

Effect of Attorney Groupings on the Success Rate in Cases Seeking to Overturn Trial decision of refusal of Patent Applications in Japan

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[Abstract] This study focuses on the importance of specialized legal representation in cases represented by groups of attorneys seeking to overturn trial decision of refusal of patent applications filed in Japan. Accordingly, the effect of attorney groupings on the percentage of such cases in which the plaintiff was successful has been analyzed. As a result of this analysis, it was discovered that groups composed exclusively of patent attorneys won the highest percentage of cases related to patent applications. Groups composed of a mixture of patent attorneys and lawyers who were not specifically patent attorneys (herein referred to as “lawyers”) had the second-highest success rate, and groups composed exclusively of lawyers had the lowest. Moreover, it was revealed that the success rate for patent applications rises with increases in the number of patent attorneys within the range of one to three patent attorneys. However, as the number of patent attorneys increases to four and more, the success rate in such cases decreases. These results suggest that in cases seeking to overturn final decisions of refusal of patent applications, attorney groupings have an important effect on the success rate. Additionally, it was confirmed that the most advantageous representation for plaintiffs in these cases is no more than three patent attorneys, with no lawyers who are not patent attorneys.

[KEYWORD] Groups of Attorneys Trial Decision of Refusal Case Plaintiff Success Rate
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1. Introduction

1.1. Purpose of Study

In order for patent applications to result in the successful acquisition of patents, patentability must be allowed based on examinations at the Japan Patent Office (JPO), except in cases in which the non-substantive examination system is adopted. When patentability is not so allowed, the court may be petitioned to revoke

the decision of such examination. This is referred to as a case for revocation of an examination decision. In Japan, when patent applicants¹ are foreign, with no address or residence in Japan, they are prohibited from filing cases seeking revocation of examination decisions made by the panel unless attorneys who have addresses or residences in Japan handle such filing on their behalf². In light of the complexity and need for expertise in cases seeking revocation of examination decisions, the majority of foreign patent applicants ap-

point patent attorneys³, and/or lawyers who are not specifically patent attorneys in Japan as counsel. Adding to the complexity, the invention that is the subject of cases seeking revocation of examination decisions cannot always be described in a clearly defined manner, because such inventions often involve intricate and abstract technical concepts. Thus, it is possible for even a single invention to be understood in different ways by different parties involved. It should also be noted that the functions of patent attorneys and lawyers are different, and involved fundamentally different backgrounds and skills; a primary task of patent attorneys is to submit applications, and a primary operation of lawyers is to handle legal cases.

Based on the differences and complexities mentioned above, the use and composition of attorney groupings may have some influence on the success rate in cases seeking revocation of examination decisions, which can be of great importance to patent applicants. However, there are few studies of this rate. If the use and composition of attorney groupings does influence the case success rate for plaintiffs, proposals to use appropriate attorney groupings would be of significant assistance for increasing the patent acquisition rate.

Therefore, the following hypothesis for this study has been established: The use and composition of attorney groupings by patent applicants influences case success rate. This hypothesis is substantiated hereinafter.

1.2. Previous Studies

There have been a limited number of previous studies concerning the relationship of attorney use to civil infringement cases. However, there have not been any prior studies on the relationship of attorney use to administrative litigation cases seeking revocation of examination decisions. The existing studies mentioned above do not appear to have targeted cases in which patent attorneys are the sole representatives, or cases in which both patent attorneys and lawyers are

representatives. However, an empirical analysis of the cause-and-effect relationship between the success rate in cases seeking revocation of examination decisions regarding patent applications and the number of attorneys has been performed. This study related to cases in which revocation of examination decisions was sought in the form of *ex parte* appeal and *inter partes* appeal, and concluded that the greater the number of representatives (i.e., lawyers), the lower the success rate (Aoki and Sasahara, 2012). Aoki and Sasahara (2012) also noted that there had been very few previous studies of the relationship between administrative litigation and the characteristics of representatives.

