), http://www.vjolt.net/vol10/issue3/v10i3_a6-Hansen-Young.pdf.

[105] Ashwin Madhavan, DOMAIN NAMES AND CYBERSQUATTING, http://www.indialawjournal.com/volume1/issue_2/article_by_ashwin.html (last visited Feb 28, 2015).

[106] John D Mercer, CYBERSQUATTING: BLACKMAIL ON THE INFORMATION SUPERHIGHWAY, http://128.197.26.36/law/central/jd/organizations/journals/scitech/volume6/mercer.pdf (last visited Feb 28, 2015).

[107] Prashant Mali, DOMAIN NAME DISPUTES AND LAW IN INDIA CSI COMMUNICATIONS 33 (2012), http://www.csi-india.org/c/document_library/get_file?uuid=5e9efaed-d7f5-447f-8bd8-2e67abd565a

Communication vs Cyberbooth & Anr 1999 PTC (19) 201 and Satyam Infoway Ltd. vs Sifynet Solutions Pvt. Ltd. AIR 2004 SC 3540. These disputes may be broadly categorized as, disputes between trademark and domain name owners and between domain name owners inter se. Careful examination of the judgments given by the courts in India reveals that protection available under the Act is stronger than internationally required and provided. But there are certain issues, for instance, the Trade Marks Act, 1999 itself is not extra territorial and may not allow for adequate protection of domain names. Secondly, Rule 2 of the UDNDR Policy requires the applicant to determine that the domain name for which registration is sought, does not infringes or violates someone else's rights. Thus, if the domain name, proposed to be registered, is in violation of another person's "trademark rights", it will violate Rule 2 of the Policy. In such an eventuality, the Registrar is within his right to refuse to register the domain name. This shows that a domain name, though properly registered as per the requirements of ICANN, still it is subject to the Trademarks Act, 1999 if a person successfully proves that he has 'rights' flowing out of the Act.[108] Cybersquatting has been prevalent in India since the advent of internet in the continent, as of now there has been no such law like that of the United States which prohibits Cybersquatting.[109] Harmonious application of the principles of the trademark law and the provisions concerning the domain names is required at present time.[110]

Because of vastness of internet the issue of IP infringement becomes rarified as dissemination and duplication of IP is instantaneous, easy and anonymous over World Wide Web and detecting infringer is difficult. On the issue of protection of intellectual rights (patents, trademarks, copyrights) including domain names the IT Act is silent,[111] but the IT Act in India, is enabled by other Acts to protect Intellectual Property infringements. For instance dispute resolution in connection with domain names is under the Trade Marks Act 1999,[112] which is in compliance with the TRIPS obligations. Substantial amendments have been done in 2012 in the Indian Copyright Act 1957[113] to protect computer databases and software

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c (last visited Feb 27, 2015).

[108] Priyanka Sharma, DOMAIN NAME PROTECTION IN INDIA, http://cyberlawsinindia.blogspot.in/2010/02/domain-name-protection-in-india.html (last visited Feb 28, 2015).

[109] Mali, *supra* note.

[110] Praveen Dalal, DOMAIN NAME PROTECTION IN INDIA, http://www.naavi.org/cl_editorial_04/praveen_dalal/pd_domain_name_nov4.htm (last visited Feb 28, 2015).

[111] Rastogi, *supra* note.

[112] The Trade Marks Act 1999, , http://www.ipindia.nic.in/tmr_new/tmr_act_rules/TMRAct_New.pdf (last visited Feb 25, 2015).

[113] Indian Copyright Act 1957, , http://copyright.gov.in/Documents/CopyrightRules1957.pdf (last

programs as "literary work". Law governing patents in India i.e. the Patents (Amendment) Act 2005[114] has been amended thrice since 1999 to comply under TRIPS.

F. Payment

Payments are the backbone of the economy; similarly, for successful evolution of e-commerce smooth servings payment mechanisms are vital. As compared to traditional payment methods electronic payment methods are complex and multi-player, involving buyer, seller, *payment processors* (constitute core functions involving clearing, payment and settlement), *intermediaries* (entities that collect monies received from customers for payment to merchants using any electronic/online payment mode, for goods and services availed by them and subsequently facilitate the transfer of these monies to the merchants in final settlement of the obligations of the paying customers) [115] and *technology providers* (facilitate transmission of customer/merchant data, instructions, approvals, denials etc. through hardware and software). As illustrated in figure 4, online payment services poses complex practical challenges as it includes technological capabilities of service providers, commercial relationships, issues of regulation and law (buyer and seller protection), security considerations including identification issues, such as authentication and verification, and co-ordination among a variety of parties with different and sometimes competing interests.[116] Existing payment instruments include credit cards/debit cards, mobile payments, electronic cash and conventional offline system like cash on delivery. Credit cards are not very popular in India and penetration of credit cards vise-a-vis total population is meager 2%.[117] Both traditional and electronic payment systems in India are regulated by the Payment and Settlement Systems Act 2007[118], which defines payment system as, "a system that enables payment to be effected between a payer and a beneficiary, involving clearing, payment or settlement services or all of them but does not include a stock exchange". It is further fortified by RBI

visited Feb 27, 2015).

[114] The Patents (Amendment) Act 2005, , http://ipindia.nic.in/ipr/patent/patent_2005.pdf (last visited Feb 27, 2015).

[115] RBI, DIRECTIONS FOR OPENING AND OPERATION OF ACCOUNTS AND SETTLEMENT OF PAYMENTS FOR ELECTRONIC PAYMENT TRANSACTIONS INVOLVING INTERMEDIARIES, http://rbidocs.rbi.org.in/rdocs/notification/PDFs/DOIPS241109.pdf (last visited Mar 2, 2015).

[116] OECD, ONLINE PAYMENT SYSTEMS FOR E-COMMERCE, http://www.oecd.org/internet/ieconomy/36736056.pdf (last visited Mar 2, 2015).

[117] Sutherland Insights, INDIA CREDIT CARD MARKET OVERVIEW, http://www.sutherlandinsights.com/india-credit-card-market-overview (last visited Oct 10, 2014).

[118] The Payment and Settlement Systems Act 2007, , http://rbidocs.rbi.org.in/rdocs/Publications/PDFs/86706.pdf (last visited Feb 27, 2015).

guidelines which prevent security/privacy breach and control fictitious transactions but these guidelines also retard growth of e-commerce. Despite of these guidelines, in 2014, Uber Technologies, a US based taxi hailing company used an overseas gateway to conduct transactions, and violated Indian regulations by "bypassing" rules. Uber used customer's stored credit card information and directly processed payments, and did not follow two-step verification which is essential for all e-commerce transactions in India.[119] Further, lack of consumer trust in online merchants has forced companies to offer cash-on-deliver, which has created a whole new market for e-commerce in India.[120] But CoD (cash on delivery) services significantly increase financial costs (labor, cash handling and higher returns of purchased items) which act as impediment in disguise.[121]

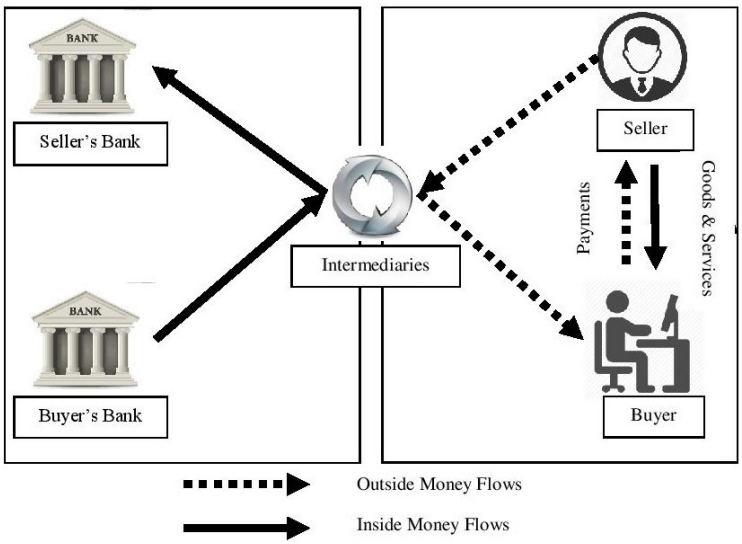

Figure 4. Electronic Payment System.

