

STUDY OF OUTSOURCING OF PRIOR ART SEARCH IN JAPAN AND
CONSIDERATIONS FOR THE BRAZILIAN NATIONAL INSTITUTE OF INDUSTRIAL
PROPERTY.

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Abstract

A scene of huge amount of patents application pending examination, the goal of reducing the first action pendency increasing the efficiency, and the difficulty of hiring public servants, has been current for Brazilian National Institute of Industrial Property (INPI) and a past history to the Japan Patent Office (JPO). Japan was the first world's Office to adopt the outsourcing of the Prior Art Search, launched in 1985, and has been increasing the outsourcing on the last few decades to reach the first action pendency goal. From this experience of Japan, this study intends to identify opportunities, benefits and constraints of the outsourcing strategy for Brazil.

The methodology of this study is based on the literature on outsourcing in Brazil's Public Administration; previous information on outsourcing of Prior Art Search on JPO; interview with a relevant researcher in economics and questions for JPO. The results were presented to support the decision-maker to answer the main questions related to outsourcing planning in the public administration, such as: How to control and evaluate? What are the benefits and motivations?

The results point out that the outsourcing of the prior art search strategy has a limited effect to decrease the backlog of invention patent applications where the work-sharing and securing the adequate number of examiners seems to be the main actions. However, minimizing the risks, this study recommends a pilot program in outsourcing of prior art search to provide INPI and the stakeholders the expertise for adopting the outsourcing as a complementary strategy to increase efficiency and quality in the technical examination, to promote the industrial property, and to create new opportunities outside the Office.

Keywords: Patent Examination, Outsourcing of Prior Art Search;

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List of Abbreviations

APIC	Asia Pacific Industrial Property Centre
ECLA	European Classification System
EPO	European Patent Office
FY	Financial Year with respect to India and Fiscal Year with respect to Japan
INPI	Brazilian National Institute of Industrial Property
INPIT	National Centre for Industrial Property Information and Training
IPCC	Industrial Property Cooperation Centre
IPDL	Industrial Property Digital Library
IPEA	International Preliminary Examination Authority
IPER	International Preliminary Examination Report
IPO	Intellectual Property Office
IPRs	Intellectual Property Rights
ISA	International Search Authority
ISR	International Search Report
JIII	Japan Institute of Invention and Innovation
JIPA	Japan Intellectual Property Association
JPO	Japan Patent Office
LPI	Brazilian Industrial Property Law
MDIC	Ministry of Development, Industry and Commerce, Government of Brazil
METI	Ministry of Economy, Trade and Industry, Government of Japan
PCT	Patent Cooperation Treaty
USPTO	Unites States Patents and Trademarks Office
RSO	Registered Search Organization
WIPO	World Intellectual Property Organization

1 Introduction

Currently, the average first action pendency of the INPI counted from the filing date is about 8 (eight) years, due to the historical accumulation of pending applications for examination (*backlog*) and the filing of new applications. The number of pending applications for examination was increasing every year until 2015, and the number of patent examiners has always been insufficient to deal with.

The worst consequence of this long waiting time for the first action and decision of the patent applications is discouraging the use of the patent protection as an economic strategy of competitiveness, by the lack of effectiveness when the patent right is obtained too late. According with the legal maxim mentioned by Mr. Nakajima, the former Commissioner of JPO, “Justice delayed is justice denied”. In the case of domestic applications filed directly in the institute, the consequence is even greater, because they will only have a search and an opinion about their invention eight years from the filing date.

The INPI have been taken actions to decline the number of pending applications and speedy up the first action time, such as accelerated examination programs, accelerated decision programs for reduce the examination time, as well as hiring new examiners and adopting measures to improve productivity, as the home-office and the examination into INPI Regional Offices. Most of these actions are being effectives in decreasing the backlog since 2016, but they have a long-term effect.

A short-term solution has proposed by MDIC and INPI in 2017, named Simplified Decision Procedure that consists of granting the pending patent applications without conducting the technical examination. Although the proposal provides mechanisms for the applicant to request non-adherence to the program, the project has faced resistance in different sectors of society. This program is pending of government approval.

The short-term proposal would reduce drastically the first action pendency, however, if INPI does not maintain the number of patent decisions in the same level than the number of new patent application, the first action time and the backlog will return to grow up. Maintaining an ideal number of patent examiners is another challenge faced by INPI, from the government’s resistance for hiring new public servants.

The Brazilian scene of huge backlog, the need to reduce the pendency first action increasing efficiency and maintaining quality, and the difficulty for hiring public servant examiners, are similar challenges faced by Japan years ago. Among different actions to deal

with backlog and reduce the first action pendency, the increasing in the outsourcing of prior art search was one of the strategic actions to JPO deal with this challenge.

Before thinking about the hypothesis of adopting the outsourcing of prior art search in the patent examination in Brazil, it is necessary first to study other measures that Japan has used to face the Backlog and to reduce the First Action pendency, keeping in mind the country's particularities. The following Basic Information Section focus on making a deep analysis of the characteristics of the application into Brazilian backlog and describe some previous actions taken for INPI to dismiss the effect FA (First Action) pendency.

In (Yamauchi & Nagaoka, 2015) proposed to investigate if the outsourcing of prior art search on Japan increase the efficiency of patent examination in terms of quality and speed, and conclude that the outsourcing significantly decrease the number of appeals against rejection and grant, and increase the volume of final decisions (rejection and grant) by examiner per unit of time.

Japan was the first world's Office to adopt the outsourcing of prior art search, launched in 1985, followed by Korea which began in 1992¹. From that 30 years of Japan experience in Outsourcing, this study aims to know the outsourcing plan adopted by the JPO, identifying opportunities, benefits or constraints that might assist INPI in achieve its institutional mission of increase efficiency in granting patent rights in Brazil.

From the previous studies and the normative about the outsourcing in Brazil's Public Administration, the results focusing on to present information to support answer six questions: What are the definition and scope of the service which intending to outsource? Is it possible to outsource this service? How to control and evaluate the service? What are the convenience and benefits to outsourcing? What would be the design of the outsourcing? What are the motivations?

Based on the results of the study, the final section consists of recommendations for INPI, including suggestions for improvements in Information Technology tools, and the opportunity for a pilot program to outsource the Prior Art Search for Utility Models applications.

¹ "Expanded outsourcing of prior art searches", Korean Intellectual Property Organization, 2003
http://www.kipo.go.kr/kpo/user.tdf?seq=174&c=1003&a=user.english.board.BoardApp&board_id=kiponews&catmenu=ek06_01_01

2 Basic information and Previous studies

This section provides background information about the patent application figures in INPI. Moreover, considering that Outsourcing of prior art search is one action among several to INPI achieve the efficiency and quality goals, this section includes the actions that INPI has been taking to reduce backlog and diminish the prejudicial effects of the first action pendency for both the applicant and the public.

The procedure to obtain a patent right in Brazil is regulated by the Industrial Property Law (LPI), Law No. 9.279 May 14, 1996 and by the INPI Normative Rules. The law establishes two kinds of patent application: invention patents or utility model patents. The workflow is almost the same for both patent categories. First, after the patent application has been filed, directly or by PCT national phase, the office verifies whether the patent application meets the formal requirements. In case of the first filing in Brazil, the application is maintained in secrecy for eighteen months, when it is classified, and finishing the secrecy period, the application is published. The applicant has the deadline of thirty-six months, from the filing date, to request the examination otherwise the application is withdrawn. After the request for examination, the application enters in the queue of pending first action applications.

The First Action consists of issuing the Search Report² and the First Examination Report, containing the results of examination when were verified the application's conditions (descriptive sufficiency and clarity, support of the claims, and unit of the invention) and the patentability requirements (industrial application, inventive step, and novelty). When the patent examiner opinion is for non-patentability or they formulate requirements, the applicant has the opportunity to reply the examination report within 90 (ninety) days. If the applicant does not reply the requirements, the application is withdrawal, otherwise, the technical examination continues until the decision for allowing or rejecting the patent application.

The time elapsed from the first action to the decision is less than one year on average, that is a reasonable time against the decision time pendency taken from the filing date. Recently, the decision time pendency for utility models patent applications is seven years, and for inventions patent applications is ten years, in average. This pendency is an average along the

² Note that in the international phase of PCT, or in EPO, the search report is issued before the request to examination together with the publication.

technical fields of the patent applications. For instance, in the telecommunication field, all patents examined in non-fast track route are decided after ten years.

The LPI Article 40 (forty), sole paragraph, establishes that the term of a patent, counted from the granted date, will not be less than 10 years for invention patents and will not be less than 7 years for utility model patent application. It means that when the patent application is granted after ten or seven years, the term of the patent is lengthened. This article is a safety forecast for the applicant, however, it is undesirable for the public due to the extended patent term.

2.1 Pending Patent Applications

There are many distinct definitions for backlog calculation among different Patent Offices. The INPI has used, for years, calculating the backlog by the number of pending patent applications for a final decision, since the filing date. This is the simplest way to explain and calculate the backlog, accumulating the number of filed applications minus the decided applications in a year. Another common definition is accumulating only the number of patent applications that have already requested the examination and are pending examination or pending first action.

The definition used to INPI has the drawback of overestimate the number of pendency, showing as pending all applications have not decided yet, even though some applications is not really pending but into the examination request period. However, it has the benefit of considering all non-decided filed applications as potential pending.

Utility Models Patent Applications

The Figure 10 shows the number of Withdrawal, Pending and Decided Utility Model patent application, according to the year of the applications filing date. The bottom chart shows the values in terms of percentage from the total filed. The Utility Model patent applications are filed mainly by residents and the amount of application of non-residents is statistically irrelevant. The average number of applications filed on the last five years, is 2,800 with a slightly decreasing since 2007. The bottom chart shows that before the third year, 25% of the Utility Models applications are withdrawn mainly because they do not comply with the formalities. After the third year, the withdrawn rate increase to 50% due to non-payment of the first annuity fee or non-request the examination.