Moreover, with regard to cases seeking revocation of examination decisions that invalidated patents, as a result of analyzing changes in the rate at which examination decisions were upheld over three years from 2006 through 2008, Kobayasi et al. (2009) suggested that in cases where the patent holder won, the number of persons who were employed to dispute the inventive step became increasingly large, while no changes were observed concerning court judgments on the inventive step. Furthermore, with regard to the plaintiff success rate in appeals of trial decision of refusal (herein after "trial decision") relating to refusal of the inventive step, Kawada and Inoue (2011) reported that among 100 decisions made by the Intellectual Property High Court in 2010, 15 (15%) were revoked, and among 111 decisions made by the Intellectual Property High Court in 2011, 20 (18%) were revoked.

Concerning the patent attorney system in Japan, Arai (2005) states that quantitative improvement of professional representatives has been attempted, among the intellectual property strategies adopted in Japan. Such an attempt was made because supporting operations were found to be necessary for the aspects of acquisition of rights, use of rights, and dispute resolution. Bausch (2009) examined the role of patent attorneys in the formulation of international intellectual strategies at all levels. Specifically, Bausch's statements relate to license negotiations and litigation,

as well as patent applications, in the home countries of applicants ; international applications regarding which priority was claimed under the Paris convention ; and measures against invalidation assertions by third parties following patents.

The structure of this paper is as follows. First, the background and research method are explained in Chapter 2. Observations follow in Chapter 3, and Chapter 4 contains the study’s conclusions.

2. Background and Research Method

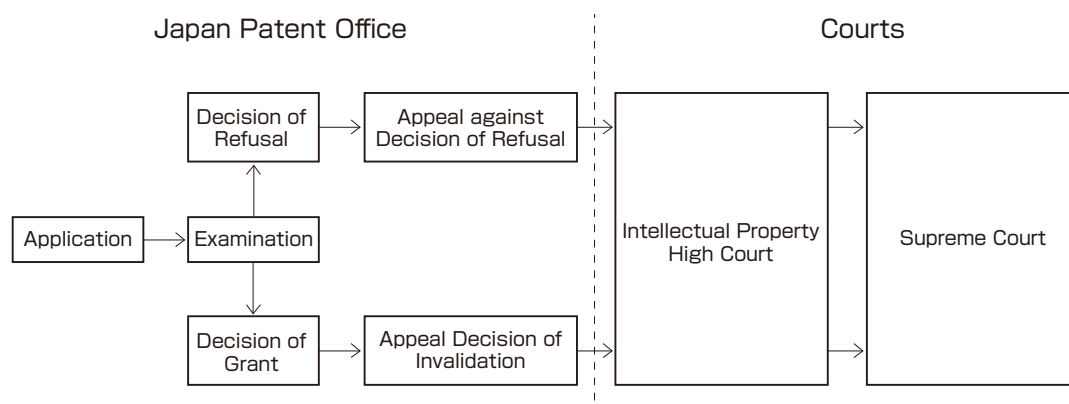
2.1. Background

A three-tiered judicial system has been adopted in Japan, meaning that trials can be conducted in up to three instances per case⁴. However, with regard to cases seeking revocation of examination decisions made by the Japan Patent Office, the first instance is omitted, and an action is filed directly with the Intellectual Property High Court (Fig. 1)⁵. There are two reasons for this : first, examinations performed by the Japan Patent Office are conducted based on procedures similar to court trials (Japan Patent Office, 2013) ; and second, cases relating to intellectual property are highly technical (Japan Patent Office, 2013). There are two types of cases in which revocation of examination decisions is sought in Japan⁶. One type of case seeks revocation of ex parte appeal decisions in which the

Commissioner of the JPO is a defendant ; a typical example of this kind of decision is a decision made as a result of an examination relating to efforts to overturn a final rejection⁷. The other type of case seeks revocation of inter partes appeal decisions in which the Commissioner of the JPO is not a defendant ; A typical example of inter partes reexamination decision is a decision made as a result of an examination for invalidation⁸. This paper targets ex parte appeal cases seeking revocation of trial decisions concerning final rejections of patent applications. For comparison, cases seeking revocation of trial decisions concerning final rejections of trademark applications are referred to as well.

