

A Brazilian Intellectual Property Office for the 21st Century

International Benchmarking Report



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Contents

1. FOREWORD	5
2. EXECUTIVE SUMMARY	6
3. INTRODUCTION	8
4. THE CHOICE OF IPOS	11
5. ORGANISATIONAL STRUCTURE.....	14
6. QUALITY	23
7. PROCESS	29
8. PRICING.....	38
9. INFORMATION COMMUNICATION TECHNOLOGIES (ICT).....	45
10. HUMAN RESOURCES	51
11. KEY LEARNINGS	57
12. CONCLUSION	59
SCHEDULE 1	60
SCHEDULE 2	61
SCHEDULE 3	63
SCHEDULE 4	64
SCHEDULE 5	85
SCHEDULE 6	91
BIBLIOGRAPHY	96

ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
AU	Australia
BEIS	Department for Business, Energy and Industrial Strategy (UK)
BR	Brazil
CA	Canada
CEO	Chief Executive Officer
CIPO	Canadian Intellectual Property Office
CPC	Cooperative Patent Classification
DOC	United States Department of Commerce
DPMA	German Patent and Trade Mark Office
EPO	European Patent Office
FCDO	Foreign, Commonwealth & Development Office of the United Kingdom
FGV	Fundação Getulio Vargas
GB	Great Britain
GTP	Global Trade Programme
HR	Human Resources
HRM	Human Resources Management
ICT	Information and Communications Technologies
INPI	Instituto Nacional da Propriedade Industrial (Brazil)
INTA	International Trademark Association
IP	Intellectual Property
IPA	Intellectual Property Office of Australia
IPC	International Patent Classification
IPO	Intellectual Property Office
IPOS	Intellectual Property Office of Singapore
IPO UK	Intellectual Property Office of the United Kingdom
IPR	Intellectual Property Right
ISO	International Organisation for Standardisation
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
JETCO	United Kingdom and Brazil Joint Economic and Trade Committee
KIPO	Korean Intellectual Property Office
KPI	Key Performance Indicator
KR	Republic of Korea
OPQA	Office of Patent Quality Assurance (USPTO)
PCT	Patent Cooperation Treaty
PDTMD	Patents Designs Trade Mark Directorate
PPH	Patent Prosecution Highway
R&D	Research and Development
RFE	Request for Examination
RQAS	Review Quality Assurance Specialists (OPQA)
QMS	Quality Management System
SG	Singapore
SME	Small and Medium-Sized Enterprises
UK	United Kingdom
USA	United States of America
USP	Universidade de São Paulo
USPTO	United States Patent and Trade Office
TTO	Technology Transfer Office
WIPO	World Intellectual Property Organisation

1. Foreword

The Foreign, Commonwealth & Development Office of the United Kingdom (FCDO) through the Cross-Whitehall Prosperity Fund Global Trade Programme, is providing assistance using Overseas Development Funds to support Technical Assistance to eligible programmes, whose primary objectives include poverty reduction, promotion of gender equality and inclusive growth. In 2016, during the Trade Ministerial Dialogue between UK and Brazil, in the Joint Economic and Trade Committee (JETCO), both countries publicly committed to working together through the Prosperity Fund to facilitate Brazil's trade.

To deliver the objectives of the Global Trade Programme, the Intellectual Property Office of the United Kingdom (IPO UK), in conjunction with FCDO, have collaborated with INPI, the "Instituto Nacional da Propriedade Industrial" of Brazil, to design a transformational programme entitled "A Brazilian Intellectual Property Office for the 21st Century". The desired outcome of the Programme is a much more effective IP regime in Brazil – encouraging innovation, greater international trade, investment, interaction with global value chains, enabling job creation and supporting inclusive growth and poverty reduction.

To successfully deliver this programme, Palladium has appointed teams of consultants from FGV Projetos (Quality, Service Pricing, Human Resources), ITS/USP (Information Technology) and Procomex (Processes) to work alongside its team of local and national experts. For the International Benchmarking exercise, Palladium partnered with FGV Projetos of Brazil and Collier IP of the UK. The Ministry of Economy, as a key stakeholder, ensures the overall alignment of the Programme to the National Strategy of Intellectual Property and other larger national directives and goals. Central to the programme is the involvement of all change-makers within INPI as well as wider stakeholders, such as members of the IP community of Brazil. This collaboration is what ensures the programme will be able to achieve the transformational ambitions to which it aspires.

The successful implementation of the Programme entails review of the current procedures at INPI to replace them with best-practice and sustainable solutions, thus enabling a healthy IP framework that supports inclusive and sustainable economic growth, innovation, trade and prosperity.

2. Executive Summary

This is a benchmarking report for the “A Brazil IP Office for the 21st Century” project. The Intellectual Property Offices (IPOs) selected to act as benchmarks are from highly innovative countries¹, as per the WIPO Global Innovation Index. This review and analysis seek to uncover some of the core features of these IPOs. By casting light on their activities, the expectation is that this will enable other IPOs, particularly INPI, to benefit from their experiences. It is hoped that this report will become an important tool for mutual understanding of the main features of IPOs and support further inter-office collaboration (IPO of the Future, 2020²).