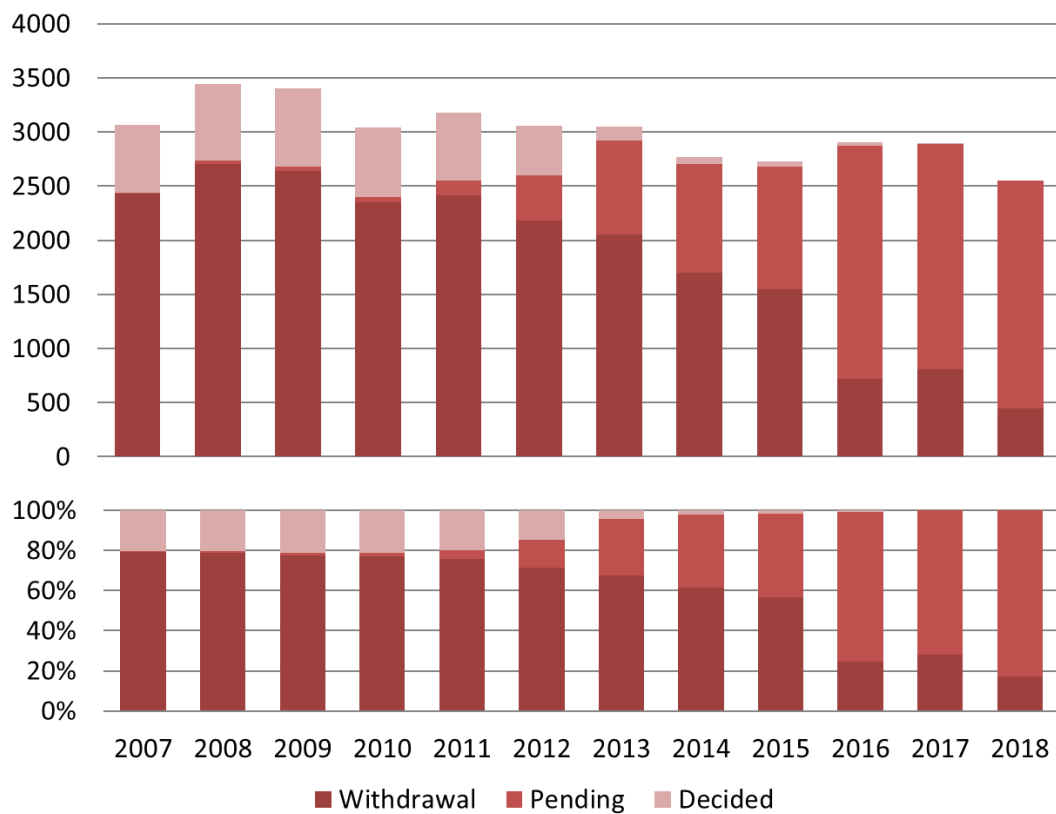


Figure 1: Utility Model patent applications by filing year.

The number of Utility Model applications pending First Action after three years, is around 3,700 applications.

Invention Patent Applications

The shows on the top chart the number of Withdrawal, Pending and Decided Invention patent application, according to the year of the applications filing date, since 2000, and the bottom chart shows the values in terms of percentage from the total applications filed.

The small values in the 2017 and 2018 refer to the national phase PCT applications that may come in up to thirty months from the filing date, and those numbers will increase further.

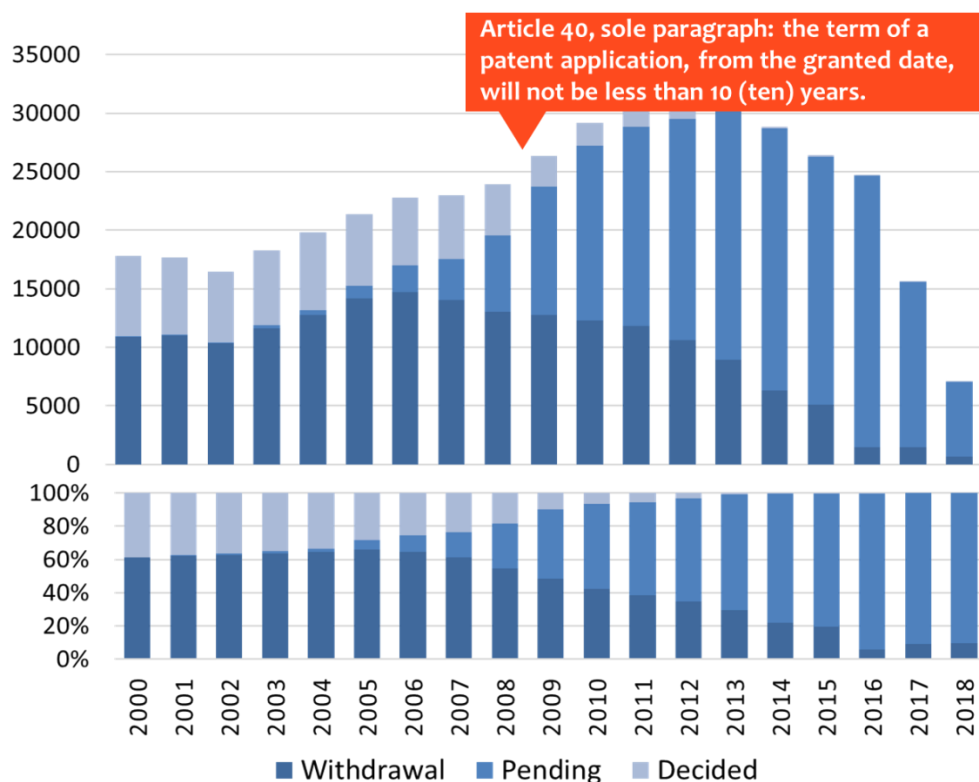


Figure 2: Invention Patent application by filing year.

The number of resident's applications reached in 2017 the record value of 5500 applications, equivalent to 21% of the total patent applications filed (INPI, 2019). In JPO, the number of resident's applications is 80% of the number of applications, and 72% of the total number of patent applications request examination (JPO, 2018).

The , bottom chart, shows that after the third year, the withdrawn rate is 20% due to non-payment of the first annuity fee or non-request the examination. There is a clear increasing in the relative number of withdrawn applications according with the filing date. The older the application, the higher is the number of withdrawn applications.

The number of applications pending First Action after three years is approximately 140,000, in which approximately 25,000 will be decided after ten years and whether granted the term will be extended according with the LPI Article 40, sole paragraph.

From the total of the pending applications, there are not request for priority for 16% (22,400), which means that 84% of pending invention patent applications have a family member patent application filed in another country and probably there are examination results.

Pending Patent applications without priority by technical field

The Figure 11 shows the number of pending invention patent applications without priority distributed along the technical fields³.

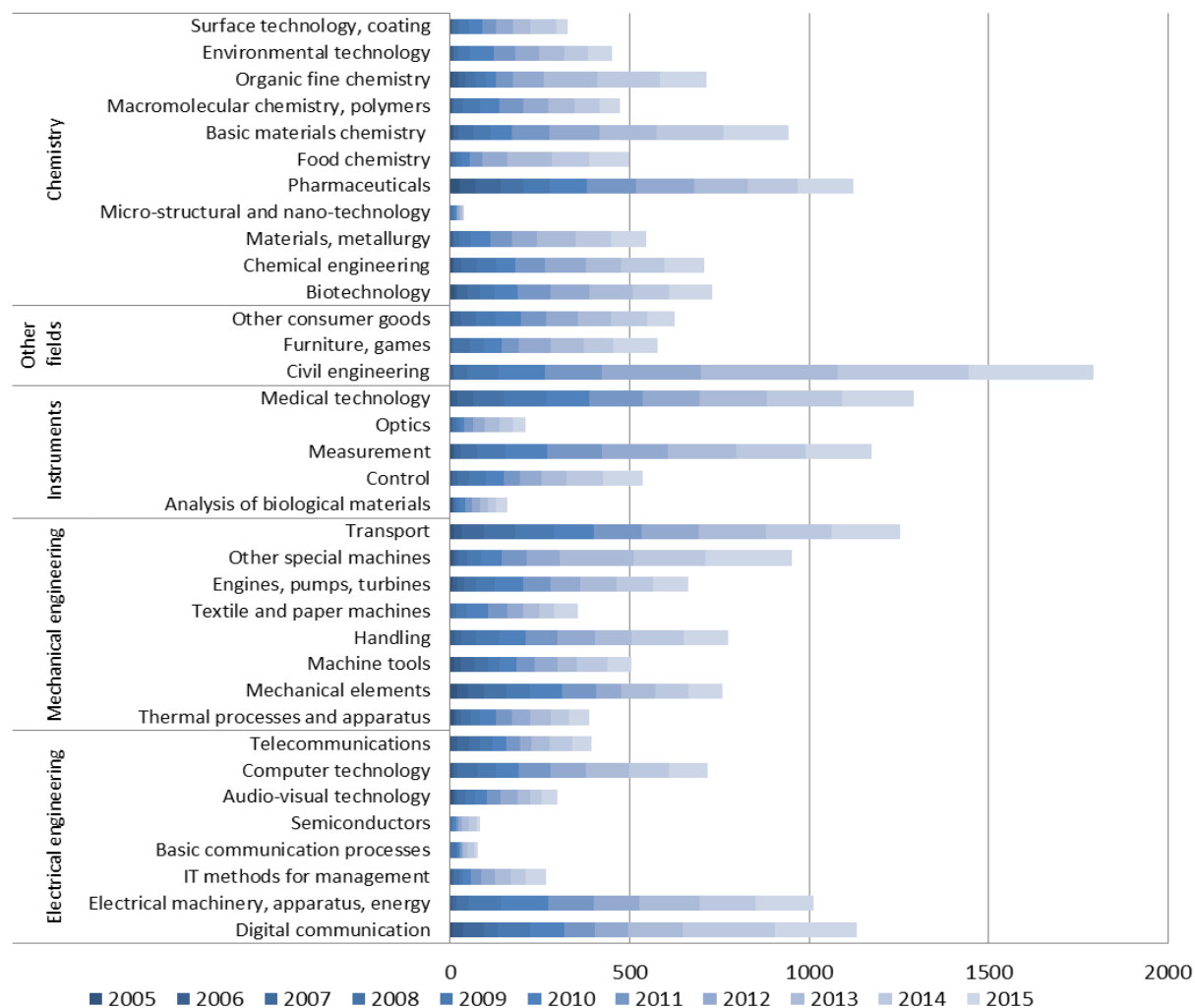


Figure 3: Pending Invention Patent applications without priority by technical field.