As described in 1.1, power of attorney in cases seeking revocation of examination decisions is given to Japanese patent attorneys. Such power of attorney has a history of nearly 70 years — from 1948 to the present — and is an important condition for patent attorneys who protect applicants and undertake application-related operations. Additionally, trials of refusal, which are preliminary steps in cases that aim to overturn trial decisions, are mostly performed by a patent attorney. Patent attorneys also provide representation for patent applications before such requests. Thus, it can be said to be efficient and economical for patent attorneys, who are familiar with the content of applications and the technologies of the corresponding technical fields, to be representatives for these plaintiffs.

Fig. 1 Relationship between Japan Patent Office and Courts



In many cases, lawyers who are not patent attorneys begin to represent clients at the stage at which revocation of examination decisions are sought, joining the patent attorneys who have represented such clients at earlier stages. This is because lawyers are experts in litigation, so they can help achieve smooth progress throughout the litigation process by working together with patent attorneys. Moreover, after examination decisions have been made by the Patent Office, patent attorneys sometimes withdraw, and only lawyers represent relevant cases at the stage of seeking revocation of examination decisions. Such cases are quite rare, however.

2.2. Research Method

2.2.1. Databases Used

The following databases were used for data collection: the “astamuse project patent precedent database”⁹ and “astamuse project trademark precedent database,”¹⁰ both of which are the property of the astamuse company, Ltd., which has its head office in Tokyo, Japan.

2.2.2. Data Collection

2.2.2.1. Data Collection related to Patent Applications

To search for specific precedents in the patent precedent database, focus was placed on the terms “patent right” and “cases seeking revocation of examination decisions,” as well as the keywords “designated representative,” “decision of rejection,” and “inventive step.” The term “designated representative” refers to a staff member¹¹ designated by the Commissioner of the JPO as the person who conducts a case for revocation of examination decisions, or the like. This keyword never failed to emerge in searches about cases of revocation of ex parte appeal decisions. The keyword “inventive step” was used in association with data.

Data was collected on decisions to revoke resulting from trial decisions relating to rejection of inventive step among all trial decisions made from January 2008 to January 20, 2013 that were recorded in the database.

As a result, data was acquired on a total of 284 cases seeking revocation of examination decisions. A single case dismissed because of elapse of the term for action was excluded from the total. Consequently, data was obtained on 283 cases in total.

Data was visually and manually classified into the following categories, among others: (i) revocation; (ii) dismissal; (iii) percentage of all plaintiffs that were foreigners; and (iv) attorney groupings. A database was then created for analysis.

2.2.2.2. Data Collection related to Applications for Trademark Registrations

When searching for specific precedents in the trademark precedent database, focus was on the terms “trademark right” and “cases seeking revocation of examination decisions,” and the keywords “designated representative” and “dissatisfaction 20” were used. The term “dissatisfaction 20” is a combination of “dissatisfaction,” which refers to trial decisions, and “20,” the first two digits signifying the years since 2000. The period targeted for research is the same as that used for the patent-related research described above. As a result, data was acquired for a total of 61 cases seeking revocation of examination decisions, and then visually and manually classified into the categories of (i) revocation; and (ii) dismissal. As described above, a database was then created for analysis.

2.2.3. Important Matters regarding Data

The patent and trademark precedent databases were based on the data provided by the Supreme Court in PDF format. It should be noted that there is a possibility that such databases did not cover all decisions. Furthermore, although effort was made not to miscount when compiling the database, the aforementioned classification was undertaken manually.