In this International Benchmarking report, we will consider the IPOs from six perspectives:

- Organisational structure
- Quality
- Process
- Pricing
- Information and Communications Technologies (ICT)
- Human Resources

The scope of our report focussed solely on practical operations (e.g. registration) within IPOs related to patents, trade marks and industrial designs. A consultation process to agree on the final selection of countries and create the questionnaire was undertaken between June and August 2020, involving INPI and other main stakeholders of the programme – department leads at INPI; UK IPO, FCDO, and consultants of all workstreams in the Programme. Following agreement on the questions to be asked, the questionnaire with 79 questions was distributed in September, sent by the UK IPO’s CEO. Answers to the questionnaire were received from the IP offices by the start of November 2020.

Numerous important lessons emerged during the process of examining the six IPOs, from the six themes outlined above. Our analysis confirmed that IPOs face many complex challenges, and these require a variety of solutions. The level of focus that each IPO had on its clients was noteworthy, and we found that IPOs were increasingly using technology (including disruptive technologies) to deliver their services. In complying with international treaties, IPOs are taking common approaches, and our expectation is that this will benefit those registering intellectual property rights (IPRs) in each country. We noted the tension between financial autonomy and pricing, and that many IPOs used cross-subsidisation of service pricing to encourage intellectual property registrations.

It also became clear that possessing the autonomy to act flexibly and nimbly, (even an IPO is not fully autonomous), has been a key enabler of developing and maintaining successful IPO business models. All the IPOs we encountered were seeking to support a wider innovation

¹ Further details of country level innovation are found in the WIPO Global Innovation Index 2020, p.33. This is available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020.pdf

² The Intellectual Property Office (IPO) of the Future, Report. IPO of the Future Think Tank, International Trademark Association, Nov. 2020, p.26. This is available at: <https://www.inta.org/perspectives/the-intellectual-property-office-ipo-of-the-future/>

ecosystem, including through stakeholder engagement, increased efficiency and public awareness raising and education.

Key Observations

The IPOs we surveyed exhibited the following characteristics:

1. They had reached a high stage of office development with respect to autonomy, financing, and quality of delivery.
2. Each IPO recognises the need to develop and execute a long-term strategy.
3. The IPOs were all influential from a global perspective and they were engaged in frequent international collaboration with other top IPOs. The IPOs were outward-facing, internationally competitive, and operated in such a way so as to be seen as welcoming for international companies interested in investing in intangible assets in their country.
4. Their approach to their function was a modern one and was not based on a bureaucratic approach. This means the IPOs had a focus on the business use of IP, and this focus determined the actions of the IPOs³.
5. Each IPO had a laser focus on the end-users of its services and designed their activities to meet the needs of the both the local and international client base that they served.
6. The approach to pricing of the offices was often innovative and provided for low cost of entry for first-time users or users of limited financial means. This meant that IPOs were keen to explore novel pricing mechanisms to encourage new users of the IPO from their society.
7. Most offices were financially autonomous.
8. We observed that IPOs were allowing themselves to be used as a national tool to promote economic development (incorporating trade and innovation) using intangible assets and intellectual property rights.
9. Regarding the use of disruptive technologies we found the IPOs open to using new technology to benefit the needs of their end-users.

This report was produced by Richard Nugent of Collier IP (now Mathys & Squire Consulting Limited) and Otavio Mielnik of FGV Projetos in November 2020.

We would like to thank the staff and senior management teams of INPI and each of the IPOs which provided feedback to our questionnaire. We recognise that some questions were quite challenging, and the timeframe available to provide responses was short. We also appreciate the support of the workstream leads of Organisational Structure, Process, Quality, Human Resources, Pricing and IT, for their support in the identification of key issues for investigation in the questionnaire. A special thank you is due to IPO UK who provided advanced and helpful feedback on the questionnaire before it was distributed to the IPOs.

³ However, it is important to note that business uses of IP, and the interaction of IPOs with business was outside of the scope of the report. In our view this would be an excellent topic for an additional review.

3. Introduction

This Benchmarking report is a work package within “A Brazil IP Office for the 21st Century” project. The project addresses six key themes:

1. Organisational Structure
2. Quality
3. Process
4. Pricing
5. Information and Communications Technologies (ICT)
6. Human Resources

The foundation of this report is a Benchmarking Questionnaire which was sent to six highly reputed national IPOs. These are detailed in the table below:

IP Australia (IPA)
The Canadian Intellectual Property Office (CIPO)
The Korean Intellectual Property Office (KIPO)
The Intellectual Property Office of Singapore (IPOS)
The Intellectual Property Office of the United Kingdom of Great Britain and Northern Ireland (IPO UK)
The United States Patent and Trademark Office (USPTO)

Table 1. Selected IPOs as part of the international benchmarking exercise

The process of selecting countries for the Benchmarking exercise considered various key criteria, including position in the Global Innovation Index, known similarities with or specific points of interest to INPI, availability for collaboration and reputation for excellence. Further details on each of the countries have been provided in Schedule 1. The main aim of this exercise was to facilitate further investigation of practices and strategic guidelines of offices.

This report was informed by the results of the questionnaire itself, as well as desktop research, including key scientific literature. Furthermore, each of the six themes of the project was reviewed from the end-user perspective. Each of the national IPOs was analyzed not as a standalone service delivery office, but rather as an important participant within the national and international innovation ecosystem. The offices serve the nation, but they also compete with other offices globally, and are strongly impacted by how relevant international actors view each nation as a venue for innovative economic activity. Each IPO we studied has its own business model, and each one is vying to be viewed as excellent and ‘world-class’. These aspirations can only be realised if an IPO is built on a strong organisational foundation, effectively executes a properly considered strategy, and is strongly focused on quality and continual improvement.