This non-uniform distribution comes not only from the number of filed applications in each technical field over the last years, but by the number of examiners available in these technical fields. For instance, in the telecommunication field, while a high number of applications were filed on the digital and cellular communication there was only two examiners in the telecommunication division.

³ The values were obtained from Technical field correlation table provided by WIPO.

The patent applications in the pharmaceutical field particularly has an additional delay due to the provision included in the LPI which establish that pharmaceutical products patents must be submitted to ANVISA's (Brazilian Health Surveillance Agency⁴) prior consent before being granted.

The shows the distribution of pending applications without priority among five technical areas. The Utility Models exhibit a high concentration in the Mechanical engineering (44%) and Civil engineering and Furniture (31%), corresponding to 75% of the number of pending Utility Models. For invention patent applications, the Figure 11 shows an increasing in the number of applications in the Civil engineering on the recent years, which represent 13% of the total pending application without priority, according with the .

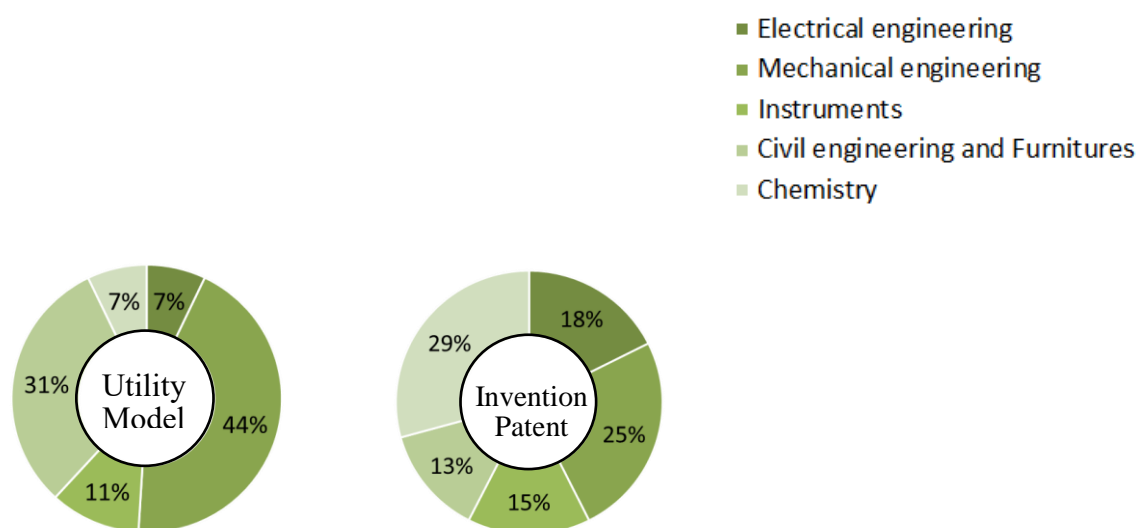


Figure 4: Distribution of pending applications without priority among five technical fields.

2.2 INPI actions to face the Backlog

The chart of the shows the historical series of the number of patent applications Pending Final Decision - Backlog - since 2009 until 2018, according with the definition used by INPI. (INPI, 2018). The chart shows a decreasing in the Backlog since 2016, due to the number of decisions has exceeded the number of filings in the two last years.

⁴ ANVISA is equivalent to the FDA (Food and Drug Administration) in United States.

Number of Patent applications pending final decision (Backlog)

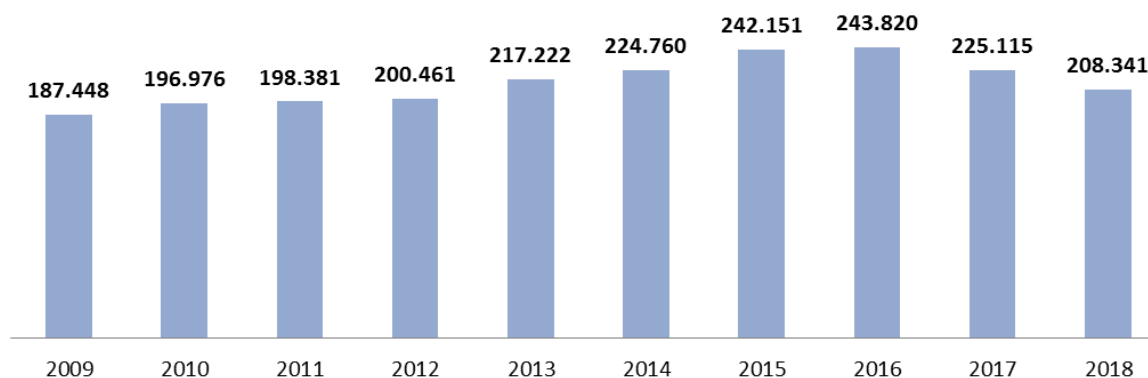


Figure 5: Number of Patent applications Pending Final Decision since 2009 until 2018.

The INPI have been taken actions to decline the number of pending applications and speed up the first action time, such as accelerated examination programs, accelerated decision programs for reduce the examination time, as well as hiring new examiners and adopting measures to improve productivity, as the home-office and the examination into INPI Regional Offices.

Accelerated Examination: Similar to the Accelerated Examination System in Japan⁵, INPI has implemented “Prioritization Programs” to accelerate the examination of patent application in cases that the applicant or the society need a faster response about the patent right. Elderly applicants or applicants with severe illness or physical or mental disability can use these fast tracks. The patent applications in litigation, related to products to treat specific diseases or green patents can be accelerated by these programs.

Programs designated to Research Centers, Universities, Technological Institutes, Small and medium enterprises are still pilot programs, where the number of applications or the technological fields are limited. In the same way the PPH programs have been expanded in a controlled manner, limiting the number of applications and the technological fields⁶. Currently, INPI has five PPH programs in place with EPO, JPO, PROSUL, SIPO and USPTO. The number of requirements for prioritizations, including PPH programs, have reached about 3,4 % of the number of applications on 2017.

⁵ https://www.jpo.go.jp/torikumi_e/t_torikumi_e/outline_accelerated.htm

⁶ <http://www.inpi.gov.br/menu-servicos/patente/projeto-piloto-pph>

Pre-examination Program: The goal of the Pre-examination program is to **reduce the examination and decision time** during the patent examination process. An application submitted to this program is not prioritized, this means that the application's position in the pending queue does not change.

On October 25 by the Regulation the INPI/PR N° 227, the INPI has regulated the examination procedure considering the results of Prior Art search already done by others worldwide IP Offices for patents application pending examination more than ten years.

According to this regulation, if the patent application is in exam, and there is a family member application that has already examined by another country, then, this application would be issued a "Pre-examination report" before the regular patent examination.

In this "Pre-examination" a Search Report is issued based on the documents cited by other IP Offices. At the same time, a request to the applicant is issued for voluntarily presenting arguments or amended claims, according with the cited documents and the examination results on other Offices. If the applicant does not reply the request on time the patent application is withdrawal. We believe that the applicant becomes more cooperative if the expectation of grant is high.

Following the examination, the Regulation established that if the examiner concludes that the cited documents on the Search Report cover the prior art in a sufficient manner, he can choose do not conduct further search for Prior Art and proceed with the substantive examination. In Addition, if the applicant restricts the claims accordingly and/or provides useful arguments in advance, is expected that the decision time is shortened. There isn't obligation for the patent examiner to accept the Search Report nor the examination results from another Patent Office, but he is encouraged to consider this.

Simplified Decision Procedure: A Law Act to decide the pending patent applications have been proposed by the MDIC and INPI, and it is pending approval of the Brazilian Government. The regulation proposes to simplify and speed up the patent decision procedure by granting the pending patent applications without substantive examination, and such as published.

This proposal is a fixed-term procedure, because it would be applied only to patent applications filed before the Regulation publication date. The patent applications related to pharmaceutical field would be apart from this procedure too. In addition, the applicant or a

third party could submit a technical opposition to exclude the patent application from the simplified procedure, and then the substantive examination would occur normally.

The INPI submitted this procedure to a public consult that finished on August 31, 2017, in which many criticism and suggestion were received as well as support to the procedure.

Although the proposal provides mechanisms for the applicant to request non-adherence to the program and to have their application examined, it is understood that the program is a measure that has negative impacts such as reducing the quality of decisions issued by INPI, which are currently considered high-level decisions. For this reason, the project has faced resistance in different sectors of society.

Collaboration Project with CNPq: INPI have been planning an agreement with the National Council for Scientific and Technological Development (CNPq) focusing on training researchers in Prior Art Search and Substantive Examination. The objectives of this action are to raise awareness about industrial property and enable researchers to be able to provide an opinion about the patentability requirements for INPI. This project was included in INPI's strategic and budgetary planning for 2019.

Preliminary Opinion Program: Since 2009 the INPI is an International Search and Preliminary Examination Authority (ISA/IPEA) of the Patent Cooperation Treaty (PCT). Under the PCT regulation, applicants who choose this route receive the International Search Report (ISR) and the Written Opinion (WO) about the patentability requirements of their international application before the publication of the international application. Therefore, an applicant who chooses filing directly in Brazil will only receive an opinion about your invention patentability on the first action after the publication and the request for examination.

To mitigate this problem, INPI created the Preliminary Opinion Program where the applicant can request the search and preliminary opinion, in the manner of the PCT, at any time after filing. The number of requests for Preliminary Opinion has increased suddenly in the last two years, with 111 and 175 requests in 2017 and 2018, respectively. In 2018, the number of requests represents 3.5% of the domestic filing and 75% (seventy-five percent) of the requests comes from only two Universities.

The summarizes the numbers of INPI in 2018, obtained from annual reports and from the Strategic Plan 2018-2019, where includes the target to reduce by half both the decision time and the first action time.

Table 1: Summary of INPI Basic Information

Number of INPI	2018
Invention Patent Applications	24,857
Domestic Invention Patent Applications	4,980 (19%)
Utility Model Patent Applications	2,587
Final Decision Actions	17,264
First Actions	16,418
Final Decision Pendency	7,7 years*
First Action Pendency	7,4 years*
Total Pendency	10 years**
Pending Decision Patent Application	208,341
Examiners	326 (December)

Note: *from the request for examination date. (data from 1st half of 2018)

**from the filing date. (data from 1st half of 2018)

3 Methodology

The methodology used in this study basically consists of search in the literature previous studies related to the outsourcing in Brazilian Public Organizations, previous information about the actions of JPO to deal with the backlog years ago; information from the JPO about the Management of Outsourcing, and interviews with Registered Organizations that execute the Prior Art Search to JPO.