2.3. Data Processing

Using the collected data, the following were researched: the case success rate for plaintiffs; the percentage of plaintiffs that were foreigners; attorney groupings; the relationship between the case success rate

Table 1 Plaintiff Success Rate

Decision	Patent		Trademark	
	Number of cases	Rate (%)	Number of cases	Rate (%)
Revocation (in favor of plaintiff)	64	22.5	26	42.6
Dismissal (against plaintiff)	219	77.1	35	57.4
Withdrawn	1	0.4	0	0
Total	283	100	61	100

for plaintiffs and attorney groupings ; and the relationship between the case success rate for plaintiffs and the number of attorneys. The results will be reported in this order.

2.3.1. Plaintiff Case Success Rate

Table 1 shows the case success and failure rates for plaintiffs, calculated as percentages of all decisions. As shown in the Table, decisions to revoke resulting from trial decisions relating to rejection of inventive step accounted for 64 cases (22.5%) out of the total of 283 cases. Despite parameter differences, these results seem low compared with the 42.6% success rate for plaintiffs in cases concerning applications for trademark registration. However, these results showed a more favorable rate for plaintiffs than the results shown by Kawada and Inoue (2011, 2012). In any case, as instructed by Kawada and Inoue (2011), whether or not the success rate in cases was high would become an important point for patent applicants who made requests that were not accepted to judge whether or not they should submit their disputes to the court as plaintiffs.

Incidentally, the plaintiff success rate in cases concerning administrative litigation including intellectual property cases and other administrative cases by country, which were 17.4% for Japan (2000), 21.0% for England (2000), and 10.6% (1999) for Germany (i.e., the Administrative Court) (The figures for the U.S. and France are unknown.) (Supreme Court, 2002).

2.3.2. Relationship between Plaintiff Success Rate and Attorney Groupings

2.3.2.1. Patent Applications

Fig. 2 shows the percentage of trial decisions that were revoked in which the representatives in patent application cases were only patent attorneys (i.e., one or more such attorneys), only lawyers (i.e., one or more such lawyers), and mixtures of patent attorney(s) and lawyer(s). As shown in Fig. 2, the highest rate of revocation was 25.4%, when only patent attorneys represented cases ; the second-highest rate was 20.8%, when patent attorneys and lawyers represented cases together ; and the lowest rate was 11.1%, when only lawyers represented cases. That is to say, the success rate for cases in which only patent attorneys served as representatives was about 2.3 times higher than the rate for cases in which only lawyers served as representatives, and about 1.8 times higher than the rate for cases in which both patent attorneys and lawyers served as representatives.

2.3.2.2. Applications for Trademark Registration

Fig. 3 shows the percentage of examination decisions that were revoked in which the representatives in trademark application cases were only patent attorneys (i.e., one or more such attorneys), only lawyers (i.e., one or more such lawyers), and mixtures of patent attorney(s) and lawyer(s) in relation to applications for trademark registrations. As shown in Fig. 3, the highest rate of revocation was 21.3%, when only patent attorneys represented cases ; the second-highest rate was 11.5%, when only lawyers represented cases ; and the lowest rate was 9.8%, when patent at-

Fig. 2 Revocation and Dismissal Rates for Attorney Groupings (Patents)