Source: Sumanjeet (2009)

[119] Suvashree Choudhury, INDIA WORKING TO FIX E-COMMERCE PAYMENTS POST-UBER CASE, http://in.reuters.com/article/2014/12/27/india-rbi-uber-idINKBN0K505F20141227 (last visited May 23, 2015).
[120] Satya Krishna Ganni, HOW THE GROWTH OF INDIAN ECOMMERCE WILL END BY 2016, http://trak.in/tags/business/2015/02/18/indian-ecommerce-growth-mcommerce/ (last visited Feb 19, 2015).
[121] PWC, *supra* note.

The Indian IT Act is not equipped to handle issues like high transaction costs of cross-border operations (tax and regulatory issues) and security risks. Secondly, even when the payment systems are domestically well equipped, they are not available internationally or become too costly or complicated. Third, CoD can only be offered to domestic customers and to buy internationally customers have to risk their money and privacy. Fourth, additional service costs and currency fluctuations can increase the transaction costs of cross-border payments. A recent study revealed that consumers' concerns related to payment security, data protection and the fear of online fraud are particularly high in case of international transactions.[122] Lastly, very often customer are not able to determine responsible parties for addressing any problems that arise, the procedures for seeking redress, and the types of remedies that may be obtained.[123]

Payment related issues can be significantly checked, for instance customer will not mind additional cost if they know that the payment method being used is trustworthy. Secondly, customers can be educated regarding safety rules for on-line payments and about their rights and obligations when numbers of parties (such as mobile operators, Internet service providers, and social media) are involved in a transaction.[124] Third, international co-operation in enforcement of security rules for electronic transactions can be strengthened.[125] Present online payments mechanisms and internet banking system are not up to the mark and invite cyber-crimes and financial frauds. The Reserve Bank of India (RBI) has issued strict warning to Indian banks and financial intermediaries to ensure cyber security.[126]

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[122] EC, REPORT ON CROSS-BORDER E-COMMERCE IN THE EU, http://ec.europa.eu/consumers/archive/strategy/docs/com_staff_wp2009_en.pdf (last visited Mar 2, 2015).

[123] OECD, CONSUMER POLICY GUIDANCE ON MOBILE AND ONLINE PAYMENTS, http://www.oecd-ilibrary.org/docserver/download/5jz432cl1ns7.pdf?expires=1424496555&id=id&accname=guest&checksum=AA23E0250AAA1D870A5F8760CAB7B9B7 (last visited Feb 21, 2015).

[124] *Id.*

[125] OECD, ELECTRONIC AND MOBILE COMMERCE, http://www.oecd-ilibrary.org/docserver/download/5k437p2gxw6g.pdf?expires=1424497530&id=id&accname=guest&checksum=4FF60849320F273DAAF88E35690C9282 (last visited Feb 21, 2015).

[126] Perry4Law Techno Legal Base, ONLINE SHOPPING IN INDIA : LEGAL AND CYBER SECURITY ISSUES, http://ecommercelawsinindia.blogspot.in/2012/03/online-shopping-in-india-legal-and.html (last visited Oct 5, 2014).

G. Taxation of e-commerce transactions

Assessing tax and collecting revenue for transactions carried over cyberspace is difficult because of rapid technological developments, absence of boundaries and intangible nature of transactions in goods/services.[127] The Organization for Economic Cooperation and Development (OECD) highlighted guiding principles for the taxation of e-commerce transaction, i.e. neutrality, efficiency, certainty and simplicity, effectiveness and fairness and flexibility.[128] Introduction of separate tax regime for e-commerce transactions was excogitated by the High Powered Committee (HPC) constituted by the Central Board of Direct Taxes, but quoting principle of 'neutrality', HPC maintained that no separate regime for the taxation of e-commerce transactions is required and existing laws are sufficient.[129] To get a piece of growing e-commerce revenue, Indian states are looking at ways to tax e-commerce transactions. Tax laws are trying to keep pace with evolving business models and corporate structures, especially in the context of most large e-commerce companies boasting marketplace models.[130] Still, India is struggling with taxation issues which are highlighted and discussed below on the basis of two broad classifications of taxes[131] -

1. Direct Taxes

The Income Tax Act 1961 governs taxation of income in India. Residents are subject to tax in India on their worldwide income, whereas non-residents are taxed only on income sourced in India. There are two main issues with respect to income generated by non-residents from e-commerce transactions, first is *Characterization of income* i.e. whether income earned with respect to the use or sale of goods (particularly items such as software and electronic databases) and sale of advertising space etc. is royalty or business income or capital gains.[132] Since characterization of income by Indian tax authorities is not in consonance with international principles, non-residents could potentially face the risk of double

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[127] Arya Mukesh, AUDITING E-TAXATION INTO IT 34–39 (2009), http://intosaiitaudit.org/intoit_articles/18p36top41.pdf (last visited Mar 5, 2015).

[128] OECD, TAXATION AND ELECTRONIC COMMERCE: IMPLEMENTING THE OTTAWA TAXATION FRAMEWORK CONDITIONS, http://www.oecd.org/tax/consumption/Taxation and eCommerce 2001.pdf (last visited Feb 21, 2015).

[129] Nishith Desai Associates, *supra* note.

[130] Livemint.com, STATES LOOK TO PLUG TAX GAPS IN E-COMMERCE, http://www.livemint.com/Politics/VTh4Ud2Zrxgmp2XOWTQKCK/States-look-to-plug-tax-gaps-in-ecommerce.html (last visited Mar 5, 2015).

[131] Vitt.in, ALL INDIAN TAXES (2015), http://www.vitt.in/taxes.html (last visited Mar 8, 2015).

[132] OECD, TAX TREATY CHARACTERISATION ISSUES ARISING FROM E-COMMERCE, http://www.oecd.org/tax/consumption/1923396.pdf (last visited Mar 7, 2015).

taxation. For example, definition of royalty under the ITA is wider than the internationally accepted definition. In addition, issues like payments made for the maintenance of software, website hosting, data warehousing, data retrieval, delivery of high value data etc., have not yet been tested in the court of law yet, and the characterization of such transactions is still uncertain (Director Income Tax v. Nokia Networks OY (2012) 253 CTR (Del) 417; DDIT vs. Reliance Infocomm Ltd/Lucent Technologies, 2013 (9) TMI 374; Standard Chartered Bank v. DDIT, (2011) 11 taxmann.com 105 (MUM); Dell International Services (India) Pvt. Ltd., In re, 305 ITR 37 (AAR); Cable and Wireless Networks India (P) Ltd., In re, 315 ITR 72 (AAR); Yahoo India Pvt. Ltd. v. DCIT, ITA No.506/Mum/2008; Pinstorm Technologies Pvt Ltd v. ITO, TS 536 ITAT (2012) Mum; ITO v. Right Florists Ltd, I.T.A. No.: 1336/ Kol/ 2011).

Second is *a permanent establishment (PE) issue* that may arise due to the presence of a server/other electronic terminal in India, hosting of websites or other technical equipment, etc..[133, 134] Due to intangible nature of transactions in e-commerce establishing the existence of PE is difficult. Indian tax authorities assert that a website could constitute a PE in certain circumstances and have expressed reservations to the OECD commentary in this regard (Amadeus Global Travel v. Deputy Commissioner Income Tax, (2008) 19 SOT 257, Delhi).