Before each theme is examined in further detail, it is useful to look at each IPO in terms of the workload placed on the office. One example which illustrates workload is the number of patent filings in a country. The IPOs we reviewed fell into two groups. Group one has less than 40,000 patent filings annually and is shown in Figure 1 below (we also added Brazil to this view)⁴

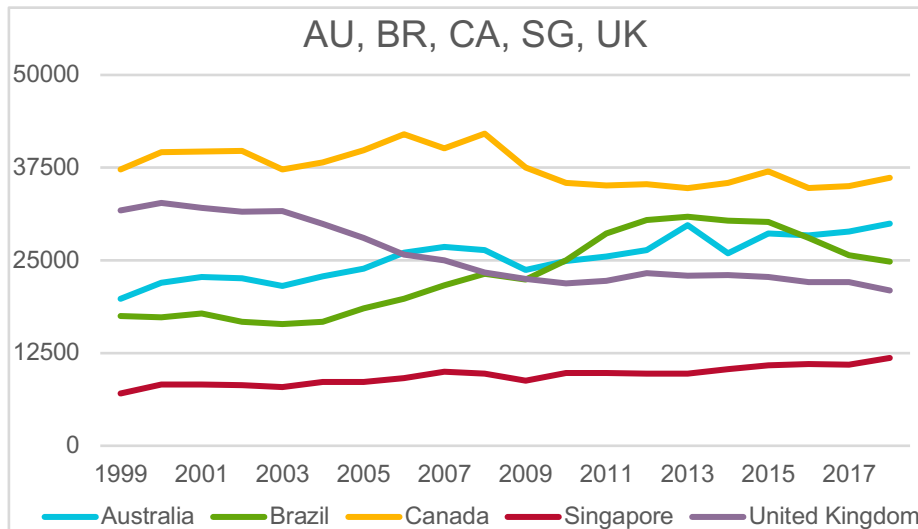


Figure 1. Patent filings per country, group 1.

Group 2 is KIPO and USPTO which deal with significantly more filings annually than all the Group 1 countries put together. This inevitably impacts their operations, as well as their finances.

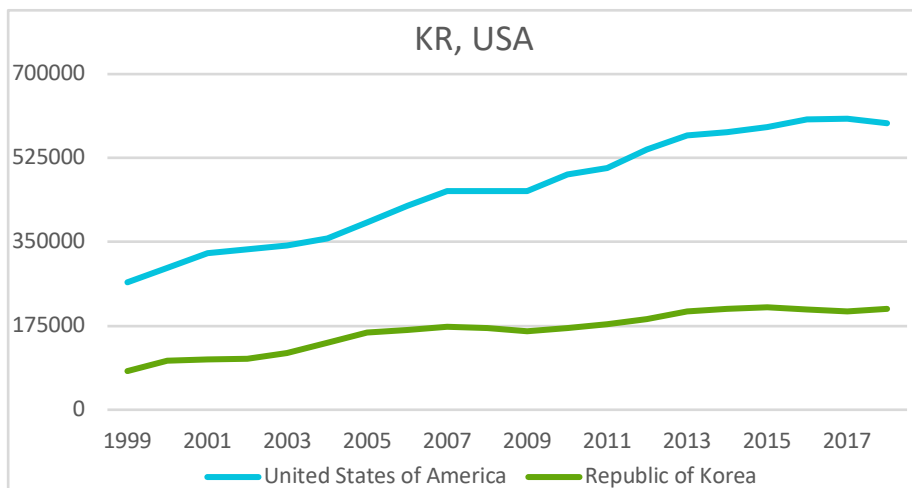


Figure 2. Patent filings per country, group 2.

As we consider each country it is worth bearing in mind this difference in work volumes and associated incoming funds. This will impact the operation of the organisation, from its organisational structure to its processes, pricing approach and human resources.

The Benchmarking Report was developed based on

- (1) the questionnaire answered by each IPO,
- (2) materials related to each IPO available on their website and other media, and
- (3) literature on intellectual property rights.

⁴ This graphic was produced using data from WIPO Stats: <https://www.wipo.int/ipstats/en/>

We faced limits on accessing other sources of information and restrictions from IPOs on sharing information, as well as reproducing third party content without acquiring legal permissions. Covid-19 was a substantial constraint on mobility and prevented us from accessing each IPO in person. Development of the questionnaire took more time than initially planned and involved three rounds of discussions to agree on the final set of questions. Finally, the tight timelines involved in developing this report meant that we did not have the time for the necessary follow-up with the IPOs. This would have allowed us to provide more accurate and comprehensive information than that provided by the answers to the questionnaire. Nonetheless, in spite of these limitations this report presents a useful analysis of how some of the world's leading IP offices operate and presents an overview of some of the key factors behind their success. It thereby offers INPI an understanding of what can be achieved, and some aspirations it should consider as it strives to become an IP Office for the 21st Century.

The IPOs organisational charts are presented in Schedule 5. In addition, the usefulness and relevance to INPI of the International Benchmarking Report is introduced in Schedule 6 based on the assessment of this report by the INPI workstream leaders of the Project.

4. The choice of IPOs

The criteria involved in choosing the six IPOs covered by this report was straightforward. We selected those IPOs which had been demonstrating a high level of expertise over many years. Following consultations with INPI, we decided not to include the European Patent Office (EPO). We also chose not to include China as it was not clear if it would be possible to receive the responses we needed within a short timescale. Had more time been available we would have strongly recommended its inclusion. Our brief was to look at five countries, however a sixth country (Australia) was added upon the request of INPI.