Questions to JPO: A list of twenty questions was addressed to JPO, categorized in three main topics: Influence of outsourcing on the examiner's productivity; the Outsourcing Management; and considerations for subsidy the outsourcing in Brazil. After receiving the answers, a supplementary list of ten questions was sent to clarify some specific points.

Interview with Mr. Yamauchi: The article of (Yamauchi & Nagaoka, 2015), was an important reference for this study, when the author proposed to investigate the efficiency of outsourcing in JPO. An interview with the main author brought some insight regarding the benefits and risks of outsourcing the Prior Art Search.

Training Course on Information Technology, on December 17th: was very useful for the context of my research, especially on the topics of work sharing, access to patent information, and JPO system tools. In this course I realized the importance of providing better access to Brazilian patent documents in which the adoption of the WIPO Publish tool can be one way of doing this.

JPO meeting: Mission of Ms. Laje, Patent Director of INPI, on January 16th and 17th. The meeting consisted of a presentation of the Outsourcing by the JPO Examination Promotion Office.

Visiting AIRI organization: The INPI had sent 22 (twenty-two) questions to the AIRI company. Visiting the company, we had a meeting with four company members who presented the answer to the questions. We have had the opportunity to clarify and supplement all issues related to the Registered Outsourcing Organization.

4 Results and discussions

Before thinking about outsourcing of the prior art search, the next section focus in describing other measures that Japan used to face the Backlog and to reduce the First Action pendency, including some comparative analysis with the actions that INPI have been taken.

Adopting the outsourcing in Public Organizations have found some divergent opinions about the convenience and law limits, but objectively address the question of how to identify and conduct the outsourcing of services to meet the public interest and respect the law.

4.1 Insights from the JPO's actions to deal with the backlog

The recent challenges of JPO differ from years ago. Around 2006 year, with a growing backlog after the adoption of the 3-year period for the examination request, instead of 7-year, JPO was charged of increasing the efficiency and maintaining quality.

The strategic actions of both offices in deal with the backlog go beyond those described in this study. The actions described in this study seek to identify insights that may help INPI in reducing the first action pendency before talk about outsourcing.

The main difference when we compare the strategic plan of the offices is the fact that in Japan the plans to face the backlog came from a larger State plan. “In February 2002, the Prime Minister Junichiro Koizumi, in his policy speech, announced the national goal of making Japan an intellectual property-based nation” (JPO, 2007). In Brazil, so far the intellectual property has not received this same attention from the state. When the State puts Intellectual Property as a priority, this drives not only the actions for INPI office, but spreads in different directions, as in educational, industrial and economic policy.

The reversal in applications numbers of residents and non-residents between Japan and Brazil shows this difference in the national culture of industrial property. While in 2017 the number of non-resident applications in Japan was approximately 5 times higher than Brazil, the number of resident applicants was almost 45 times higher.

Comparing Japan's Status Reports from now and 10 years ago, we noticed the difference in the current challenges of the JPO. From the JPO Status Report 2006 and 2007, and the (Rambadu, 2007) report, we can summarize the main measures that JPO has achieved to reach the goals of the *expeditious and efficient patent examinations* plan. Recently, Japan's current concerns are in enhancing the quality program in patent examination and examining

new technologies such as Artificial Intelligence, the Internet of Things, Industry 4.0, and essential patents related to standards.

Table 2: Summary of the numbers from JPO (2006 and 2017).

Number of JPO	2006	2017
Patent Applications	408,674	318,479
Domestic Applications	347,060 (85%)	260,290 (82%)
Request for Examination	382,116	240,118
First Actions	292,756	239,236
Search Outsourced	197,000 (67% FA)	153,000 (64% FA)
International Search	25,556	45,948
First Action Pendency	26 months*	9,4 months*
Total Pendency	-	14,6 months*
Examiners	1,468 (294 fixed-term)	1,696 (499 fixed-term)

Note: *from the request for examination date.

The INPI's actions over many years have been aimed to face the backlog and has been directing the staff time and effort to solve the same old problem, sometimes losing the focus for new improvements.

The Short-term Proposal of granting the pending patents by the Simplified Decision Procedure can be viewed as “a bad remedy for the backlog disease”, as commonly speech by the, Former President of INPI, Mr. Luiz Otávio Pimentel. The proposal would reduce drastically the first action pendency, however, if INPI does not maintain the number of decision in the same level than the number of new patent application, the first action time and the backlog will return to grow up, and we will revive that ghost.

Returning to the JPO actions, there are no surprise when we read from the JPO’s 2007 report “In order to conduct timely and high quality patent examinations, the JPO is strengthening its examination framework and improving the efficiency of its examination work by steadily implementing various measures, including hiring fixed-term examiners and increasing the outsourcing of prior art searches” (JPO, 2007).

Securing the number of patent examiners: the report (JPO, 2007) states that even using the outsourcing of the prior art search and enhancing efficiency to a considerable degree

comparing with other Patent Offices such as USPTO and EPO, it is necessary to increase the number of patent examiners in order to greatly enhance its examination capability.

The ratio of the number of patent applications filed by year per number of first action in that year, can give an expectation of the first action pendency. For comparison, in JPO, this ratio was about 1,4 years in 2006, and in INPI, this ratio was 1,7 years in 2017. This ratio indicates the number of applications per year in INPI exceeds the working capacity by 70%. This means that the recent INPI's examination capacity is even lower than JPO's in that time, when it was necessary to increase the number of examiners.

In case of the execution of the Simplified Decision Procedure granting the pending application, there will be application that the procedure will not be applied. In addition, the newer the applications, the more complex the applications and it will require more examination time. The number of withdrawn applications will be lower. Considering these factors, the number of examiners in the INPI is insufficient to avoid the pendency time to grow up again.

Fixed-term examiner: As Brazil, the JPO's patent examiner is usually a civil servant or “public officer”, and the JPO report mentions the government's policy of reducing the number of public officer. JPO had employed fixed-term examiners since 2004. Hiring of fixed-term examiners was started because their hiring was incorporated into the Intellectual Property Strategic Program 2003 (Strategic program on creation, protection, and utilization of intellectual property) as provisional measures for reducing backlog⁷. The term of appointment is 5 years, and can be extended to up to 10 years (Rambadu, 2007). Except for the fact that the term is limited, there is no difference between regular examiners and fixed-term examiners in the work of granting patent rights. The JPO hires fixed-term examiners by conducting examinations/interviews on its own⁸.

The Brazil's Federal Constitution of 1988 established that the public servants should be hired through public contest (Art. 37, item II). However, there is prevision to allow the recruitment of fixed-terms public servants in order to meet the temporary need of exceptional public interest (Art. 37, item IX) (Nelson & Braga, 2017).

In the past, INPI has tried hiring fixed-term public servants for patents analysis, through the Art. 2º VI item c) of the Law Nº 8.745, of December 9, 1993. However, the Brazilian Federal

⁷ Extracted from the JPO's answer to the list of questions.

⁸ Extracted from the JPO's answer to the list of questions.

Supreme Court (STF), judging an Unconstitutionality Lawsuit (ADI 2380-0), revoked the Law item c) for unconstitutionality, considering that the patent analysis is a permanent activity of the State.

Consolidated Examination: This procedure adopted by JPO consisted of examining a group of application in one lot, by systematically understanding the technical details through explanations or interviews with applicant (Rambadu, 2007). JPO has implemented Consolidated Examination for technically relevant applications, such as a group of applications concerning composite technology, or a group of applications concerning the same product, or series of applications concerning inventions made by the same inventor.

Work-sharing: JPO promoted a cooperation for mutual exploitation of the Prior Art Search and the examination results carried out by other offices. That initiative has included: (i) the expansion of the PPH programs with USPTO, KIPO, UK; (ii) the development of Systems to allows examiner online access examination-related information in other offices; (iii) Utilization of prior art search/examination results of foreign offices, where was formulated the “Guidelines Concerning the Use of Prior Art Search/Examination Results of Foreign Patent Offices, in March 2007. Those guidelines remain effective on examination conducted on and before September 30, 2015 (JPO Guidelines, 2015).

The figure from the Lecture "Work Sharing and IT Tools" shows how the workload of examination can be reduced by utilization of Search and Examination results of other Offices.

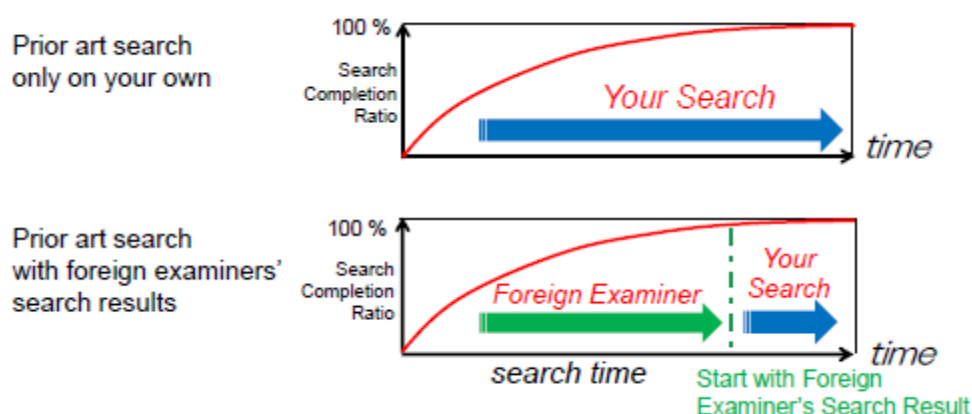


Figure 6: Effect of work-sharing on the examination time (picture from the IT Training Course Lecture).

From the JPO point of view, a typical initiative aimed at work sharing and improving quality of examination by using examination results of other offices is the PPH program. For the purpose of achieving accelerated examination, detailed requirements such as correspondence of claims, submitting of examination results of the Office of Earlier Examination by applicants, etc. are set by both IP offices concerned for the PPH. This makes the PPH an initiative where multiple IP offices collaborate closely with each other for reusing examination results⁹.