2. Indirect taxes

Indirect tax is the charge that is collected by intermediary and passed on to the government, from the individual who actually suffers the economic burden of the tax.[135] In India, e-commerce and internet-based business models are taxed in a way which conflicts with international approaches. Laws regulating e-commerce in India are still evolving and lack clarity.[136] The IT Act of India is silent on indirect taxation of electronic transactions and issues like customs duty for cross border sales, sales tax, etc. of goods and services delivered electronically are not clearly spelled out.[137] Main indirect taxes levied are limned below -

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[133] OECD, THE IMPACT OF THE COMMUNICATIONS REVOLUTION ON THE APPLICATION OF "PLACE OF EFFECTIVE MANAGEMENT" AS A TIE BREAKER RULE, http://www.oecd.org/ctp/treaties/1923328.pdf (last visited Mar 7, 2015).

[134] OECD, ATTRIBUTION OF PROFIT TO A PERMANENT ESTABLISHMENT INVOLVED IN ELECTRONIC COMMERCE TRANSACTIONS, http://www.oecd.org/tax/treaties/1923312.pdf (last visited Mar 7, 2015).

[135] ACE Legal, INDIRECT TAXES, http://www.consultacelegal.com/knowledge-center/indirect-taxes (last visited Feb 22, 2015).

[136] PWC, *supra* note.

[137] Rastogi, *supra* note.

- Service Tax – There is no exempt on any specific kind of e-commerce transactions. The location of the receiver is treated as the place where service is delivered.

- Sales Tax - In context of e-commerce transactions, the Supreme Court has held that intangible goods such as software put in a tangible media, technical knowhow and other IPRs are goods for the purpose of sales tax.[138] A survey within the EU put in foreground consumption taxes (such as VAT) as most pressing impediment for small and medium enterprises involved in e-commerce. These small firms have no expertise in negotiating with bureaucratic complexity of foreign systems.[139]

- Customs Duty – In India, any fees paid as royalties or license fee must be added to the customs value. In case of embedded copyrightable software, the value of the software, only if invoiced separately, is added to the valuation of the equipment for purposes of customs duty.[140]

- Excise Duty - Excise duty is payable on non-customized software but exempt on customized software which originates in India.

The taxation issues have caught attention both at international and national levels and governments and authorities are exploring remedial measures. The Committee on Fiscal Affairs (under OECD) specifically identified certain work topics and issues. These include direct tax issues and allocation of income, consumption tax issues, the role of technology-based systems in tax collection and tax administration issues, the means to address significant compliance challenges and exploiting taxpayer service opportunities.[141, 142, 143] The High Powered Committee (HPC) of Ministry of Finance, India acknowledged need of high level of preparedness of the tax administrators to cope with the advent of e-commerce

[138] The Customs Act 1962, , http://odishapolice.gov.in/sites/default/files/PDF/The Customs Act 1962.pdf (last visited Mar 9, 2015).
[139] EC, *supra* note.
[140] Nishith Desai Associates, *supra* note.
[141] OECD, TAX ADMINISTRATION ASPECTS OF ELECTRONIC COMMERCE: RESPONDING TO THE CHALLENGES AND OPPORTUNITIES, http://www.oecd.org/tax/treaties/1923272.pdf (last visited Feb 21, 2015).
[142] Collin Lau & Andrew Halkyard, FROM E-COMMERCE TO E-BUSINESS TAXATION ASIA-PACIFIC TAX BULLETIN 2–13 (2003), http://unpan1.un.org/intradoc/groups/public/documents/unpan/unpan008624.pdf (last visited Mar 7, 2015).
[143] OECD, CONSUMPTION TAX ASPECTS OF ELECTRONIC COMMERCE, http://www.oecd.org/tax/consumption/2673667.pdf (last visited Mar 7, 2015).

and tried to address enforcement challenge in their report "Taxation and E-Commerce". Issues mentioned in the report are, identity and location of parties, anonymity of transactions and accounts, dis-intermediation, transfer pricing issues, online delivery and net cash, easy access to tax havens and low tax jurisdictions, identification of taxing jurisdiction, new evasion opportunities, recovery of tax, exchange of information and tax payer service opportunities.[144] Since e-commerce can happen over internet which is ubiquitous in nature, taxation and dispute related to e-commerce can span multiple countries as transactions at different levels may depend on resources situated in various countries. A stronger international legal framework is necessary for successful e-commerce on regional level.[145] Complexity related to taxes for firms selling goods and services abroad can be reduced via agreements between states or by providing domestic firms with assistance in navigating the requirements in foreign jurisdictions.[146] Concept of "trusted traders" has been introduced by the European Commission; where trusted traders are have privileges like trade facilitations, faster border crossing, and fewer physical inspections.[147]

E-commerce businesses catering to wide variety of audience find it difficult to manage and to stay compliant to the laws because of interpretation of intricate tax norms and complex inter-state taxation rules. To unleash the potential of e-commerce and to increase efficiency in operations, creation of jobs, growth of the industry and investments in back-end infrastructure, a favorable regulatory environment is essential.[148] Taxes on e-commerce are regulated by extension of the current tax laws. To develop an all-inclusive framework for e-commerce the IT Act has to be revisited.[149]

H. Intermediary liability

Under section 2 (w) of the IT (Amendment) Act 2008, intermediary is defined as - "intermediary", with respect to any particular electronic records, means any person who on behalf of another person receives, stores or transmits that record or provides any service with respect to that record and includes telecom service

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[144] Rashminsanghvi.com, ENFORCEMENT ISSUES IN ELECTRONIC COMMERCE, http://www.rashminsanghvi.com/downloads/taxation/international-taxation/bpo_taxation_in_india/Chapter_3-Enforcement_Issues_in_Electronic_Commerce.pdf (last visited Mar 6, 2015).

[145] Rastogi, *supra* note.

[146] OECD, *supra* note.

[147] Stefan Henningsson et al., *The Next Generation Information Infrastructure for International Trade*, 6 J. THEOR. APPL. ELECTRON. COMMER. RES. 1–15 (2011).

[148] PWC, *supra* note.

[149] Kirti Agrawal & Namrata Agrawal, *Impact of E-commerce on Taxation*, 4 INT. J. INF. COMPUT. TECHNOL. 99–106 (2014).

providers, network service providers, internet service providers, web-hosting service providers, search engines, online payment sites, online-auction sites, online-market places and cyber cafes. When the IT Act 2000 was incorporated legislators had this mindset that private commercial transactions will subject to fewer burdens than government-related interactions. But arrest of Avnish Bajaj, CEO of Baazee.com (caused by e-commerce posting generated by a third-party user of the site) forced legislators to rethink about modernizing the IT Act to cope up with advent of intermediaries and pacing e-commerce developments.[150] This led to emergence of the IT (Amendment) Act 2008. Liability regime for Indian online intermediaries, are covered by two key legislations i.e. the IT (Amendment) Act 2008 and the Copyright Act (as amended in 2012), supplemented by the Information Technology (Intermediary guidelines) Rules, which act as secondary legislation.[151] Scenario for intermediaries in India was very bad before the IT (Amendment) Act 2008.[152] The Indian government has granted intermediaries a conditional safe harbor under section 79 of the IT Act by providing that an intermediary is not liable for any third-party content hosted/made available through such intermediary under certain circumstances.[153] An e-commerce company can pre-empt any liability arising by virtue of providing a platform for third parties, by following these guidelines (MySpace was found guilty of primary copyright infringement, in the case of Super Cassettes Industries Ltd. Vs. Myspace Inc. and Anr. (2011(48) PTC49 (Del)).

As per text approved under the IT (Amendment) Act 2008, there are still lots of differences in law in India and the EU.[154] For instance differences in ISP

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[150] Apar Gupta, LIABILITY OF INTERMEDIARIES IN INDIA? FROM TROUBLED WATERS TO SAFE HARBORS, http://www.supremecourtcases.com/index2.php?option=com_content&itemid=1&do_pdf=1&id=6648 (last visited Mar 10, 2015).