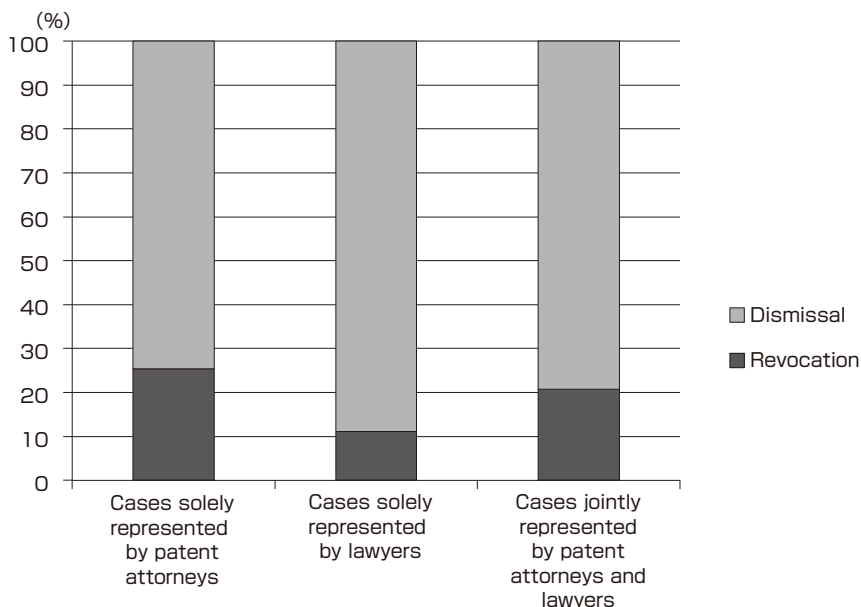
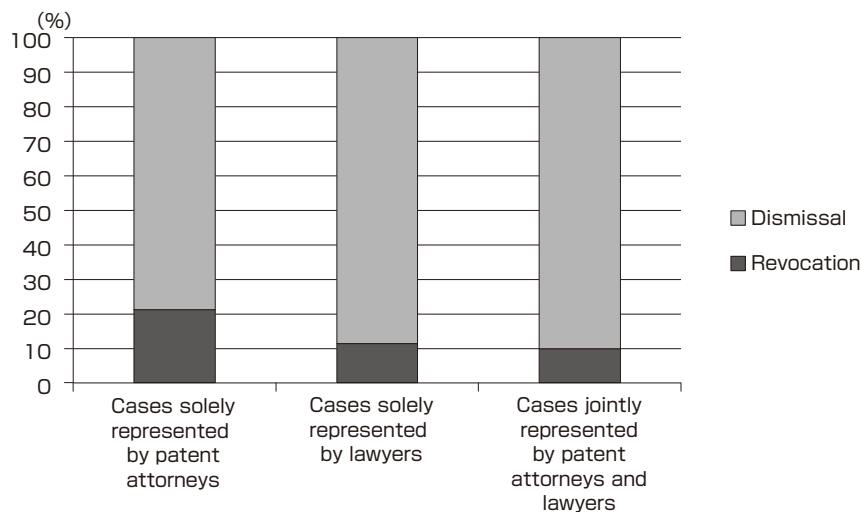


Fig. 3 Revocation and Dismissal Rates for Attorney Groupings (Trademark)



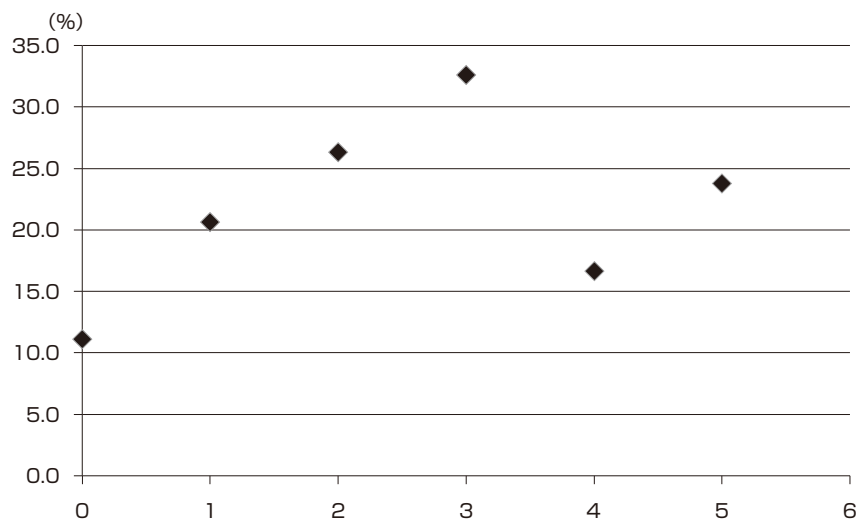
torneys and lawyers represented cases together. That is to say, the success rate for cases in which only patent attorneys served as representatives was about 1.6 times higher than the rate for cases in which only lawyers served as representatives, and about 2.2 times higher than the rate for cases in which both patent attorneys and lawyers served as representatives. Here, in cases of applications for trademark registration, the

success rate for joint representation by patent attorneys and lawyers, which accounted for the second-highest position in patent application cases, was in third place.