On the other hand, JPO examiners are recommended to use examination results of other offices by using One Portal Dossier system or WIPO-CASE system as an initiative within the JPO, in the same way as for INPI. (As with INPI, examiners are not obligated to make the same decision as other offices.) Even though we consider the initiative itself as an initiative for improving efficiency and quality of examination of the JPO, we are mutually referring to examination results with other offices in practice, since JPO's examination results are provided to other offices via the One Portal Dossier or the WIPO-CASE. The fact that multiple offices are actively using each other's examination results via browsing systems of dossier information, which are not limited to specific applications such as PPH applications, can be considered as a sort of collaborative work between IP offices¹⁰.

Since most applications in the INPI backlog has at least the search report and examination done by other offices, the collaborative work, or work-sharing, seems to be the most feasible measure to achieve efficiency while maintaining a desirable level of quality. In this sense, the PPH program has been gradually expanded and the Pre-examination program, described in the Basic Information section, has been applied intensively by INPI.

However, the effectiveness of the pre-examination program depends on the commitment of the applicants to reply and amend their application according to the documents already issued by other offices. The results of the pilot project show that in 7% of applications with pre-examination, the reply was not significant to accelerate examination. In addition, 13% of the selected applications did not participate of the program because they were national applications, as Utility Models.

⁹ Extracted from the JPO's answer to the list of questions.

¹⁰ Extracted from the JPO's answer to the list of questions.

Outsourcing: The number of outsourcing of prior art search in JPO has been increasing over the years and the strategy has been changing. In 2004, the outsourcing system has turned from the “Designed Search Organizations” to a “Registered Search Organizations”. Before 2004, the public-interest corporation IPCC (Industrial Property Cooperation Center) was the only Designed Search Organization. After changing for a Registered Search Organization system, any organization or private corporation can be registered as Search Organization if they meet the requirements. Recently, there are 10 Registered Search Organizations and JPO expected that the competition among organizations, could improve the search quality¹¹.

Related to the report issued by the Search Organizations, JPO has been promoting the "Dialogue Based" instead of only the "Report Based". In the “Dialogue Based” report, there is a previous dialogue between the examiner and the searcher, when the searcher explains the claimed invention and the prior art to the examiner, that can instruct the searcher to conduct additional search if the necessary¹².

Another improvement in the outsourcing system was the expansion of the search scope to include foreign documents in addition to the domestic patents, in 2014.

Productivity and incentives: At the JPO, a target is set not only for FA pendency (9 to 11 months on average) but also for total pendency (14 to 16 months on average), and productivity is managed to adhere to the targets¹³. The degree of target achievement is one of the indicators in assessing examiners’ performance and can affect their promotion or salary.

When the application is outsourced, the point set for FA is lower than that for FA of a non-outsourced case. The point does not change even when a supplementary search is made. The points are purely set in accordance with the type of application and the type of Office Action. Points for FAs are set higher than those for SAs and final decisions¹⁴.

For reference, there are non-outsourced cases that can take 1 to 2 days to issue an FA while it takes about half a day to 1 day for outsourced cases¹⁵.

In (Junbyoung Oh & Yee Kyoung Kim, 2017) the author mentions that in Korean Intellectual Property Office (KIPO), if the examiner must search a broad range of prior art, the

¹¹ Lectures notes

¹² Lectures notes

¹³ Extracted from the JPO’s answer to the list of questions.

¹⁴ Extracted from the answer from JPO.

¹⁵ Extracted from the JPO’s answer to the supplementary questions.

credit per examination disposal is greater (i.e., 1.25 or 1.5), while the credit is less than one if the prior art search is outsourced (e.g., 0.8).

4.2 Considerations for outsourcing of Prior Art Search in Brazil

In (Prado, Teixeira, & Teixeira, 2013), the authors argue that outsourcing is present in our daily life. We ourselves delegate to third parties to carry out activities that we could carry out directly, having more time to spend in actions that we consider more relevant. It happens frequently when parents decide for hiring a professional to organize their children's birthday party or when we decide to eat out or eat at home and use a food delivery service instead of cooking. For our grandparents or parents, it would be nonsense to outsource the birthday party, do not make the cake, snacks and sweets for their children, and do not invite the family to their home. Therefore, which reasons lead us to hire or not another person to do things that we could do it. For a person, we can suppose that the reasons are achieving benefits as spend less time, obtain unexpected result, more quality or be proud for do it.

For a public organization, the authors of (Prado, Teixeira, & Teixeira, 2013) consider that outsourcing one activity or process can be motivated by achieve their mission with more quality, efficiency and effectiveness. However, the benefits of cost, time or quality are factors present in almost every decision of managers, but just mentioning them does not help to take the decision of outsource or not.

Based on these considerations, the work published by (Prado, Teixeira, & Teixeira, 2013) and (Teixeira, Martelanc, & Prado, 2009) propose to discuss methods and instruments to support decision-making for outsourcing or not, and the best way of doing it, presenting a logical flow based on the work of (Sabaté, 2004), in which this report was organized.

Recently, the Decree 9.507/2018 regulates the indirect execution of services in Public administration, through outsourcing, and the Normative Ruling 07/2018 established a the new contract format for the Public Administration, regulating the planning phases of contracting, supplier selection and contract management (ENAP, 2018). Thus, this paper intends to present information that could support a future planning for Brazil outsource of the prior art search based on these regulations.

The considerations in this report regarding the outsourcing of the prior art search in INPI from the experience of JPO, are organized to provide insights to answer the following questions: What are the definition and scope of the service which intending to outsource? Is it possible to outsource this service? How to control and evaluate the service? What are the convenience and benefits to outsourcing? What would be the design of the outsourcing? What are the motivations?

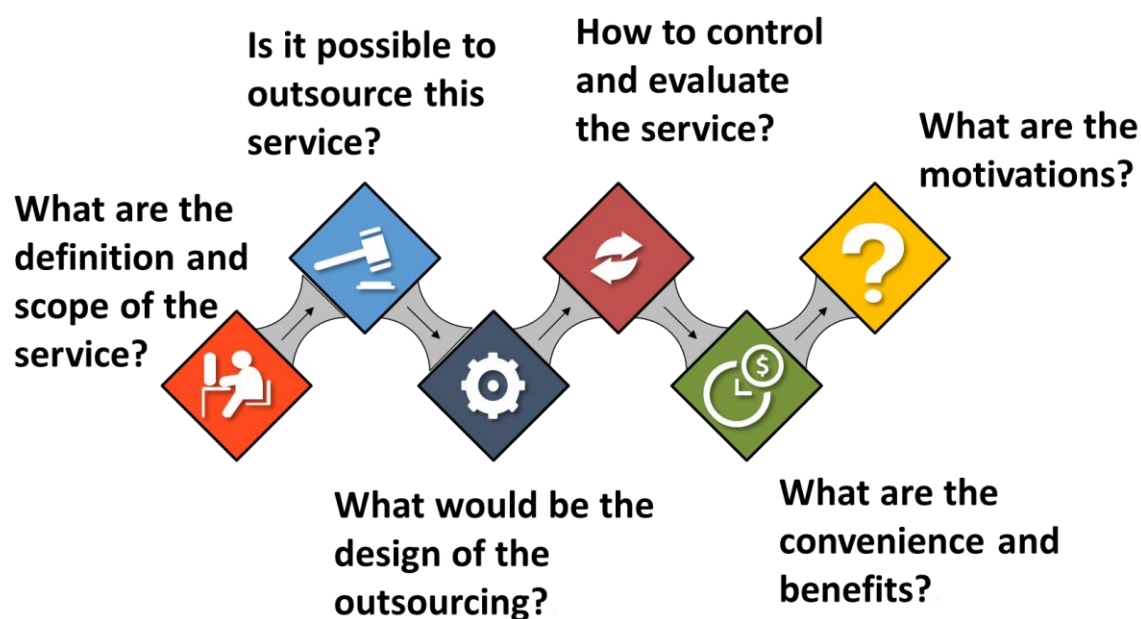


Figure 7: Support questions regarding the adoption of the outsourcing of Prior Art Search.

4.2.1 What are the definition and scope of the service?

The service to be outsourced is part of the patent examination procedure. Thus, first, it is necessary to describe briefly the patent examination procedure in Brazil.

The queue of pending patent applications is ordered by filing date. The invention patent applications are distributed automatically for nineteen Patent Division according to the IPC (International Patent Classification). The Utility Models are assigned for the Utility Model Patent Division. Thus, the Head of each Patent Division monthly distributes the patent application to examiners combining the classification with the technical expertise of the

examiners. When the examiner is in charge of an application without request for priority¹⁶, the internal procedures regulate the following:

- a. The examiner consults the digital dossier of the patent application through internal systems and briefly verify the digitization and another administrative formality;
- b. The examiner read the description to understand the claimed invention and preliminarily verify whether the Search can be conducted;
- c. The examiner conducts the prior art search covering foreign patent documents, domestic patent documents and the non-patent literature (NPL). Usually, the examiner uses: the EPOQUE system to search foreign patent information documents; the Brazilian web search tool for search domestic patent information documents; and commercial systems for search NLP (IEEE Xplorer, STN...).
- d. After that, they understand and compare the prior art documents with the claimed invention drafting the Search Report, and categorizing the documents according to its relevance;
- e. The examiners draft the First Action report verifying the conditions of the application, such as patentability exclusion, unity of invention, clarity, support of the claims, enablement requirement and formulate the decision regarding the patentability requirements of Novelty, Industrial Application and Inventive Step. Then, they issue the first notification for refusal, grant or requirements.
- f. In case of notification for refusal or requirements, the applicant reply the first notification and the examiner verifies the amendments and arguments, issuing a Second Examination report, that contain another notification or a decision for grant or refusal. The examiner is encouraged to take the decision on this second examination.

This set of tasks is usually common among patent offices (WIPO, 2014), although the distribution of efforts can vary. The Figure 8 illustrates an estimate workload distribution, where the arrow size was approximately drawn according to the efforts or time spent in each task. The blue rectangle represents the scope of the service intended to be outsourced.

¹⁶ For applications with request for priority, the examiner needs to check whether there is a family member application with search report or examination results from other Offices.



Figure 8: Workload distribution on the Patent Examination and decision.