[151] Martin Hvidt Thelle et al., CLOSING THE GAP-INDIAN ONLINE INTERMEDIARIES AND A LIABILITY SYSTEM NOT YET FIT FOR PURPOSE COPENHAGEN ECONOMICS 1–38 (2014), http://www.globalnetworkinitiative.org/sites/default/files/Closing the Gap - Copenhagen Economics_March 2014_0.pdf (last visited Mar 10, 2015).

[152] Alaya Legal, INDIA: INTERMEDIARIES UNDER THE INFORMATION TECHNOLOGY (AMENDMENT) ACT 2008, http://www.mondaq.com/india/x/225328/Telecommunications+Mobile+Cable+Communications/Intermediaries+Under+The+Information+Technology+Amendment+Act+2008 (last visited Mar 10, 2015).

[153] Smitha Krishna Prasad, Rakhi Jindal & Vivek Kathpalia, INTERMEDIARIES-MESSENGERS OR GUARDIANS ? HOW INDIA AND US DEAL WITH THE ROLE AND LIABILITY OF INTERMEDIARIES U.S.-INDIA BUSINESS COUNCIL'S LEGAL SERVICES NEWSLETTER 5–6 (2013), http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research Articles/Intermediaries_-_Messengers_or_Guardians.pdf (last visited Mar 10, 2015).

[154] Thelle et al., *supra* note.

liability laws in India and the US have led to continue trade-relation barriers.[155] Although efforts have been made in the form of the IT (Intermediary guidelines) Rules, but still there are plenty of gaps that are required to be plugged in so that the intermediaries can operate without inhibitions.[156] For instance, the language in the guidelines is too generic to provide univocal guidance to industry, enforcers and citizens. This creates mismatch between; actual and assumed definition of legality between users, who access content and users who create content via an intermediary; procedures that are to be followed between online intermediaries and aggrieved parties and interpretation of law among different partners of enforcement community. Secondly, Intermediaries are given very short time to react (36 hours for first reaction); in case it receives notice regarding third party content. Third, an unclear or unjustified notification can put intermediary in dilemma of choice between rights and wrong. Fourth, the Copyright Act, as amended in 2012 is relevant to online intermediaries as they involve transmission of third party content, but great deal of ambiguity in interpretation of law has been observed and conditions under which intermediaries are protected against liability are unclear. This problem can be attributed to mismatch between copyright and the IT Act legislation.[157]

Across the globe updating rules in pace with rapid technological developments is very difficult for the policy makers. The IT (Intermediary guidelines) Rules need to be revisited, which may include, statements explicitly specifying the imperative to safeguard intermediaries from liability where a third party is the source of the content at stake and qualified immunity for intermediaries, if they are complying with court orders. Secondly, clarity in written legislation should be bought to remove heterogeneity between state and local level enforcement. Third, a legal framework should be made which ensures clear expectations by aggrieved parties and clear compliance by intermediaries, with regard to legal remedy.[158]

I. Jurisdiction issues

Business disputes for an e-commerce business/enterprise can be *contractual disputes* (between B2B and B2C) or *non-contractual disputes* (copyright, data

[155] Aakanksha Kumar, *Internet Intermediary (ISP) Liability for Contributory Copyright Infringement in USA and India : Lack of Uniformity as a Trade Barrier*, 19 J. INTELLECT. PROP. RIGHTS 272–281 (2014), http://nopr.niscair.res.in/bitstream/123456789/29290/1/JIPR 19(4) 272-281.pdf.
[156] Alaya Legal, *supra* note.
[157] Thelle et al., *supra* note.
[158] *Id.*

protection, right of free expression and competition law and domain name disputes).[159][160] A court can hear on a matter if it has both *subject-matter jurisdiction* (court's authority to decide a particular type of dispute) and *personal jurisdiction* (territorial jurisdiction determined by residence of the parties). Due to borderless nature of internet 'territorial' jurisdiction gets complex; moreover in relation to diverse categories of disputes, issues such as jurisdiction, choice of law and high cost of cross-jurisdictional litigation arise.[161] There are certain loopholes in the IT Act such as ambiguity with respect to legal jurisdiction of contracts involving international parties[162] and absence of dual-key pairs for individuals and business, compromising confidentiality of e-transactions.[163][164] In India jurisdiction and enforcement issues pertaining e-commerce are still nascent.[165] But there are certain incidences where court has assumed jurisdiction over a matter in preliminary stages (SMC. Pneumatics (India) Pvt. Ltd. vs. Jogesh Kwatra, Suit No. 1279/2001)

With respect to jurisdiction, Section 1(2) of the IT Act 2000 reads as, "It shall extend to the whole of India and, save as otherwise provided in this Act, it applies also to any offence or contravention there under committed outside India by any person".[166] Section 75 further strengthen the Act regarding its application for offence or contravention committed outside India, and reads as under, "(1) Subject to the Provisions of Sub-section (2), the provisions of this Act shall apply also to any offence or contravention committed outside India by any person irrespective of his nationality. (2) for the purposes of Sub-section (1), this Act shall apply to an offence or contravention committed outside India by any person if the act or conduct constituting the offence or contravention involves a computer, computer system or network located in India".

For enforcement of laws under the IT Act 2000, there is provision for appointment of Controller of Certifying Authorities (Section 17), adjudicating officers (Section 46) and one or more Cyber Appellate Tribunals (Chapter 10).

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[159] Sachin Mishra, DETERMINING JURISDICTION OVER E-COMMERCE DISPUTES IN INDIA MANUPATRA 1–17 (2014), http://www.manupatra.co.in/newsline/articles/Upload/FE4BA350-DBEF-49DA-97D4-09E54ED8B813.pdf (last visited Mar 11, 2015).

[160] Kah-Wei Chong & Len Kardon, E-COMMERCE: AN INTRODUCTION- DISPUTES, http://cyber.law.harvard.edu/ecommerce/disputes.html (last visited Mar 12, 2015).

[161] Mishra, *supra* note.

[162] Agrawal and Agrawal, *supra* note.

[163] *Id.*

[164] Rastogi, *supra* note.

[165] Nishith Desai Associates, *supra* note.

[166] Rajesh Tandon, ROLE OF JUDGES AND PROSECUTORS IN COMBATING WITH CYBER CRIMES, http://catindia.gov.in/writereaddata/ln_4pfyqO111912012.pdf (last visited Mar 11, 2015).

Primary function of the controller is to regulate certifying authorities issuing digital signature certificates (Section 18). To settle disputes between subscribers and certifying authorities Controller is empowered with quasi-judicial powers.[167] Contraventions of any provisions outlined in Chapter 9 are adjudged by adjudicating officers, who has Civil Court powers. Cyber Appellate Tribunal (CAT) was established by Central Government in accordance with the provisions contained under Section 48, under the aegis of Controller of Certifying Authorities. Cyber Appellate Tribunal has same powers as are vested in a civil court but it's guided by principles of natural justice. Appeal can be made before the Tribunal, if any person is aggrieved by an order made by the Controller or by an Adjudicating Officer. A further appeal can be made to High Court.