2.3.3. Relationship between Plaintiff Success Rate and Number of Attorneys

As shown in Fig. 4, with respect to the patent case, the success rate for cases without representation by

Fig. 4 Relationship between Plaintiff Success Rates and Number of Attorneys (Patent Attorneys)



patent attorneys (i.e., zero attorneys) was 11.1%, which was the lowest rate. Thus, it was discovered that the success rate in cases with representation by attorneys was higher than that for cases without representation by attorneys. Next, the plaintiff success rate for cases with representation by two attorneys was higher than that for cases with representation by a single attorney. Moreover, the plaintiff success rate for cases with representation by three attorneys was higher than that for cases with representation by two attorneys. On the other hand, the success rate for cases with representation by four attorneys was markedly lower. The reason why the success rate for cases with representation by four attorneys was markedly lower than that for cases with representation by five attorneys will be described in the following section of “3. Observations”.

In addition, it should be noted that the number of patent attorneys listed in Fig. 4 might be different from the number of patent attorneys who substantially and actually worked for the cases. This is generally because individual attorney is concerned with many other cases at the same time. Therefore, it is rare that plural attorneys participate in one case simultaneously. Also, it should be noticed that the specialties among

the lawyers are different in level, and the revocation and dismissal rate might depend on the difference of the specialties. Because there may be some lawyer with a little experiences of cases about intellectual property rights.

3. Observations

The results arising from this study support the hypothesis that the composition of attorney groupings chosen by patent applicants influence plaintiff success rate. The grounds for the related arguments are provided below.

There were 283 cases submitted from January 2008 until January 2013 seeking revocation of trial decisions because of the lack of the inventive step. In such cases, it was observed that the plaintiff success rate clearly varied in accordance with differences in attorney groupings. The success rate for cases with representation by patent attorneys alone was about 2.3 times higher than that for cases with representation by lawyers alone, and about 1.8 times higher than that for cases with joint representation by lawyers and patent attorneys (Fig. 2). These facts suggest that it would be the most effective for plaintiffs (i.e., patent appli-

cants) to use only patent attorneys as attorneys in order to acquire the highest case success rates.

Here, the reason why appointment of patent attorneys is advantageous in terms of case success rate is reviewed. According to the 2012 report of Yamada and Inoue, reasons for revocation of trial decisions relating to rejection of inventive step can be roughly divided into the following categories: (1) erroneous identification of inventions being applied for; and (2) existence of motivations, factors that prevent patent approval, and unprominent effects. Category (1) above can be further subdivided into: (i) misunderstanding of the nature of the invention; (ii) mishandling of papers related to cited inventions; and (iii) misunderstanding of how the nature of the invention corresponds with and differs from cited invention(s). Category (2) above can be further subdivided into: (i) whether or not there could be results or opportunities (i.e., motivations) relating to the invention being applied for; (ii) whether or not there is difficulty (i.e., reasons that preclude patents from being granted) concerning a combination of cited inventions used to satisfy the condition that the invention being applied for can be easily conceived of; and (iii) whether or not advantageous effects (i.e., prominent effects) of the invention applied for would be unexpected by those skilled in the art. Understanding of the nature of the invention, motivation, elements that would prevent patents from being granted, and prominent effects have deep relationships with technical findings. Such matters can be easily understood by person skilled in the art on a daily basis. Moreover, technical findings are important to the case. Therefore, the fact that appointment of patent attorneys is advantageous can be affirmed based on the following: (1) as stated in 2.1, patent attorneys make a request for trial decision as a preliminary step in a case for revocation of an examination decision, and they also provide representation regarding the patent application before such a request in most cases. Thus, patent attorneys have many opportunities to gain technical knowledge about the specific in-

vention seeking a patent; and (2) for patent applications, the success rate for cases with representation by lawyers alone was in the lowest position, but for trademark registration applications, which are not deeply related to technical findings, such success rate changed position with that for cases with representation by a combination of patent attorneys and lawyers (Fig. 3).