JPO estimates that without outsourcing, the examiners usually spends 40% of their time in b), understanding of the claimed inventions, 30% in c), prior art search, 10% in d) understanding of prior art documents which the examiner found, and 20% in e) evaluation of patentability and drafting first office action, respectively¹⁷.

In terms of the necessary skills to execute these tasks, the task b), c) and d) require higher technical experience than the tasks e) and f) that, in turn, require higher experience in the substantive examination procedure. The administrative action of the task e) and f) must be necessarily issued by a public servant.

The service scope intended to be outsourced encompasses the b), c) and d) tasks, where the end is well defined by the issuance of the search report. In INPI, there is a specific guideline on how to conduct the Prior Art Search and how to present the outcomes. The quality of the Prior Art Search can be evaluated from the used search strategy.

In (Teixeira, Martelanc, & Prado, 2009) the authors mention that for analyzing the outsourcing potential, the less specific the service and more common, the greater potential of outsourcing the service. From this point of view, the potential for outsource the Prior Art Search depends whether this task is specific for the patent office or it is widely known by third parties.

First, this task is the main subject of cooperation between patent offices, in order to reduce duplication of work, as was seen in the work-sharing section. It means that there is a quasi-harmonization of the procedure of Prior Art Search between Patent Offices. Initiatives that aim to reduce the effort of the examiner using computational tools, such as artificial intelligence-based system, normally focus in automate the Prior Art Search. For instance, USPTO recently announced the interest in using the latest technology in prior art searches¹⁸.

Second, the applicant must know the prior art of its invention and carried out previously the search before filing the patent application, in order to know the potentiality of his invention, avoiding the waste of money and effort in filing the patent application. Some national laws

¹⁷ Lecture notes

¹⁸ USPTO's Challenge to Improve Patent Search with Artificial Intelligence - Request for Information (RFI).

require that an applicant submit to the office information about prior art documents known at the time of filing a patent application, in order to assist examiners in conducting substantive examination (WIPO, 2014).

For a third party execute the Prior Art Search, its needs basic Information Technology and Communication Systems infrastructure, such as broad and fast internet access, information security systems, data storage space, computer, large or multiple monitors that allows viewing different documents simultaneously, and access to databases of patent information. JPO provides to the Registered Search Organizations a search environment similar to its own search system¹⁹.

The person performing the search must have knowledge at least in English language, when the search scope covers foreign documents. They must have higher education in the technical field of the application to understand the invention, formulate the search strategy to find the Prior Art documents and compare with the claimed invention. He or she must know the system for International Patent Classification (IPC) and Cooperative Patent Classification (CPC), and must have basic knowledge of the patent system and the procedure for examining the patentability requirements.

We can assume that the specificity of the search task is low. In other words, not only the Patent Office is able to execute it, but require specialization. In JPO, one of the requirements to be a Registered Search Organization is the Searcher must complete the Training Course provided by JPO in a specific technical field. INPI can provide this training, due to its expertise in basic and advanced training courses in patent examination, classification and prior art search, for both new examiners and external partners.

In JPO, the transfer of experienced examiners to the private sector, such as fixed-term or retired examiners, and the high culture in intellectual property has created an external workforce to support the outsourcing for private Organizations. In Brazil, the availability of these potential players is uncertain, being a risk factor. Therefore, an outsourcing plan will must necessarily involve the identification of possible suppliers.

4.2.2 Is it possible to outsource this service?

¹⁹ Extracted from the JPO's answer to the list of questions.

In order to answer this question whether is possible to outsource the Prior Art Search in INPI, we must answer whether this service is subject to indirect execution in the federal public administration, according to established by the Decree 9507/2018, Art. 3º. The most sensitive restriction for outsourcing the Prior Art Search refers to Art. 3º item IV, which states that services covered by the carrier plan of government officials are not subject to indirect execution. The purpose of this Law provision is to prevent the Public Administration from using the outsourcing as a means to bypass the public tender (ENAP, 2018).

The career plan of examiners, for the position of *Researcher in Industrial Property* defined in Law No. 11,355/2006, Art. 90, assigns to the Researcher the attributions of patent examination and elaboration of a technical opinion for granting patent rights. Although there is no explicit citation of Prior Art Search in the definition of the Researcher career, it would not be reasonable to argue that Researcher career do not cover the Prior Art Search activity. Even because the LPI establishes in Art 35 that at the time of the technical examination the search report and the opinion regarding the patentability requirements will be elaborated.

However, the paragraph 1 of the same Decree article, creates an exception that the auxiliary, instrumental or accessory services may be executed in an indirect manner, being prohibited transferring the decision or the responsibility of administrative acts to the contractor.

In (Prado, Teixeira, & Teixeira, 2013) the author mentioned that a Government function differs from the process or parts of process that integrate the workflow to execute the Government function. The process or parts of process can be outsourced if the legal competence of the Government function is preserved. For instance, when a Technical Assistant of the Judge issue a report to a judicial process, he participates in the process, helping the Judge to reason, however, he does not invade or suppress the Judge's function.

From that point of view, the outsourcing of the Prior Art Search does not intend to outsource the patent examination or replace examiners. The substantive examination of the patentability requirements and the decision for grant or refusal a patent application should remain under the authority of the examiner, representing the Government.

The LPI admits that external participants present Prior Art documents. The Article 34 of LPI provides that the applicant, when requested, should submit objections, prior searches and examination results for corresponding application in other countries. The Article 31 of LPI expressly provides that documents and information for aiding (help, assist, or support) examination may be filed by a third party.

In spite of the arguments presented, the question whether the Prior Art Search can be executed in an indirect manner needs to be subject to more in-depth and specialized legal

consultation analysis. In Addition, according to (Dantas, 2012) the outsourcing must be rigorously submitted to the Legal Departments, prioritizing contracting services and not people, minimizing potential litigation with labor bias and social security.

4.2.3 What would be the design of the outsourcing?

In JPO, the process of contracting the Private Organizations to execute the Prior Art Search comprises two stages:

- a) Registration, equivalent to a qualification process; and
- b) Selection, which basically consists of distributing and allocating the number of outsourcing planned for the fiscal year, among the Registered Organizations, based on a competitive process.

Recently, there are ten (10) “Registered Search Organization” in Japan. Any organizations can be a registered search organization if they meet the requirements provided under Article 37 of the Act on Special Provisions for Procedures related to Industrial Property Right. A registered searching organization may obtain registration for each technical field (classified into 39 technical fields) subject to certain legal requirements, summarized as follow:

- The organization has 10 or more searchers that have knowledge of the technical field concerned;
- The organization has computers and programs required for conducting the searches;
- The organization is not a subsidiary of another limited company.

The Selection is made while ensuring competition in terms of both quality and price. JPO holds a selection meeting with external experts, including law and patent attorneys, to decide the number of applications to be assigned to each organization. A ranking among the registered search organizations is made according to selection rules consisting of price scores and technical scores. Then, the applications are assigned to the registered search organization in order of the ranking and according to the technical field in which the organization is registered²⁰.

The technical score is based on parameters such as Financial condition, Security Requirements, Quality of the search reports, Delivery date management, etc.... The experience

²⁰ Lecture Notes

of the company's employees who will provide the service is also considered for a new incoming company. When the search organization hires a new searcher, the organization has to submit the notification of the election of the searchers to JPO. The technical score attributed to the company combines both the prediction of the company's ability to meet the contract, with performance achieved by the company under previous contracts.

Planning the number of applications that will be submitted for outsourcing depends on the available budget, the number of searches that Registered Organizations are able to perform, the cost of the service offered according to the price competition, and the performance of the Patent Office on examination.

In JPO, the Examination Promotion Office plans the number of outsourced applications every fiscal year, according to the budget. The Director of each Examination Office plans the number of searches for each technical field and submits to the promotion office. Each Examination Office has an examiner in charge of outsourcing to assist the work.

I find that the JPO two-stage process, starting with the company qualification, helps to identify potential players for future use and discard the contractors do not meet qualifications. In (Dovalina, 2006), the author mention the agency wishing to contract out a service must ask, through public notice, for a request for qualifications from potential bidders. This process helps to ensure that bids that are unrealistically low can be thrown out by the governmental entity as invalid if the contractors do not meet qualifications of the agency.

JPO believes that a competitive environment is created under a system where multiple companies are registered and evaluated, which has a possibility of resulting in improving the quality and efficiency of searches²¹.

In Brazil, this two-stage approach seems, at first sight, to be provided by Art. 114 of Law No. 8.666/93, when in certain situations the binding process may be preceded by a pre-qualification process.

In the registering process the “interest conflict” must be avoid. I have not found information regarding the “business field” requirements for Registered Organizations in JPO, however a “law firm” or a “patent law firm” that intend to be a registered search organization would probably not be allowed. Even though the documents submitted for outsourcing are public, the neutrality in finding prior art documents and confidentiality of the search results before they are published must be guaranteed by obligations.

²¹ Extracted from the JPO’s answer to the list of questions.

In (Yamauchi & Nagaoka, 2015) the author estimates that in JPO, the cost for outsourcing accounted for about 40% of the total direct cost of examination. In JPO, the cost of search for one case is basically the same regardless of the number of claims or the technical field. However, the cost is higher for foreign applications compared to domestic applications. The cost will also vary depending on whether to expand the scope of searches to foreign literature or not, but is approximately U\$900 dollars²² (for domestic application and the scope of search is only domestic literature) for one case on average²³. The cost is different for each registered searching organization and it is decided by the price offered by outsource organizations²⁴.

4.2.4 How to control and evaluate the service?

The service control must be done throughout the flow of outsourcing, from the request to the delivery, ending with the evaluation of the service. The outsourcing flow in JPO begins when the office monthly selects the applications that will be outsourced and requests outsourcing according to the plan established on the fiscal year. In the Registered Search Organization, the searcher executes the Prior Art Search and visits the JPO examiners to report the search results. The JPO examiner conducts patent examination by utilizing the search report that the searcher wrote.

In each JPO Examination Office, there are Outsourcing Administrators that are examiners in charge of selecting cases to be outsourced. The administrator selects the cases based on the request for examination date, the presence or absence of an ISR created by JPO, etc. In addition, these administrators also decide whether to limit the search scope to domestic literature or to include foreign literature in the search scope, for each case selected.²⁵

Selecting the applications to outsource

From the outsourcing flow in JPO, before the outsourcing request there is an application selection process in which some variables need to be determined in a project, such as defining who chooses the applications. Selecting applications strategy is an important factor in getting

²² 1 dollar = 110 yens.