Section 3 of IPC mention about punishment of offences committed beyond but which by law may be tried within India, and read as under, "Any person liable, by any Indian law to be tried for an offence committed beyond India shall be dealt with according to the provisions of this code for any act committed beyond India in the same manner as if such act had been committed within".[168]

In terms of international jurisdiction legal provisions available in India provide *"long arm jurisdiction"* to create personal jurisdiction over business transactions of non-residents. At times countries enforce other countries law out of friendly civility i.e. *judicial comity.*[169] Legal differences have been highlighted as major barriers to e-commerce and cross-border trade under different studies.[170] There are large number of laws and provisions under judiciary which overlap, or in certain cases don't cover all issue areas.[171]

Four considerations i.e. power, effect, legitimacy and notice, which work well in physical world, do not translate effectively in virtual and borderless world of e-commerce. Therefore governments, who wish to enforce laws with respect to online business must establish jurisdiction over the conduct.[172] Secondly, there are two ways in which a sovereign can extend its prescriptive jurisdiction beyond its enforcement jurisdiction i.e. a sovereign can ask other sovereign to enforce its judgments or apply its laws under certain condition.[173] Third, both buyer and seller seek dependable and inexpensive resolution process and different techniques can be

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[167] Abhilash, *supra* note.
[168] The Indian Penal Code 1860, , http://www.icf.indianrailways.gov.in/uploads/files/The Indian Penal Code.pdf (last visited Feb 27, 2015).
[169] SCHNEIDER, *supra* note.
[170] OECD, *supra* note.
[171] *Id.*
[172] SCHNEIDER, *supra* note.
[173] Chong and Kardon, *supra* note.

deployed to achieve a workable and most acceptable solution, like credit card charge back mechanism, merchant complaint resolution mechanism or complaints to governmental authorities and consumer protection agencies. Online dispute resolution (ODR) may become successful as virtual small claims courts offering the advantage of speed, reduced cost, greater convenience and accessibility and deploy dispute resolution techniques (arbitration, mediation, negotiation) through assisted software or rules. Some providers are using "peer pressure" technique also.[174] Fourthly, information centers can be established by policy makers to provide information to buyers and sellers regarding regulations and procedures involved in trans-border e-commerce activity.[175] Fifth, policy aspects related to e-commerce activities can be included in regional trade agreements.[176] Lastly, along with the strengthening of the legal and statute framework, efficient and comprehensive infrastructure has to be built for monitoring of all e-commerce transactions.[177]

J. Consumer protection issues

In India, with regard to consumer protection, there is no separate consumer protection law which is specifically regulating online transaction, therefore the IT Act rely on the Consumer Protection Act 1986[178] which governs the relationship between consumers and goods/ service providers. Any service which is delivered free of charge, do not fall under the scope of CPA, 1986. Various remedial actions that can be imposed under CPA are removal of defects/ deficiencies, replacement of goods, return of price paid, compensations and discontinuation of unfair trade practice or the restrictive trade practice or not to repeat them. There are almost no watchdogs in the form of consumer NGOs in India, but one such agency is Citizen Consumer and Civic Action Group (CAG). CAG conducted a study in 2001 which highlighted numerous issues like privacy of information, provision of contract terms such as guarantees/ warrantees, refunds, dispute settlement, hidden costs and misleading information and other problems.[179] On international sphere Organization for Economic Co-operation and Development identified five key consumer protection issues in respect to e-commerce, which are information

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174 *Id.*
175 OECD, *supra* note.
176 *Id.*
177 Agrawal and Agrawal, *supra* note.
178 The Consumer Protection Act 1986, , http://dc-siwan.bih.nic.in/Consumer_Act.pdf (last visited Mar 2, 2015).
179 CAG, E-COMMERCE AND CONSUMER PROTECTION IN INDIA, http://dealsothon.blogspot.in/2014/07/e-commerce-and-consumer-protection-in.html (last visited Jul 20, 2014).

disclosure, fraud and misleading commercial practices, privacy issues, dispute resolution and redress.[180]

OECD Committee on Consumer Policy suggested guiding principles that apply only to business-to-consumer electronic commerce, covering transparent and effective protection, fair business, advertising and marketing practices, online disclosures, confirmation process, payment, dispute resolution and redress, privacy and education and awareness.[181]

V. Discussion - ODR an alternative approach

In country like India, where more than 30 million civil and criminal court cases are pending,[182] an alternative and efficient litigation system is urgently required. Because of delay in justice, litigation is the least favored method for resolution in business to business (B2B) or business to customer (B2C) disputes. Alternative Dispute Resolution (ADR) methods like mediation, conciliation and arbitration are gaining grounds but these methods also have limitations, as they requires physical presence of both parties and the arbitrator/conciliator/mediator.[183] In such scenario, Online Dispute Resolution (ODR) can play significant role in settling B2C, B2B, C2C, B2G, intellectual property, insurance, other financial, auctions, domain name, copyright, e-banking and privacy issues in cyberspace.[184,185,186] ODR is getting popular because of its speed, convenience, ease of access, efficiency, cost effectiveness, its reach across borders and easy storage of digital data.[187,188] Clark, Cho and Hoyle mentioned a generic eight step

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[180] OECD, *supra* note.

[181] OECD, GUIDELINES FOR CONSUMER PROTECTION IN THE CONTEXT OF ELECTRONIC COMMERCE, http://www.oecd.org/internet/consumer/34023235.pdf (last visited Mar 2, 2015).

[182] PTI, MORE THAN 3 CRORE COURT CASES PENDING ACROSS COUNTRY, http://www.ndtv.com/india-news/more-than-3-crore-court-cases-pending-across-country-709595 (last visited May 27, 2015).

[183] Anurag K Agarwal, IS INDIA READY FOR ONLINE DISPUTE RESOLUTION? IIM AHMEDABAD W.P. NO.2006-10-03 1–17 (2006), http://www.iimahd.ernet.in/publications/data/2006-10-03_aagarwal.pdf (last visited May 27, 2015).

[184] *Id.*

[185] United Nations, ONLINE DISPUTE RESOLUTION: E-COMMERCE AND BEYOND E-COMMERCE AND DEVELOPMENT REPORT 177–203 (2003), http://unctad.org/en/Docs/ecdr2003ch7_en.pdf (last visited May 28, 2015).

[186] Thomas Schultz, *Does Online Dispute Resolution Need Governmental Intervention? The Case for Architectures of Control and Trust*, 6 NORTH CAROLINA J. LAW TECHNOL. 71–106 (2004).

[187] Eugene Clark, George Cho & Arthur Hoyle, *Online Dispute Resolution: Present Realities, Pressing Problems and Future Prospects*, 17 INT. REV. LAW, COMPUT. TECHNOL. 7–25 (2003).

[188] Zheng Tang, *An effective dispute resolution system for electronic consumer contracts*, 23 COMPUT. LAW SECUR. REP. 42–52 (2007).

ODR process which includes, intital contact, initiation of dispute resolution process, assessment and checklist formation, information exchange, foraml lodgement, question and answer by parties, facilitaation and decision.[189] Currently ODR has three approaches; cyberspace (which focuses on Internet and information technology), non-adjudicative ADR (focuses on negotiation, mediation, and improving communications and relationships between parties) and arbitration (focuses on rights and applications of law with an arbitrator's decision).[190] Arbitration is being used at National Internet Exchange of India (NIXI), but other two approaches are not very popular in India.[191]

Although ODR is an effective method for resolving e-commerce disputes, but it can work efficiently only if minimal conditions are fulfilled i.e. information to consumer, consent of both parties to submit the dispute to third party, neutrality of third party and compliance with the legal requirements.[192] There are other hurdles like access, technology, cultural and language issues, and trust in new untested system.[193] As mentioned earlier, to reap benefits through ODR, a sound techno-legal base is essential. Xu and Yuan proposed principle-based dispute resolution system to determine liability and responsibility of parties regarding payments or adjustments resulting from the dispute.[194] Basic principles of this system include government laws, industrial self-regulation, and contracts agreed by parties. Similarly, Schultz also contended for governmental intervention in ODR process.[195] Understanding the role of government, India enacted the IT Act 2000 to give formal and legal recognition to e-commerce and e-governance. Further, traditional arbitration law has been reformulated as the Arbitration and Conciliation Act 1996, which is in synchronization with standards of the UNCITRAL Model and the Code of Civil Procedure 1908 has been amended to introduce section 89 for methods of alternative dispute resolution (ADR) in India.[196]

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189 Clark, Cho, and Hoyle, *supra* note.
190 Agarwal, *supra* note.
191 *Id.*
192 Anne Salaun, *Consumer Protection- Proposals for Improving the Protection of Online Consumers*, 15 COMPUT. LAW SECUR. REP. 159–167 (1999).
193 Agarwal, *supra* note.
194 Zhengchuan Xu & Yufei Yuan, *Principle-based dispute resolution for consumer protection*, 22 KNOWLEDGE-BASED SYST. 18–27 (2009), http://dx.doi.org/10.1016/j.knosys.2008.04.009.
195 Schultz, *supra* note.
196 Chitranjali Negi, CONCEPT ONLINE DISPUTE RESOLUTION IN INDIA, http://dx.doi.org/10.2139/ssrn.2596267 (last visited May 27, 2015).