With regard to the number of attorneys, in light of the expertise needed and the advanced level of knowledge that is relevant in intellectual property cases, there is no need to explain the reason why cases conducted with the involvement in attorneys have a higher success rate than those conducted without. The more attorneys that are involved (up to three attorneys), the higher the case success rate becomes. This is because a team of three or fewer attorneys is appropriate, as the attorneys complement each other, and a synergistic effect regarding knowledge and experience leading to better results can be easily obtained. Attorneys often engage in a great deal of discussion with inventors and applicants, and formulate case strategies. Three or fewer attorneys are arguably able to complement each other. However, in cases involving four or more attorneys, attorneys can begin to bring up unnecessary points and deviate from the topic of discussion. As a result, situations in which agreement cannot be reached tend to occur easily. This can cause a lower case success rate for plaintiffs. Because of this, greater numbers of attorneys can lead to lower case success rates for plaintiffs. Regarding reasons for this Aoki and Sasahara (2012) observe that for typical disputes, increasing of the number of attorneys may cause worse teamwork, or may cause poor performance in trials, due to moral hazard within a team.

In order to clarify the reasons of the above conclusion, we conducted interviews with ten patent attorneys and two lawyers. According to the interviews, all of the attorneys agreed that a well-known proverb saying that In addition, "Two heads are better than one." could be applied to the conclusion as a major reason. This is because if there is only one head it

may fail to find important solutions with which the other head can provide. Therefore, we believe that the more attorneys that are involved (up to three attorneys), the higher the case success rate becomes.

Furthermore, in order to find out some reasons why is the success rate for cases with representation by four attorneys lower than that for cases with representation by five attorneys, we asked to the twelve interviewees mentioned above to provide us with the reasons. All attorneys have provided us with substantively the same conclusion in individual expressions. Namely, an argument of intellectual property matters performed by four attorneys usually produces two or more different opinions, and it is often difficult to determine participant's policies using decision by majority owing to the even number. In addition, in Japan, it is considered that it is good to argue with three people in total in order to obtain better ideas, whereas English-speaking people say two. They say this is because the third person would act as an umpire before the arguments conducted by the two attorneys in the group, and the umpire would generally lead the arguments to favorite solutions. As we discussed above, it is assumed that the argument performed by four attorneys tends to lower the success rate for cases owing to the lack of majority votes and umpire person.

On the other hand, if five attorneys simultaneously join the argument, it seems to be better than four attorneys in finding their policies, because they can use decision by a majority vote. However, in general, it is natural and possible for three of five attorneys to argue about the matters around the same table, but it is quite unlikely for all of the members. This is because the number of three is, as mentioned above, a good number to argue about the matters in view of the nature of the intellectual property matters and individual time schedules of each attorney and so on. Therefore, it is nature that the three attorneys discuss and obtain their policies in advance, and it is also true that the three attorneys will be annoyed by negotiations with the other two attorneys about the already-discussed policies. It

may cause worse teamwork, or may cause poor performance in trials, due to moral hazard within a team.

As we discussed above, it is the reasons why is the success rate for cases with representation by four attorneys lower than that for cases with representation by five attorneys. In addition, it is the reasons why is the success rate for cases with representation by five attorneys lower than that for cases with representation by three attorneys.

In any case, this study has not enabled definition of the mechanism by which the appropriate number of attorneys can be determined, which would serve to enhance the case success rate for plaintiffs. This issue remains to be addressed in the future.

4. Conclusion

This study focused upon the importance of attorney groupings for cases seeking revocation of trial decisions in Japan. It also analyzed the effect of such importance on the case success rate for plaintiffs.