The process of selecting the set of countries for the Benchmarking exercise considered a range of key criteria:

- 1. High level of participation in the IPR global regime evolution.** The IPR global regime has strongly evolved since the 1990s, when regulations on intellectual property became linked to international trade and investment policy. IPRs gained a prominent status at the global level to promote economic growth and innovative economies. The six IPOs played a relevant role in this process.
- 2. Leadership and reference for IP in the 2020-2030 decade.** Providing INPI with the most relevant best-practice examples on how to become a 21st century IPO was an important criterion. The six IPOs chosen manage new and disruptive technologies at the intersection between IP, trade and innovation with noteworthy performance and results in processes and products.
- 3. IPOs are within the international innovation system.** There is a strong relationship between international innovation and IPRs. A consistent and comprehensive international framework for IPRs promotes innovation. The Global Innovation Index is a reference on that matter and the six IPOs are among the first 23 countries out of a total of 131.
- 4. High performance in patent filings through the use of new technologies.** The use of new technologies (such as artificial intelligence in some countries) has been a powerful tool to address the growing demand on patent filings and to improve the performance of some IPOs. This was relevant in the choice of the six IPOs since their performance is related to the use of new technologies.
- 5. Increasing financial and political autonomy.** Financial and political autonomy have been crucial to improve IPOs' performance. The selected IPOs are self-financing legal entities, cost-recovery and fee-funded agencies. Independent from their government, although under different institutional evolutions, the six IPOs both increased their efficiency and were able, (1) to be focused on national innovation policies and (2) to promote international rules converging to a common IP regime, reducing transaction costs and making services more attractive.
- 6. Sustainable business models.** The six IPOs base their activity on sustainable business models, relying on their own resources and improving their performance and efficiency under long term strategic plans. Those plans include the use of new technologies to address IPRs application filings as well as new policies on service pricing, quality and processes efficiency.

- 7. Cooperative action with other IPOs.** The six IPOs develop cooperative programs that improve the global IP regime. Two of them (USPTO and KIPO) participate in the IP5, a forum of the five largest intellectual property offices in the world (CNIPA, USPTO, JPO, EPO and KIPO), which was launched in 2007 to improve the efficiency of the examination process for patents worldwide. In addition, in 2008, the IPOs of UK, Canada and Australia formed the Vancouver Group to explore ways to improve quality and services to business, sharing information and experiences on common issues and areas and contributing to a more effective multilateral approach to work sharing. In each of the six IPOs there are substantial numbers of patent applications abroad through the PCT system, designed to facilitate patent applications in multiple jurisdictions. Furthermore, many overseas residents seek IP protection in each of the six IPOs. A further cooperative effort involving the six IPOs is the Global Patent Prosecution Highway (PPH), which allows patent applications accepted in one country to request expedited examination in other countries, improving efficiency and saving costs through reduced duplication and more timely outcomes to applicants.
- 8. Complementarity among the six IPOs.** The selected IPOs are complementary. They are in countries that have evolved under different economic conditions and specific IP regimes. The relative importance of their economies and the IPRs is presented below. The workload of each IPO is shown in Figures 1 and 2 above.

Looking at each of the countries separately we explain our rationale below:

IPO UK: IPO UK is a sponsor of this study. Furthermore, the IPO UK enjoys a high position on the Global Innovation Index and regularly develops the workings of its office to support economic development in the UK.

IPOS: Despite being a very small country, Singapore has seen its IPO become an international IP powerhouse, and has engaged significantly in international cooperation, e.g. via signing numerous MOUs with other IP offices around the world. It has also attracted a disproportionately high number of IP filings for a country of its size and population. It therefore offers a number of useful observations for INPI.

USPTO: As a major economic power and a critical source of innovation, USA is a country where many people register their innovations and is the most valuable market globally for IP. With huge numbers of filings, and with its operations being tied to government in ways analogous to the government linkage of INPI to the Brazilian government, it serves as a useful point of analysis for the purposes of this study.

KIPO: Like the USPTO, KIPO is one of the IP5. It is a major player internationally in the IP world, and is a country that has developed significantly in the relatively recent past to become a major technological player. KIPO strongly encourage a culture of innovation within Korea. As a country, it has many advanced features with respect to IP and many IP related institutions.

CIPO: Canada enjoys an advanced IP office which, like USPTO and IP Australia, takes into consideration the needs of native communities. CIPO seeks to enable citizens to take advantage of IP. This inclusive approach, alongside a position on IP which went far beyond just registration, made Canada a good example for the purposes of this report.

IP Australia: IP Australia was a strong favourite of INPI. Despite being lower on the Global Innovation Index scale than the other countries in this study, IP Australia is an office which is

making significant advances, as evidenced by the developments in the office to date and its long-term strategic plans.

Given the aspirational nature of this report, our focus was centred on understanding the operations of the best IP offices globally, and therefore the team did not select countries which are less developed than Brazil. This was a deliberate decision, which is in line with the overall aspirations of INPI. Setting a high level of ambition is key to ensuring that INPI is supported to achieving the transformational aims of the Brazil IP project.

5. Organisational Structure

IPOs Governance and Organisational Structure

Analysis of key themes for investigation through the International Benchmarking questionnaire uncovered a multitude of organisational structures in existence in IP Offices, most of which were neither clearly set out in public documentation, nor in a format to allow comparison and analysis. Considering that one of the strategic aims of the “Brazilian Intellectual Property Office for the 21st Century” is to support INPI in the redesign of its organisational structure, it thus became essential to question IP Offices on this topic and review their answers against the existing scientific literature.