ODR is infancy stage in India; there is need of proper education and training to general public and workforce; lawyers can be educated to give priority to conciliation/mediation to save time and money while settling disputes.[197,198]

VI. Concluding remarks

Indian entrepreneurs and foreign MNCs are forging various e-commerce ventures. Being at very nascent stage, less number of e-commerce players are actually knowing and complying with techno-legal requirements. Understanding the fact that proliferation of new technologies like e-commerce require solid legal framework, the Indian government made an attempt to address number of issues and legislated the IT Act as a mixture of too many provisions. As a result, several provisions which are essential for development of e-commerce environment are incomplete or unaddressed. These include issues related to legal validity of e-transactions, security, junk mail and spamming, content regulation, intellectual property, payment, taxation of e-commerce transactions, intermediary liability, jurisdiction and consumer protection. E-commerce industry had a hope of getting an improved version when the IT Act 2000 was amended in 2008. But certain issues still remained unanswered, for example, like any other contracts, e-contracts are governed by basic principles of the Indian Contract Act 1872 and formation of online contracts and legal enforceability of online contracts involving international parties is still cumbersome. Because of inadequate provision of the IT Act 2008, the Reasonable security practices and procedures and sensitive personal data or information rules was introduced in 2011 to provide framework for protection of data and it lists out security practices and standards. India contributes almost 3.43% of unwanted mail, and ranks 6th as source of world's spam, still India lack in legislative measure to control it. The IT Act is silent on the issue of protection of intellectual rights (patents, trademarks, copyrights) including domain names and it is dependent on other acts to protect intellectual property infringements. Both traditional and electronic payment systems in India are regulated by the Payment and Settlement Systems Act 2007. Similarly, High Powered Committee (HPC) constituted by the Central Board of Direct Taxes quoting principle of 'neutrality', maintained that no separate regime for the taxation of e-commerce transactions is required and existing laws are sufficient, but in reality India is struggling with e-commerce taxation issues (direct and indirect taxes). Jurisdiction and enforcement issues relating e-commerce jurisprudence are still nascent in India. There are certain loopholes in the IT Act such as ambiguity with respect to legal jurisdiction of contracts involving international parties and absence of dual-key

[197] *Id.*
[198] Agarwal, *supra* note.

pairs for individuals and business, compromising confidentiality of e-transactions. With regard to consumer protection also, there is no separate law which is specifically regulating online transaction, therefore the IT Act rely on the Consumer Protection Act, (1986).

It can be observed that present form of the IT Act is too weak and it has to depend on other legislations to cope up various legal issues in e-commerce. Only a strong legal framework can create a business environment which is conducive for e-commerce industry in India. Therefore, policy makers should introduce a separate e-commerce law to keep pace with rapid technological developments.

RESEARCH ON THE RELEVANCE BETWEEN CORPORATE VALUE AND PATENT POWER ——BASED ON THE EMPIRICAL TEST OF LISTED COMPANIES ON GEM IN CHINA

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ABSTRACT

Patent power is not only the embodiment of enterprise R&D capability, but also reflects the core competitiveness of enterprises. This paper analyzes the value relevance of different aspects of patent power. The results show that the patent quality and patent complexity in small and medium-sized enterprises have a positive impact on the corporate value, and the relationship between patent strength, patent content richness, patent comprehensibility and corporate value is not significant.

Keywords**:** small and medium sized enterprises; patent power; value relevance

I. Introduction

In a time of knowledge economy, with the deepening of economic globalization and the heating up of competition among enterprises, an enterprise's competitive edges lies more on the intangible assets, especially the patent power, than the material assets or tangible assets. Patent, as a very example of knowledge capital, is now surpassing the fixed assets and financial capital in significance. The technical innovation brought through R&D and patent application will sharpen enterprises' comprehensive competitive edge to realize sustainable development. Though, as a typical kind of intangible assets, the real value of patent is hard to be measured, enterprises are required to increase their value with patent application which is based on achieving core technology and standards along the way of research and development.

Recent research have found that the gap between the account value and market value of listed enterprises are keep widening, a trend due to the absent of numerous intangible value in the financial statement. In other words, the R&D and innovation information revealed in the current financial statement is not accurate enough. The information users, especially investors, however, are eagerly to be accessible to enterprises' such information of intangible assets to make more accurate assessment to the whole entity and obtain more investment returns. Therefore, assessing an enterprise's value by measuring its patent power can provide a new method of intangible assets evaluation.

Theoretically, the value of patent comes from the certain domination it can bring to its owner in product market or technical market, which will further influence the demand of products and thus obtain excess earnings by changing the fixed price of products. We found from the previous research which explores the relationship between the patent power and corporate market value from various perspectives that patent power has a certain impact on corporate value. Yet no documents had ever done research about the impact different respects of the patent have on corporate value and the impact is now uncertain. Therefore, to find out the impact, the paper dissects patent power, chooses five respects (including patent strength, patent quality, patent content richness, patent complexity and patent comprehensibility), and selects corresponding indicators from each respect as a variable to carry on system research.

The breakthroughs of the paper is in the following parts: Firstly, the paper analyzes the previous research, dissects the patent power into several respects including patent strength, patent quality, patent content richness, patent complexity and patent comprehensibility that extends the current research. Secondly, from the research perspective, the paper applies structural equation model to do empirical

research on the relationship between the patent power and corporate market value. Thirdly, with its research from the different respects of patent power, the paper may enrich the relevant documents concerning value relevance of patent power.

II. Documents Review and Theoretical Analysis

A. Documents Review on Patent Power and Patent Information

Patent power refers to the overall patent capacity that supports the development of economic society. To an enterprise, patent power is a critical part of its core competitiveness and the engine of its long-term development. Current research on patent power largely centres on the assessment of patent power and the regional compare of it. For instance, Li Li and Chen Xiuyi and Jiang Xuelin and He Jianjia used different methods to construct the overall patent power assessment system respectively, and applied their own method to assess and verify the patent power.

Patent information refers to the content of information in the disclosed patent documents. Griliches et al. （1991）studied enterprises' R&D activities to find if they contain richer information and discovered that apart from providing statistics about R&D costs, the patent information can also provide more information pertaining the R&D of enterprises. What's more, Trajtenberg(1990)held that patent influence factors could reveal information of a company's R&D capacity, the capacity which is scarcely reflected in finical reports. From these previous research, it can be concluded that patent information can provide more valuable materials to the valuation of corporate value, remedying the vacant of R&D information in financial reports.

To information users, the information contained in the patent is of great significance: First, if patent information is available to the public, even for enterprises having no need to disclose their R&D information, the public can have access to their data of patent application and authorization; Next, patent information can be useful in many ways, especially in fields like business units, productions, technology and R&D, like helping enterprises to analyze the condition of the adversaries. Patent not only contains a large amount of technical information of enterprises, but is also considered as the best source of information to identify technical innovation timely. The increase or reduction of patent development activities can reveal the change in development policy and the patent indicators can be used to analyze the patent strategy of an enterprise. As a consequence, patent activities can inform vital messages about a company's R&D capacity and patent

strategy and with which information users can tell the strategic development facts of the company.