With regard to cases seeking revocation of trial decisions concerning patent applications, the effect of groups of plaintiff attorneys on the percentage of cases in which the plaintiff was successful was analyzed. As a result of analysis, the highest rate of revocation was 25.4%, when only patent attorneys represented cases; the second-highest rate was 20.8%, when patent attorneys and lawyers represented cases together; and the lowest rate was 11.1%, when only lawyers represented cases. That is to say, the success rate for cases in which only patent attorneys served as representatives was about 2.3 times higher than the rate for cases in which only lawyers served as representatives, and about 1.8 times higher than the rate for cases in which both patent attorneys and lawyers served as representatives.

It was also revealed that, within the range of 1 to 3 patent attorneys used for a patent application, higher case success rates accompany increases in the number of patent attorneys. However, the use of four or more

patent attorneys results in lower case success rates.

The aforementioned results suggest that in regards to cases seeking revocation of trial decisions concerning patent applications, attorney groupings have important effects on the case success rate for plaintiffs. Moreover, it has been confirmed that it is advantageous for plaintiffs if only patent attorneys are representatives, and if the number of such patent attorneys is three.

NOTE

- 1 A patent applicant is called an appellant at a trial stage.
- 2 Article 8 of the Japanese Patent Law.
- 3 Article 178 of the Japanese Patent Law.
- 4 Article 77 of the Japanese Constitution, Article 2 of the Japanese Court Law.
- 5 Article 178 of the Japanese Patent Law.
- 6 Article 179 of the Japanese Patent Law.
- 7 Article 121 of the Japanese Patent Law.
- 8 Article 123 of the Japanese Patent Law.
- 9 "astamuse project patent precedent database" (<http://tokkyo.hanrei.jp/>) visited on October 8, 2014.
- 10 "astamuse project trademark precedent database" (<http://shohyo.hanrei.jp/>) visited on October 8, 2014.
- 11 "designated representative" (https://www.jpo.go.jp/shiryu/kijun/kijun2/pdf/sinpan_binran/80-01.pdf) visited on October 8, 2014.

REFERENCE

- Aoki, R. and Sasahara, A. (2012), "Empirical analyses of the administrative litigation about intellectual property rights — Causal relationship among Probability of success, Number of attorneys and Trial period," No. 542. Center for Intergenerational Studies, Institute of Economic Research, Hitotsubashi University.
- Arai, H. (2005), "Intellectual property strategy in Japan," *International Journal of Intellectual Property-Law, Economy and Management* 1.1, pp. 5-12.
- Bausch, T. (2009), "International IP Strategy and Patent Attorneys," *Journal of Intellectual Property Association of Japan* 6.2, pp. 4-10.
- Japan Patent Office (2013), "Intellectual Property Law (Industrial Property Law) Annotations, 19th Edition," (2013.06)
- Kawada, A. and Inoue, Y. (2011), "Outline of Cases Seeking Revocation of Examination Decisions in 2011, Precedent Study, Department of Intellectual Property, Tokyo Bar Association," *Patent* 64.3, pp. 44-60.
- Kawada, A. and Inoue, Y. (2012), "Outline of Cases Seeking Revocation of Examination Decisions in 2011, Precedent Study, Department of Intellectual Property, Tokyo Bar Association," *Patent* 65.6, pp. 89-109.
- Kobayashi, T., Segawa, Y., and Watanabe, T. (2009), "Changes in the Rate at which Decisions are Upheld in Cases Seeking Revocation of Examination Decisions Resulting in Invalidations, and the Background Thereof" UTokyo Policy Alternatives Research Institute, PARI Working Paper Series No. 1.
- Supreme Court (2002), "Statistical Data for Administrative Cases" Administrative Affairs Bureau, General Secretariat of the Supreme Court (<http://www.kantei.go.jp/jp/sihouseido/kentoukai/gyouseisoyou/dai3/5siryu.pdf>, visited on October 10, 2014).