This chapter on Organisational Structure has a different structure from other sections in this Report. It involves examining the role of IPO governance, the rules by which the IPO operates and the distribution of work within the IPO. Organisational Structure is the specific arrangement that governs each IPO. It is not the same in each country and evolves over time. It is institutionally determined and defined under a policy framework set up by the country’s government. Therefore, a consulting approach, restricted to a “diagnose problems and provide solutions” exercise, is not applicable in this case. The Organisational Structure assessment requires an academic approach to understand the dynamics and fundamentals of IPOs in each country and how it affects the operational activities of the IPO.

At any given moment, an IPO organisational structure corresponds to the country’s strategic view on intellectual property rights. As this is an evolving process, a new strategic perspective on the role of an IPO will create the opportunity for a new organisational design. Such a design will enable an appropriate organisational structure to be constructed. The organisational structure should be designed so that the organisation is empowered to execute the organisational strategy. As such, there is a connection between the strategic plan of an IPO and the organisational structure necessary to implement it.

Organisational design⁵ plays a central role in this process, selecting and managing aspects of structure and culture, so the IPO can achieve its goals. It is the way managers select and manage aspects of structure and culture so an organisation is positioned to control the activities necessary to achieve its goals. In the period 2010-2020, the six IPOs considered in the Benchmarking study periodically introduced Transformational Strategic Plans, usually for 5 years, aimed at improving the way the IPO delivers services to its customers through new technologies and access to global IP platforms (e.g., Patent Prosecution Highway (PPH)). This approach impacts the IPO Organisational Structure as it must be modified to integrate the IPO’s processes, policies, procedures and products to use new technologies and to access to global the IP environment. As an example, the IPO UK Transformation Programme Market Engagement PIN (published in September 2020 with 4-5 years duration) will set up high-level objectives focusing on services, customers, employees and data through digital services. For that purpose, the capability of IPO UK must be robust, adaptable and responsive to a rapidly changing global environment to promote new goals adjusted to the constant evolution of the intellectual property rights regime, which is affected by global trade development and by the economic and institutional conditions specific to each country. For the six IPOs, a Strategic Plan requires a

⁵ Bold text refers to the themes included in the KEY FINDINGS BOX at the end of the chapter.

compatible organisational structure. As a result, any required organisational redesign involves the integration of structure, processes, and people to support the implementation of the new strategy⁶.

The Main Drivers of the IPOs Organisational Structure

The institutional evolution of each country affects the two major drivers of an IPO structural organisation. These are:

- (1) the legal framework and
- (2) the financial and political autonomy.

Both drivers are affected by the country's institutional evolution and by the global IPRs regime. In some countries, in addition to the global IPRs regime evolution, special entities have been created, introduced under local legal frameworks. The purpose of these **special entities** has been to enhance the financial and political autonomy of the IPO, as well as setting up new conditions for their governance. For each IPO, the adopted methodology was to examine the legal framework, alongside financial and political autonomy, special entities (if appropriate) and their effect in each country. The figure below describes the methodology.



Figure 3. Methodology for Analysis of Organisational Structure, Source: self-elaboration

An IPO carries out the administration and management of IPRs in a country and requires the physical and legal infrastructure to administer and manage intellectual property issues⁷. Its governance is usually defined under a policy framework set up by the country's government, under which the IPO must operate. Policy and financial conditions are critical for the IPO governance. As a department within a government ministry, an IPO is subject to government policy, monitoring and financial constraints.

⁶ Aronowitz et al, McKinsey, 2015, p. 2.

⁷ Methodology for development of national IP strategies, WIPO, 2016, p. 11.

A country's IP **legal framework** relies on its institutional development and is affected by the global trade related IPRs regime. For instance, in the UK, the legal framework⁸ is based on community and international law as well as domestic legislation governed by the Patents Act 1977, the Copyright, Designs and Patents Act 1988, the Trade Marks Act 1994 and associated legislation. This legal framework informs the organisational design of the IPO. IPO UK is led by a Chief Executive and Comptroller General, appointed by the Secretary of State⁹ for Business, Energy and Industrial Strategy (BEIS)¹⁰, normally for a fixed term, and this individual is directly accountable to the Secretary of State and the Permanent Secretary for the efficient running, financial management, overall performance and strategic planning of the IPO. The Director of USPTO is appointed by the President (heard and confirmed by the US Senate) and directly reports to the Secretary of Commerce. S/he is responsible for providing policy direction and management supervision to the USPTO and for the issuance of patents and registration of trade marks. CIPO is led by a Chief Executive Officer who serves as the Commissioner of Patents and reports directly to the Deputy Minister of Innovation, Science and Economic Development responsible for CIPO's performance and strategic direction. The Director General of IP Australia is directly responsible to the Minister for Industry, Innovation and Science for the proper use and management of the entity's resources.

While proposing IP strategic objectives to the government, the IPO is required to operate under a legal framework providing a measure of political and financial autonomy. Depending on the extent of the autonomy given, this may promote or hinder the design of an organisational structure which, it is hoped, will enhance the performance of the IPO. As such, autonomy is important, and if not adequately given, it will disempower the IPO from the level of power and flexibility it requires to adequately perform its duties.