B. Document Review on the Impact Patent Have to Corporate Value

Research on patent activity and corporate values. Researchers usually apply Tobin's q to measure corporate value while studying it. In this process, corporate value reflects investors' prediction about future return and interests which is determined by the condition of tangible and intangible assets of the invested company, especially the condition of innovative knowledge and patent development. Blundell et al.（1999）found in his research on the factors influencing corporate market value that enterprises' innovative proxy variables set based on the fully consideration of enterprises' patent activities have a significant positive impact on its market value. Enterprises' market value is often regarded as foresightedness indicators that demonstrate the future performance of an enterprises, and reveals their sum total of future dividend present value which is quite intimate with the discount of future return of patent achievements. The previous research believes that enterprises' innovative activities and patent performance have a positive impact to market value. Toivanen et al.（2012）found that putting D&D costs into the model which calculates corporate value, the impact the percentage of patent to total assets have to corporate market value will become negative.

Research on patent combination and corporate values. Lin et al.（2006）held that diversity of patent combination could be used to measure the diversity of enterprises' technology and core areas, and could form synergy effects to increase the value of enterprises' market value. Parchomovsky and Wagner（2005）believed that patent combination can help an enterprise to achieve a higher market rank in a certain area, innovators thus prefer to fuse creations with patent combination to enhance the enterprises' capacity of relevant technologies. Previous research also held that the value of R&D activities are by no means unchangeable, but depends on an enterprise's reasonable R&D investment and capacity.

Research on patent significance and corporate values. Hall et al.（2005）found while applying patent citation as the proxy variable of knowledge importance contained in patent that there is a positive correlation between the average citation frequency and enterprises' market value. Research in the past had also realized the weight of patent and the great significance of business value to the valuation of an enterprise's market value. Through empirical study, Nagaoka（2005）analyzed how the two patent indicators--patent citation and scientific relation--effect enterprises' market value, and they discovered that the two patent indicators have notable

impacts on it. Deng et al.（1999）used a set of patent indicators, such as patent quantity, patent citation, to predict an enterprise's performance and find out a positive correlation between patent indicators and corporate future market/account value. Li Shi et al. found through studying the listed enterprises in china that enterprises' market value will have massive increase as a patent is added per time and that the stock market of china has the capacity of patent pricing. Li Zhongfei and Yang TingTing (2015) believed that patent quality boosts the increase in the value of enterprises' investment and has even much promoting effect to high-tech and listed enterprises. Wang Yan and Bao Xinzhong found that the height of enterprises' patent strength indicator is related to their stocks' market performance.

C. Theoretical Analysis on Value Relevance of corporate Patent Strength

Corporate patent power is a comprehensive assessment of the performance it brings to enterprises and symbols the significance of patent in market. In a complete competitive market, corporate market value has a close relation to their patent power. This is because stronger patent power can improve business performance and thus increase market value. In terms of the relationship between corporate innovation and finical performance, some research center on the impact an enterprise's R&D have to production efficiency and market value, and especially the impact of patent rights and trademark rights have to market value. Previous research attached the impact of patent to corporate market value. Study had shown the positive correlation between enterprises' R&D and Profiting condition and that the addition of R&D activities in certain period would increase market value correspondingly. These all demonstrate that theories of patent value relevance have been tested in some mature foreign capital markets. In our capital market, however, a consensus has yet reached in the studies on the above questions and the value relevance of different respects of patent power is still uncertain.

Corporate patent power is an overall reflect on enterprises' patent situation and can be measured from various respects. For instance, patent strength, patent quality, patent complexity, patent content richness, patent comprehensibility, etc. Generally speaking, different respects of patent power all have certain impacts on corporate value. Patent strength, an embodiment of an enterprise's R&D power, reflects an enterprise's capacity to develop technology and innovative products. To some extent, patent strength can represent an enterprise's competitiveness of its products and technology and has a certain positive impact on its value. Patent quality refers to the actual legitimate force of patent which guarantee the maximum interest of an enterprise. Patent complexity, a patent's complexity lies mainly on its right requirements, one of the major purposes of applying the patent ,a critical part to determine the protection scale of the patent and effecting the overall value of an

enterprise. Patent content richness and patent comprehensibility refer to the content richness and comprehensibility of the public patent application which will influence information users' judgment on corporate value.

III. Research Sample and Research Design

A. Sample Selection and Variable Definition

The 100 samples selected here are mostly from high-tech listed companies on GEM of Shenzhen Stock Exchange and center on high-tech enterprises constantly investing, producing and growing during 2010-2015, including 10 companies receiving patent pledge financing from financial institutions. Data of enterprises' patent strength, patent quality, patent content richness and patent comprehensibility are mostly from database of State Intellectual Property Office and are achieved through manual search and sorting. Data of corporate value indicators are from CSMAR database.

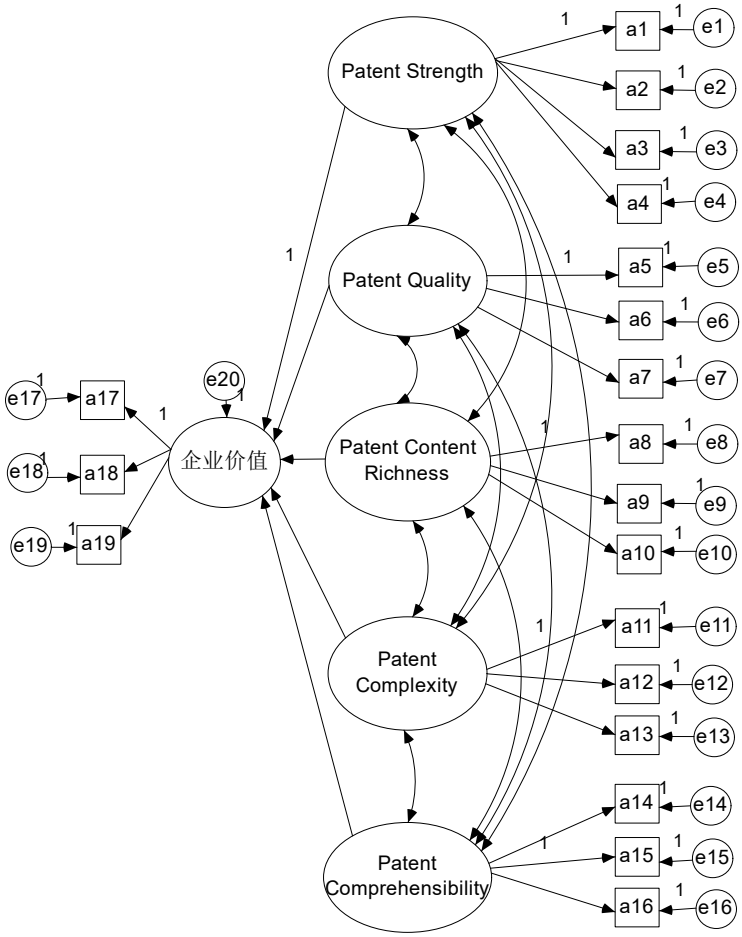
Variables here consist of latent variables and measurement variables, and 6 of them are latent variables including patent strength, patent quality, patent content richness, patent complexity, patent comprehensibility and corporate value. Every latent variable contains its corresponding measurement variable.

B. Model Construction

This paper uses structural equation model to analyze value relevance of SMEs' patent power. The reason is that, compared to the traditional multiple regression analysis which cannot be used where several variables exist simultaneously and is unable to obtain the impact latent variables have to dependent variables, the model has certain edges. Recognizing the requirements of research in the paper and the subsequent research, a structural equation model is thus constructed: Chart 1 shows the latent variables and the corresponding measurement variables as well as the error terms; Picture 1 is the impact path of the structural equation where the rectangle denotes a measurement variable, the oval denotes a latent variable and the relations between variables are denoted by lines and arrows. If there's no line between two variables, that means they have no relation; a one-way arrow denotes effective relation and a two-way denotes mutual relation.