²³ Extracted from the JPO's answer.

²⁴ Extracted from the Supplementary JPO's answer.

²⁵ Extracted from the JPO's answer to the supplementary questions.

efficiency when the outsourcing budget is limited. The challenge is to find the strategy that maximizes efficiency and quality while minimizing the costs and risks.

In (Yamauchi & Nagaoka, 2015), the authors consider that when the examiners are the ones who select the application, or “choose for outsourcing”, this decision can be affected by psychological factors, as the desire to avoid mistakes, and by the private cost of doing the search themselves or outsource, that incurs in verifying the search result and supplements the search when needed. In (Schuett, 2013) the author argues that examination can be described as a problem of moral hazard²⁶ followed by adverse selection: the examiner must be given incentives to exert effort (looking for evidence to reject, within the prior art), but must also be given incentives to truthfully reveal the evidences he finds (or lack thereof).

The study of (Yamauchi & Nagaoka, 2015) concludes that at least in the Japanese context, where there is a constraint on the number of examiners and where the examiners seem to have strong incentive for making correct decisions, giving examiners the opportunities for “make” and “buy” choice with respect to prior art search significantly improves the quality and speed of patent examination.

I find that if the examiner adherence for outsourcing is uncertain, as Brazil, or the policy of incentives fails, the selection made by examiners can be a risk for the efficiency of outsourcing. For another way, when a supervisor, instead of examiner, does the selection of application, it would reduce the influence of the intrinsic motivation of examiners in the choice for outsourcing and minimize the risk.

Recently, most pending patent applications in the INPI backlog have a family member application already examined and decided by other countries, or they are PCT applications entering in National Phase when, at least, the PCT authority has already issued the Search Report in the International Phase. Therefore, the decision for selecting or not those applications to outsourcing is crucial to motivate the adoption of an outsourcing strategy to reduce the backlog of invention patents.

²⁶ In economic theory, moral hazard is a situation where the behavior of one party may change to the detriment of another after the transaction has taken place. For example, a person with insurance against automobile theft may be less cautious about locking their car because the negative consequences of vehicle theft are (partially) under the responsibility of the insurance company. A party makes a decision about how much risk to take, while another party bears the costs if things go badly, and the party insulated from risk behaves differently from how it would if it were fully exposed to the risk. https://en.wikipedia.org/wiki/Moral_hazard

In JPO, there are cases where an application that has a search report created by other IP offices is outsourced. In such cases, the searcher checks the literature cited in the search report created by other IP offices and is required to make an explanation to the examiner in dialogues. The examiner takes account of the results in conducting examination²⁷.

When the Search Prior Art is conducted again, there is a percentage ratio for the cases that new documents were found. According to Mr. Yamauchi, if we compare this ratio, it really depends on the technical field. Therefore, if the several Patent Offices have already conducted the search examination for the same case, it is the best trust the search result of the strongest office in that particular technical field. For technical fields where Brazil is strong there are many documents in those fields and you should conduct the search. It is difficult for a foreign patent office to find local documents in Brazil where Brazil is strong. For areas where there are many documents, it is better to conduct outsourcing and that would be a very good International contribution to assist other IP offices in different countries²⁸.

Therefore, selecting those applications to outsourcing implies limiting the search scope only for domestic patent information. Until 2004, JPO had been adopting the outsourcing only to search domestic patent information. It is a reasonable decision for JPO, due to the high number of domestic patent information. However, in Brazil, even in technical fields where Brazil is strong, the number of domestic patent information is much lower. At first, it seems that the cost for examiners to carry out the search only in domestic scope is less than the cost involved in the outsourcing process, therefore, it seems that submitting those applications to outsourcing of Prior Art Search would not offer a good value for money.

Another point to address in the selection of applications is when the examiner is not a specialist in a technical field and they spend too much time to understand and search the prior art. The number of patent examiner in INPI is not enough to cover all technical fields in a specialized manner and the examiners have to cover a broad range of technical fields. Outsourcing applications in which there is no expert examiner in the technical field of the application seems to be an alternative to accelerate the examination, improving the quality and enhance the examiner's learning.

According with Mr. Yamauchi, from a short-term perspective, if the quality of the searching agency is higher, it is better to outsource these applications, but from a long-term

²⁷ Extracted from the questions answer from JPO.

²⁸ Extracted from the interview with Mr. Yamauchi.

perspective, the ability of examiners will not be enhanced, therefore overall quality would decline in the long-term.

In the case of JPO, the prerequisite or precondition is that the expertise of the searchers and the expertise of the examiners are more less the same, and the ability is almost equal. However, if the examiners are not capable enough to evaluate the quality result of the search conducted, then examiners are unable to fully manage or control the outsourcing. From that point of view, it would be better to outsource the simple one and keep the more complex ones with examiners²⁹.

I conclude that the balance between the searcher and the examiner knowledge and experience is the key concept, which can be achieved with an adequate evaluation of the searcher's experience requirement for registering the Outsourcing Organizations.

The Report by Dialog

In the earlier years, the outsourcing results in JPO were reported only by paper. Currently, the results are reported by dialogue between a searcher and an examiner.

The Director of each Examination Office in JPO assigns to examiners the interactive outsourcing for each technical field. In the Search Organization, the searcher receives an indication of the examiner to the interview³⁰. After execute the search, the searcher contact the examiner for schedule the interview, to explain the claimed inventions and the prior art documents, comparing with the claimed inventions. Also, the searcher must refer to the search strategy; how he constituted the search queries, which databases he utilized, which indexes or terms he used. If the examiner thinks the search was inadequate, he or she can instruct the searcher to conduct additional searches³¹.

The JPO has introduced an online dialogue system where searchers of distant registered search organization can report search results to examiners through online system, without personally visiting examiners at the JPO, reducing the traveling burden³². In those cases, filing documents, search reports, etc. in paper format are also used³³.

²⁹ Extracted from the interview with Mr. Yamauchi.

³⁰ Notes of the interview with AIRI organization.

³¹ Lecture of JPO/IPR training course.

³² Lecture of JPO/IPR training course.

³³ Extracted from the JPO answers.

For the INPI case, the online dialog would make it possible for Organizations distant of Rio de Janeiro participate on the outsourcing program, since the displacement cost is reduced. Considering that many examiners are working on a Home-Office program, this modality can reduce the internal cost of INPI in the displacement of examiner to the INPI. However, implementing this modality requires that both organization and INPI provide the necessary computational tools.

The Search Evaluation

I observe that the report by dialogue, adopted by JPO, represents both the delivery of a first product transferring the knowledge to examiners, and a mechanism of prior control of the work performed before issuing the Search Report. Therefore, the evaluation is done considering both the content of the dialog and the report issued.

After the search report has been submitted, the examiners make evaluations of the searches completing an “assessment sheets” for every application. The assessment sheets consist of evaluating (i) how properly the searcher understands the claimed invention and explained it to the examiner, (ii) how was the search result with respect to correctness of search strategy or cited documents, and (iii) how appropriately the searcher explained the cited documents.

JPO feedback the assessment sheets to each search organization twice a month. The supervisor in the outsourcing organization as well as searcher received them, and in the case where a full score is not obtained, they should make efforts to avoid the reported faults. The outsourcing organization analyzes the “assessment sheets” to improve report quality and the supervisor coaches the searcher in the view of the analyzed data. Based on the assessment sheets, the JPO Director periodically discusses the evaluation of searchers with the supervisors on the outsourcing organization. The JPO Director also review supervisor’s work quarterly³⁴.

The assessment results are highly taken into consideration in Selecting the Search Organization to the next fiscal year.

Maintaining the quality of service is the most important factor for the success of the outsourcing program. The risks associated with this factor refer to both the relaxation of quality control by the Office and the company's interest in a long-term.

³⁴ Lectures from the JPO/IPR.

Particular cases

Although exceptional cases are sporadic and there are few references about, it is necessary to predict them because they may be reason for wear and tear or demotivation in the relationship between the contractor and Office, being a risk to the success of the program in long term.

- The search cannot be performed: cases of lack of clarity; Requirement for description; Non supported claims; Subject-matter not eligible for patent protection. The Searcher must be able to identify and contact the examiner.
- Request for changing the category: the categories are Utility models or Invention patents. The Searcher must contact the examiner when the application is in the wrong category. If the outsourcing is done only in a specific category, this changing implies on returning the search request;
- Request for reclassification: If the outsourcing is done only in a specific technical field changing the classification can imply on returning the search request;

4.2.5 What are the convenience and benefits?

Outsourcing the prior art searches to registered search organizations, JPO promotes the speeding up of examinations through utilization of the private sector³⁵.

The first question regarding the convenience of outsourcing is whether the separation of the Prior Art Search from the examination, rather than performing at the same time or by the same examiner, improves the efficiency and quality of the examination. In EPO, the search report is transmitted to the applicant before the publication and under the BEST program (Bringing Examination and Search Together), the same examiner who made the search conducts the examination.

In (Yamauchi & Nagaoka, 2015), the authors proposed two hypotheses views about the integrations between these tasks:

- Synergy view: when the two tasks were made by the same examiner the speed and quality would be higher, due to the integration between these tasks that can also save the time necessary for communication and coordination between two individuals,

³⁵ Lecture from JPO/IPR

examiners and searchers. The outsourcing results in less complete understanding of the invention by the examiner and would reduce the quality of both tasks.

- Search scope view: the examiner can take advantage of the search ability of the searchers specialized in prior art identification and thus he/she can expand the potential search scope. The outsourcing enhances the efficiency of the examination process.

Under those hypotheses the authors (Yamauchi & Nagaoka, 2015) found that the outsourcing of prior art search significantly decreased the frequency of appeals against the rejection decisions of examiners, and increased the speed of examination by reducing the period of communications between examiners and applicants in both grant and rejection process.

Besides that, the estimation results suggest that the synergy view is more applicable to complex inventions, while the search scope view holds well for less complex inventions.