As we have established, providing an IPO with **financial and political autonomy is essential**. IPO UK has a Trading Fund status¹¹ and provides commercial services, obtaining income almost entirely from activities where a fee is payable in accordance with statute. The USPTO is funded by fees and can access and spend all fees collected as well as having the authority to adjust fees through the regulatory process. CIPO is a Special Canadian Operating Agency and can be financed by revenues from services provided to its clients on a fee-for-basis service under a cost-recovery model based on revenue from IP applications and maintenance fees. IP Australia is a cost-recovery agency and most of its revenue comes from the administration of IPRs and relies on demand for IPRs and their renewals. IPOS was established in Singapore as a separate and self-financing legal entity. Data collected from the benchmarking questionnaire shows that for most IPOs, their policy and overall governance is defined by a mix of (1) the board of directors and (2) the country's government.

Financial and Policy Autonomy in the IPO Business Model

A major challenge for any IPO is to have the financial and policy autonomy needed to enhance its performance, creating, delivering and capturing value. The degree of autonomy of an IPO is related to the value the country places on the promotion of IP, and this autonomy is determined by the fact that (1) it has a board of directors in charge of policy and overall governance, (2) can

⁸ Framework Document 2020, IPO UK, 2020.

⁹ In UK, a Secretary of State is a Minister.

¹⁰ BEIS is the Department of Business, Energy & Industrial Strategy, a ministerial department of the UK government supported by 46 agencies and public bodies. BEIS brings together responsibilities for business, industrial strategy, science, innovation, energy, and climate change.

¹¹ Trading funds are established in statute and classified outside central government as public corporations. The Permanent Secretary of HM Treasury appoints the IPO UK Chief Executive as Accounting Officer of the IPO in accordance with the Government Trading Funds Act, being personally responsible for safeguarding the public funds for which he or she has charge as well as propriety, regularity, value for money and feasibility in the handling of those public funds.

charge for services and retain the income generated, (3) can recruit, train, and retain staff according to its requirements. Moreover, the IPO (4) can sue or be sued and (5) can enter into partnership with other organisations (WIPO, 2014).

In the six IPOs which are part of the benchmarking study, the business model is based on an operating model that harmonises (1) the evolution of IP rights in the country and (2) the country's economic and institutional condition. A business model describes the rationale of how an organisation creates, delivers and captures value. A reference on that matter is the World Trade Organisation Agreement on Trade-Related Intellectual Property Rights (TRIPS) which, in 1994, engaged all countries that were members of the multilateral trading system in the task of national implementation of a common set of intellectual property standards and compliance with the TRIPS Agreement. Multilateral treaty-making in intellectual property has had an effect/influence on countries' IP legal frameworks and on IPOs' policy autonomy. IPO UK gained the legal status to act as an independent organisation due to the evolution of the UK's innovation policy, its institutional development and reform as well as for the economic and managerial need to become more efficient. National innovation policies were also a relevant factor in allowing USPTO, IP Australia, IPOS and KIPO to act as independent organisations. For CIPO, this was related to economic and managerial requirements to become more efficient.

There are numerous types of IP offices in operation globally. Some are divisions within a government department; others are departments within a government ministry. In most cases, the IP offices' operating structures are defined in the laws on which the establishment of such offices was originally based (WIPO, 2016). An IPO needs the appropriate physical and legal infrastructure and human resources to administer and manage IP-related issues. Data collected from the benchmarking questionnaire shows the six IPOs surveyed are structured in terms of departments related to (1) strategic issues (the organisation's support and its corporate needs) and (2) functional issues (IP grants and registration). For most IPOs, a strategic choice to develop new objective specific tasks is the reason they have adopted the existing organisational structure. However, for IPO UK, in addition to the strategic path, technical reasons related to its operating model and historical evolution related to global IP policy also explain its organisational structure. It is noteworthy that for IPO UK, digital transformation may require a review of the operating model review.

The IP Office of UK

The IP office of UK (IPO UK) is an Executive Agency¹² of BEIS (Department for Business, Energy and Industrial Strategy). It has its overall performance measured against a number of key performance targets that are reviewed and set annually by the Secretary of State, in the context of agreeing to the Corporate and Business Plans. These targets are reported in the Departmental Report and the IPO UK Annual Report and Accounts. IPO UK has the right to be consulted by the Department (BEIS) on both its own targets and any relevant central government targets prior to Ministerial approval. The Secretary of State determines the policy framework within which IPO UK operates, and is accountable for it in Parliament. S/he agrees on the strategic objectives, approves the annual Corporate Plan and sets key financial and performance targets for IPO UK.

As a trading fund, IPO UK is able to manage its own revenues and expenses separately from overall government finances and can be managed like a corporate body. Moreover, it has a statutory duty to ensure that the revenue of the fund is sufficient, year on year, to meet outgoings

¹² Executive agencies are distinct both from non-ministerial government departments and non-departmental public bodies, each of which have legal separation from ministerial control.

which are properly chargeable. Its transactions with the Department are restricted to the payment of an annual dividend, agreed to each year, and which considers the financial objective and repayment of principal and interest on loans as set down in pre-agreed schedules. They are a means of financing the revenue-generating operations of a government department, which takes them outside of the supply process.¹³ The UK Government is required to obtain authority from the House of Commons, through the supply process, before it can spend public money. The approval of public spending through Estimates (the supply process) operates on the basis of 'annuality', whereby money is voted for use in a particular financial year only.¹⁴ For that reason, IPO UK has the necessary flexibility in resource management to improve both the quality and cost-effectiveness of services.¹⁵

IPO UK obtains income almost entirely from activities where a fee is payable in accordance with statute while providing commercial services. The overall level of income received from fees and charges is intended to cover the full costs of the services being provided (as required by HM Treasury). IPO UK ensures that risks are mitigated through a risk management strategy, in accordance with Treasury guidance Management of Risks: Principles and Concepts (The Orange Book).¹⁶ The risk management framework supports the consistent and robust identification and management of opportunities and risks within desired levels across an organisation, incentivizing openness, challenge, innovation and excellence in order to achieve its goals.