Chart 1 Structural Equation Model of SMEs' Patent Value Relevance

Latent Variables	Measurement Variables	Error Terms
Patent Strength	Number of invention publication patents in the period（a_1）	e_1
	Number of invention authorization patents in the period（a_2）	e_2
	Number of practical new-type patents in the period（a_3）	e_3
	Number of image design patents in the period（a_4）	e_4
Patent Quality	Sum of invention publication IPC numbers in the period（a_5）	e_5
	Sum of invention authorization IPC numbers in the period（a_6）	e_6
	Sum of practical new-type IPC numbers in the period（a_7）	e_7
Patent Content Richness	Sum of invention publication pages in the period（a_8）	e_8
	Sum of invention authorization pages in the period（a_9）	e_9
	Sum of practical new-type patents' pages in the period（a_{10}）	e_{10}
Patent Complexity	Total right requirements of invention publication in the period（a_{11}）	e_{11}
	Total right requirements of invention authorization in the period（a_{12}）	e_{12}
	Total right requirements of practical new-types in the period（a_{13}）	e_{13}
Patent Comprehensibility	Number of invention publication appendixes in the period（a_{14}）	e_{14}
	Number of invention authorization appendixes in the period（a_{15}）	e_{15}
	Number of practical new-type appendixes in the period（a_{16}）	e_{16}
Corporate value	Tobin'Q（a_{17}）	e_{17}
	Price-earning ratio（a_{18}）	e_{18}
	Rate of return on common stockholders' equity（a_{19}）	e_{19}



Pic1 Structural Equation Path of SMEs' Patent Value Relevance

IV. Empirical Result

A. Statistics Analysis

Chart 2 shows the descriptive statistic result of all measurement variables. It can be seen from the statistic result of mean value and median that among four types of patents (invention publication, invention authorization, practical new-type and image design), the number of practical new-type patents is the most, the number of invention publication and invention authorization patents is the least and more than half of the enterprises having no invention authorization and image design patent at all；from the statistic result of patent quality, it can be seen that the mean value of sum of invention authorization IPC numbers owned by enterprises is higher than the sum of invention publication and practical new-typed IPC numbers together, and the gap between maximum and minimum of the sum of IPC numbers of all types is relatively huge; from the statistic result of patent content richness, half of the enterprises' applications are within 20 pages and of all three types of patents, the pages of practical new-typed patent is the most and its mean value reaches 33.791; from the patent complexity and mean value statistics of total right requirements, the sum of invention authorization is the least and that of practical new-type is the most; from the proxy variables of patent comprehensibility and application's appendixes, the mean value of practical new-type is the largest and that of invention authorization is the least; in terms of corporate value, the mean value of Tobin'Q variables is 2.27. The low standard deviation of the variable means the differences of Tobin'Q among sample enterprises are small. The mean value of price-earning ratio is 43.36 and that of rate of return on common stockholders' equity is 0.05.

Chart 2 Descriptive Statistic Result of Main variables of SMEs' Patent Value Relevance

Statistic	*N*	Mean Value	Standard Deviation	Minimum	Maximum	1/4 Quartile value	Median	3/4 Quartile value
a1	100	2.11	3.528	0	17	0	1	3
a2	100	1.19	2.328	0	11	0	0	1.75
a3	100	4.53	6.153	0	30	1	2.5	6

Statistic	*N*	Mean Value	Standard Deviation	Minimum	Maximum	1/4 Quartile value	Median	3/4 Quartile value
a4	100	2.61	8.065	0	48	0	0	2
a5	100	3.19	5.253	0	25	0	1.5	4
a6	100	1.92	3.459	0	16	0	0	2
a7	100	7.92	10.497	0	48	1	5	11.75
a8	100	18.03	26.73	0	117	0	11	23.75
a9	100	11.22	20.208	0	79	0	0	14
a10	100	30.28	33.791	0	138	7	19	49
a11	100	13.03	18.519	0	81	0	9	17
a12	100	6.92	11.879	0	47	0	0	10
a13	100	21.53	24.928	0	107	5.25	14	33
a14	100	5.83	7.584	0	32	0	4	8
a15	100	3.67	6.033	0	27	0	0	5.75
a16	100	13.81	14.658	0	59	2.25	11.5	24
a17	100	2.72	1.089	1	5	1.97	2.44	3.53
a18	100	43.36	37.394	18	168	37.64	51.65	79.78
a19	100	0.05	0.029	0.02	0.12	0.03	0.04	0.07

B. Model Fitness Test

A structural equation model is required to be assessed on its fitness, namely how fit it is to statistics. The fitness indicators used here are GFI, AGFI, PGFI, RMR and P, and the fitness value is shown in Chart 3. According to the assessment

indicators, the structural equation model constructed in the paper is fit and acceptable in statistics.

Chart 3 Fitness Assessment Indicators of the Study Model

Indicators	Fitness value of the model
GFI	0.901
RMR	0.496
NFI	0.903
TLI	0.917
P	0.000

C. Test Result of the Structural Equation Model

By analyzing the coefficients, it can be told if the parameters pass significance test and if the relation between two variables is significant. The path coefficients are showed in Chart 4. The standardized path coefficient of the proxy variable of patent quality is 1.131, which means the higher the patent quality is, the higher the corporate value will be. And the standardized path coefficient of the proxy variable of patent complexity is 2.217, which means the significant positive relationship between patent complexity and patent value relevance, while the relationship between proxy variables of patent strength, patent content richness and patent comprehensibility is not significant.

Chart 4 Path Coefficients without Standardizing and standardized Path Coefficients of SMEs' Patent Value Relevance

Impact path	Path Coefficients without standardizing	P	Standardized path coefficients
Corporate value<---Patent quality	0.525	***	1.131
Corporate value<---Patent complexity	0.677	***	2.217
Corporate value<---Patent Strength	1		3.603
Corporate value<---Patent content richness	0.009	0.652	0.248
Corporate value<---Patent comprehensibility	0.12	0.102	0.993
a4<---Patent Strength	0.066	0.763	0.025
a3<---Patent Strength	1.643	***	0.808
a2<---Patent Strength	0.266	0.002	0.346
a1<---Patent Strength	1		0.865
a13<---Patent Complexity	3.335	0.002	0.889
a10<---Patent content richness	1.019	***	0.708
a9<---Patent content richness	0.22	0.006	0.256
a8<---Patent content richness	1		0.885
a7<---Patent Quality	1.667	***	0.669
a6<---Patent Quality	0.345	***	0.421
a5<---Patent Quality	1		0.802

Impact path	Path Coefficients without standardizing	P	Standardized path coefficients
a15<---Patent Comprehensibility	1		0.468
a14<---Patent Comprehensibility	2.354	***	0.902
a16<---Patent Comprehensibility	2.406	0.004	0.477
a11<---Patent Complexity	1		0.411
a12<---Patent Complexity	3.58	0.003	0.709
a19<---Corporate value	0.005	0.469	0.139
a18<---Corporate value	35.028	***	0.774
a17<---Corporate value	1		0.735

V. Conclusion

By selecting the data of listed high-tech SMEs on GEM, the paper analyzes the value relevance of corporate patent power. The study shows that: (1) there is significant positive relation between SMEs' patent quality and patent complexity; (2) there is positive relation between patent complexity and patent value relevance; (3) the relationship between patent strength, patent content richness, patent comprehensibility and corporate value is not significant. In a summary, the impact different respects of SMEs' patent power have to corporate value is different, among which the impacts of patent quality and patent complexity are the largest.

Through the research, we find that during the innovative development of SMEs through patent power, the patent quality and patent complexity should be paid more attention to increase corporate value.

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