In Brazil, both search and examination are made by the same examiner and almost simultaneously. There is another hypothesis that the integration between search and examination may interfere in each other in a non-constructive manner. If the time to stop the search is not so clear, when the examiner does not find any prior art documents, he would be motivated to lengthen the search time and the objectivity would decrease. In this case, the specialization promoted by the separation of these tasks would sharpen the examiner's ability to gauge the inventive step and improve efficiency. However, there is no data to test this hypothesis.

In fact, I conclude that by outsourcing the Search Prior Art, the report by dialog between searchers and examiner overcomes the loss of integration, because through the dialogue the examiner can understand quickly and efficiently the claimed inventions and prior art documents. The JPO estimates that the examination with outsourcing, using the report by dialog, reduces by half the examiner's workload for issue the First Action, according with the following figure.

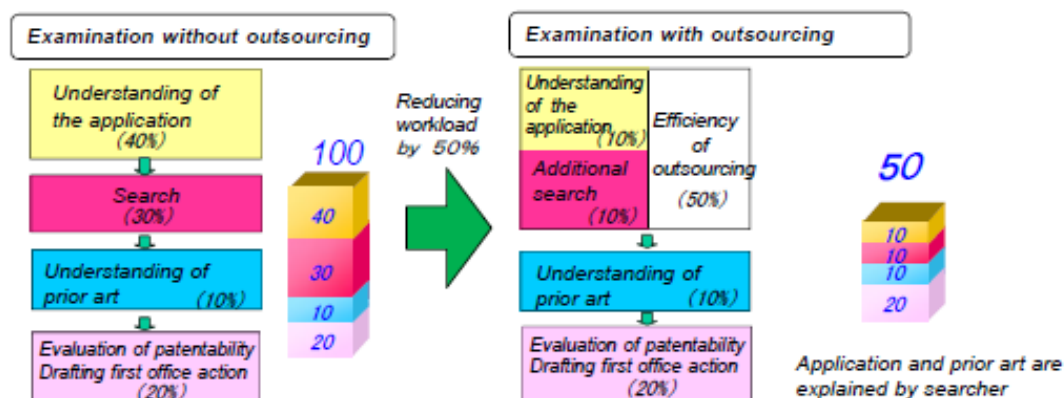


Figure 9: The Report by Dialog efficiency³⁶.

I think that when the Prior Art Search is done externally, we would have a better use of internal resources, because the workload of the examiner is more focused on the technical examination and on the decision for grant or refusal the patent application which is the exclusive action of the state.

In the previous section was mentioned that the balance between the searcher and the examiner knowledge and experience is a key concept. In fact, when the searcher's technical knowledge is high, this enhances the examiners' knowledge and improve the quality of examination. For another way, the examiner's experience in searching and substantive examination increases the searcher's ability. In JPO the external searchers are no longer considered as subcontractors, but are rather viewed as partners who complement examiners in the spirit of offering mutual guidance to a relationship that is potentially invaluable for the future of patent administration³⁷.

According to (Prado, Teixeira, & Teixeira, 2013), the outsourcing has to be viewed in a broad sense, as an opportunity to include another economic actor in the productive line, that is regulated by rules and relations and with the aim of reducing transactional costs and to promote the sustainable development of their activity, by harmonizing their workflow with the internal and external outsourcings.

Therefore, I conclude that the outsourcing in Brazil could improve awareness of intellectual property and create new business opportunity. According to Mr. Yamauchi, from the point of view of Economics, the outsourcing of the Search Prior Art is a kind of win-win system because it is beneficial for all the stakeholders³⁸.

³⁶ Picture extracted from Outsourcing of Prior Art Literature Review lecture.

³⁷ Conclusion from the article www.tokugikon.jp/gikonshi/288/288kiko5.pdf

³⁸ From the interview with Mr. Yamauchi.

4.2.6 What are the motivations for outsourcing?

The Brazilian Court has acknowledged the unconstitutionality of the INPI's delay, arguing that the duration of the proceedings violates the constitutional principles of reasonableness and efficiency of the State. The “writ of mandamus” has been recognized as the appropriate procedural means to expedite the examination of the patent when the pendency is excessive and prejudicial to the rights of the depositor (Garcez Júnior & Moreira, 2017). From the point of view of (Garcez Júnior & Moreira, 2017), the public wants a quick and effective response from INPI, but above all without losing quality, balancing the requirement of efficiency and quality, without one prevailing over the other.

The INPI Strategic Plan for 2018-2022 (INPI, 2018) includes the first goal of optimize the quality and time for granting industrial property rights, and one of the strategies to reach this goal is to outsource auxiliary, instrumental or accessory services in the patent examination³⁹. From the expertise of Japan in the outsourcing of the Prior Art Search, I have concluded that the outsourcing strategy has been one of the pillars in providing efficiency and quality to the patent examination in JPO.

In case of Non-backlog scenario, if the Simplified Procedure takes place, the applications complexity increase, the productivity tends to fall and probably the backlog grow again. Thus, the First Action pendency will increase again if no measure would be taken to increase the work capacity and the number of decisions.

The basic information section has mentioned that the main action for INPI to reach its institutional goals is mainly by securing an adequate number of patent examiners. The outsourcing program does not intend to replace patent examiners, because without patent examiners there is no examination. However, even with the permission to hire new examiners, the hiring procedure by public tender in public administration is slow. The time since the approval of the public tender by the government until contracting can take at least 2 years. In addition, the time spent to finish the training for new examiners can take at least two more years.

In this sense, training a person to execute the search is faster than training patent examiners in patent examination. If the INPI acquires expertise in outsourcing the Prior Art

³⁹ Objective index 1.0, Estrategy index 1.2;

Search and the private companies acquire expertise in execute the Search with high quality, adopting the outsourcing can be a short-term strategy with almost immediate results.

We can take the utility model as an example to estimate the impact of outsourcing on the first action pendency. On the last five years, 2,800 utility model applications were filed by year, on average, and sixty percent (60%) pass over the third year. In 2018, the number of First action was about 1,350, lower than the number of new applications, which means an increasing in the first action pendency. It would be necessary to increase the productivity by 25% to stabilize the first action pendency. Considering that the examiner workload to issue the first action is half of the total workload, and from the JPO estimative the outsourcing can reduce the first action workload by 50%, thus, the increasing of 25% in productivity could be obtained by outsourcing.

In conclusion, I find that the main motivation to adopt Prior Art Search outsourcing in INPI is to provide a complementary management strategy to achieve its institutional goal by reducing the workload of the patent examiner, increasing the number of decisions as well as increasing the quality of patent examination.

5 Recommendations

From the considerations presented in this study, I find that the outsourcing would have limited effect on facing the backlog of the invention patents applications, because most of these applications has family member application already examined by other Offices, where the work-sharing was presented as the best solution. In addition, from the JPO actions to deal with backlog in the past, comparing with the actual INPI actions, the main recommendation is ensuring adequate work capacity, maintaining the effort to hire new patent examiner, improving the work-sharing by the pre-examination program and by improving the Information Technology tools for exchange patent information.

Another suggestion to accelerate the examination is the adoption of consolidated examination program as adopted by JPO, as described in section 4.1.

The recommendation for improving the IT Tools related to the Patent Information exchange comes from the JPO/IPR Training Course on Information Technology, and according to the second goal of the INPI's Strategic Plan for expanding and improving the available data, information and knowledge in Industrial property.

It is possible for INPI examiners to access patent documents and examination results from other offices through AIPN (Advanced Industrial Property Network) and IP5's sharing documents by OPD (One Dossier Portal) and WIPO's Dossier Sharing System (WIPO-CASE). However, the examiner first needs to know the patent family of the Brazilian application they are examining. Nowadays, *Espacenet* has been the main source of patent family information.

For another way, the availability of the Brazilian patent dossier is important to allow other IP offices to access the patent information and the examination results made by INPI. However, the only Portuguese interface of the patent information system provided by INPI makes it difficult for other patent offices to access Brazilian patent information.

On the training course, the representative of WIPO describes that in the past IP offices shared the publications with other IP Offices, forming their own database, often used for commercial purposes. For instance, Brazilian documents are included on the LATPAT database. However, the lecturer argues that from WIPO's point of view this information should be free and WIPO has been committed to sharing the information through the Patent Scope, "We do not have any data but provide access".

I find that there is an opportunity for INPI to improve the exchange of information, improving the tools for provides a better access to patent information by adopting of WIPO PUBLISH and WIPO CASE, focusing on:

- Exchanging information with WIPO on entry into the PCT National Phase or publication and exchange the legal status of patent family adopting WIPO standards;
- Reducing the language barrier by making the documents available in full text to allow using machine translation tools;
- Using the CPC extensively in the INPI search system;
- Improving the Search systems by modern interfaces that allow the use of flexible search strategies;

Another suggestion to accelerate the examination is the adoption of consolidated examination program as adopted by JPO, as described in section 4.1.

If INPI intends to adopt the Outsourcing the Prior Art Search, based on the considerations and motivations presented in this study, the recommendation is to start planning a pilot program, adopting a strategy that minimizes the risks and gradually achieve the expertise over time. The adoption of outsourcing for Utility Model patent applications presents some opportunities and seems to minimize the risks for the following reasons:

- The complexity of the examination is less than for invention patents, because there is only one independent claim; the technology is less complex; the particular cases are few;
- The technical field is narrow, since 75% of the Utility Models pending examination belong to the technical field of Mechanical Engineering, Civil Engineering and Architecture;
- Utility Models, almost in totality, have no priority request, which means that there is not previous search report or examination results from another Patent Offices;
- The Utility Models patent examiners are experienced in Prior Art Search;
- The results of outsourcing for Utility models can decrease the First Action pendency in a short-term. The applicants are almost entirely Nationals, who do not have prior information about the patentability of their invention before ten years after filing.

The Report by Dialog is the main procedure to guarantee the Dialog Video conference in the Dialog Based Report

In (Dovalina, 2006) the author mentioned that the decision-making process will take into account whether the arguments for or against the outsourcing are general or specific to the

type of service. In this case, I suggest that INPI present this study and make a survey with examiners to know the arguments of the patent examiners regarding that proposal.

I recommend that the INPI include a public notice or public consultation on the outsourcing pilot program, to identify potential players, for example, by a request for qualification.

According to the section 4.2.2, the question whether the Prior Art Search can be executed in an indirect manner, needs to be subject to more in-depth and specialized legal consultation analysis.

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