Risk management is an essential part of governance and leadership, and fundamental to how the organisation is directed, managed and controlled at all levels. The IPO should appraise the financial standing of any firm with which it intends to enter into a contract. It will ensure processes are in place to make certain it is cognisant of risks that it is exposed to and which it exposes others to, that these risks are captured, escalated and communicated promptly and effectively. The IPO will establish processes to monitor and report to BEIS, including major projects identified and agreed to with BEIS and major operational, financial and reputational risks, among others.

The United States Patent and Trade Office (USPTO)

The United States Patent and Trademark Office (USPTO) is a federal agency within the US Department of Commerce (DOC) and is a demand-driven and performance-based organisation. The USPTO is organized to support its constitutionally mandated business function. Being demand-driven, the USPTO must be able to react quickly to changes in the global IP environment. Measurable organisational goals for the Commissioner of Patents and the Commissioner of Trademarks are defined by the Secretary of Commerce in an annual performance agreement.

The USPTO has been fully funded by fees since 1991. It has the ability to access and spend all fees collected as well as the authority to adjust these through the regulatory process. Its budget is predicated on workload demand and fee collection estimates derived from production and workload models, as well as global and domestic indicators of economic activity. As a fully fee-funded agency, the USPTO maintains Operating Reserves for both Patents and Trademarks, like standard private sector practices, to provide sufficient resources. Commitment to fiscal responsibility is a requirement of the USPTO, aligning spending priorities with revenue

¹³ UK Government, Cabinet Office, 2018, p. 25.

¹⁴ Honeysett et al, Main Estimates: Government spending plans for 2020-21, House of Commons Library, 2020, p. 6.

¹⁵ The Secretary of State, with HM Treasury concurrence, sets a financial objective in terms of a return on capital employed (currently set as 4% average return over the planning period (IPO UK, IPO Framework Document, 2020, p. 14).

¹⁶ UK Government, The Orange Book – Management of Risks – Principles and Concepts, 2020.

projections and ensuring sufficient Operating Reserves to preserve critical operations against potential economic or financial disruptions.

The Canadian IP Office (CIPO)

The Canadian Intellectual Property Office (CIPO) is responsible for the administration of the IP regime in Canada. It is subject to domestic and international legislation, in addition to international treaties on IP rights. As a Special Operating Agency,¹⁷ CIPO, has been associated with the Department of Innovation, Science and Economic Development (ISED) since 1992 and has enjoyed increased management flexibility in order to improve performance, including granting patents and providing for the registration of trade marks, copyrights and industrial designs. The CIPO undertakes efforts to ensure that the Canadian IP system is compatible with more advanced global IP registration systems.

As a Special Operating Agency, the CIPO can be financed by revenues from services provided to its clients. It does not receive annual parliamentary appropriations for its operations. The CIPO provides products and services on a fee-for-basis service under a cost-recovery model based on revenue from IP applications and maintenance fees and has a comprehensive financial management control of its resource capacity. Since 1994, CIPO has been financed entirely through a revolving fund authority, an ongoing funding authority for revenue re-spending that provides a financial management structure similar to that of a private business and must generate sufficient revenues to meet its expenses.¹⁸

IP Australia

IP Australia has existed since 1998 and, since February 2020, falls within the Industry, Science, Energy and Resources portfolio, sharing its IP policy development and advice responsibilities with the Department of Industry, Science, Energy and Resources. The Director General of IP Australia answers directly to the Minister of Industry, Science, Energy and Resources for the proper use and management of the entity's resources. The Director General has agency head powers under the Public Service Act of 1999, delegated from the Secretary of the Department, and is the accountable authority under the Public Governance, Performance and Accountability Act of 2013. In 2015, the Government introduced the role of Deputy Director General (Policy and Corporate Division) to create a structural separation between agency policy and service delivery functions.

IP Australia is a cost-recovery agency: its revenue is linked to the effort involved in completing examination work and largely based on the renewal of rights granted in the past. Most of the agency's revenue comes from the administration of IPRs and relies on demand for them and their renewals. As a result, financial self-reliance provides IP Australia with the scope to invest in its business with greater flexibility to pursue new strategic priorities and implement services.

IP Australia seeks to recover all related costs across the total life cycle of the IP right by charging less for the related cost of an application and examination. By deferring some of the total transaction cost to the renewal phase of an IP right's lifecycle, fees can be kept lower in the formative years where most of the transaction costs are incurred, and at a time where the applicant may not yet have established an income stream from their IP right. While common in

¹⁷ Special operating agencies are operational organisations within existing departmental structures that provide services using more of a private sector approach (Canada Treasury, Guide on Revolving Funds, 1997, p. 3).

¹⁸ A revolving fund is a funding mechanism that also promotes a more business-like service delivery. Revenues from goods and services sold or provided are the main sources of funding for a revolving fund business unit. Only business units that recover part or all of their costs may use a revolving fund. For this reason, only organisations that are primarily self-financing will be able to choose a revolving fund as a funding mechanism (Canada Treasury, Guide on Revolving Funds, 1997, pp. 3-4).

other international jurisdictions, this is a key innovation promotion principle of the IP system in Australia. In addition, charging progressively higher renewal fees, in line with the increasing age of the granted IP right, forces applicants to make an economic decision to continue patent protection only when economically justified.¹⁹

The Intellectual Property Office of Singapore (IPOS)

Previously a department of the Ministry of Law, the IPOS was established as a separate and self-financing legal entity in 2001. However, even under the new regulatory framework, the Ministry of Law still has the power to approve or disallow any item in the IPOS' annual estimates or supplementary estimates. The IPOS financial provisions are, among others, (1) charges and fees for services rendered, (2) dividends, royalties, interest or income received from any transaction, and (3) grants, subsidies, donations, gifts and contributions. IPOS may invest its money in accordance with the standard investment power of statutory bodies. Moreover, the Ministry of Law may, from time to time, make grants to the IPOS out of the money provided by Parliament. The IPOS may also raise loans from the government or, with the approval of the Minister of Finance, raise loans from banks or other financial institutions, in Singapore or elsewhere.²⁰ In Singapore, development of strong IP protection has been used to attract direct foreign investment and companies to locate in the country. At the same, it has stimulated the demand for a skilled workforce in R&D intensive sectors and was an opportunity to promote IP in Asia. In 2013, the high-level IP Steering Committee of Singapore formulated a 10-year Master Plan to strengthen the country's international position as a vibrant IP hub and promote it as a leader in IP. It included three strategic outcomes for the country to aim for: (1) a hub for IP transactions and management; (2) a hub for quality IP filings; and (3) a hub for IP dispute resolution. In the following years, Singapore has made significant progress in building a strong and reliable IP regime, well linked to international networks. Companies in Singapore have good access to foreign markets through the many IP partnerships forged with key export destinations. Innovative enterprises can monetise their IP through the IP Financing Scheme and obtain bank loans using patents, trade marks and copyright as collateral.

The Korean IP Office (KIPO)

South Korea established formal patent legislation in 1961, which was amended in 1981 to conform to the Paris Convention.²¹ In 1977, the Patent Bureau became an independent office of the Ministry of Commerce and Industry and took on the name of Korean Industrial Property Office. In 2000, it was renamed the Korean Intellectual Property Office (KIPO) and became the governmental authority in charge of affairs regarding patents, utility models, industrial designs, and trade marks. From the 1960s, South Korea followed an IPR regime that facilitated adaptations and imitative duplication of foreign technologies by domestic enterprises through utility models and industrial designs.²² During the imitation stage, IPR protection was reduced by the government to help domestic firms use foreign intellectual property with the help of duplicative imitation or reverse engineering and allowing them to gradually emerge as innovators in their own right. In the 1980s, the country faced a technological transition from imitator to innovator and saw a substantial increase in the number of patent applications. This was due to several factors: (1) trade liberalization, (2) wage increases, but also (3) external market demand resulting from

¹⁹ Department of Industry, Innovation and Science, IP Australia, Draft Cost Recovery Implementation Statement, 2012, pp. 5-6.

²⁰ Intellectual Property Office of Singapore Act, Chapter 140, Revised Edition 2001, Part V: Financial Provisions, 2002.

²¹ Kumar, Nagesh, Intellectual Property Rights, Technology and Economic Development – Experiences of Asian Countries, Economic and Political Weekly, January 18, 2003, pp. 214-215.

²² Branstetter, Lee G. and Namho Kwon, South Korea's transition from imitator to innovator: The role of external demand shocks, Journal of The Japanese and International Economies, Vol. 49, 2018, p. 28.

exchange rate changes that gave a competitive advantage to South Korean export products over similar Japanese goods, due to the strengthening of value of the yen. External demand was a major driver increasing demand for technological innovation and for stronger IP. Moreover, increased market demand for technological innovation resulted from firms deciding to increase their Research and Development (R&D) expenditure.

Organisational Structure as a Strategy Support

The most effective organisational structure for an IPO organisation is one that supports its strategy. The strategy of an IPO is its intention for the future: how it will attain its goals given its situation. The IPO should adopt a structure aligned with its goals in the most efficient manner possible, thereby promoting organisational effectiveness.

Data collected from the benchmarking questionnaire indicates that changes in IPO strategy come from different sources (policy team, senior management, wider society, IP professional bodies and legislation). For IPO UK, for example, changes in strategy are suggested by senior management. Moreover, the benchmarking exercise shows IPOs are subject to governance rules to make changes. IPO UK operates within the framework of policy, planning, accountability and delegations, under its Chief Executive, the main steering board, audit committee and other governance groups.

IPO UK, USPTO, CIPO and IP Australia have financial and policy autonomy to:

- (1) charge for services;
- (2) retain the income generated; and
- (3) retain the surplus.

However, IPO UK needs approval by HM Treasury and Parliament for changes to fees and charges. IPO UK acquired the legal status to act as an independent organisation due to the evolution of UK innovation policy, its institutional development and reform, as well as economic and managerial need, i.e., to become more efficient. National innovation policies were also the main factor allowing the USPTO, IPA, IPOS and KIPO to function as independent organisations. For the CIPO, increased efficiency was the result of economic and managerial factors.

The six IPOs examined contribute to bilateral and multilateral negotiations and the development of cooperation programs to support the global IP system. Convergence to common rules and procedures applying to foreign IP systems is strongly related to domestic innovation and policy settings. **Cooperation among IPOs** can reduce transaction costs and make services more attractive to major clients, as well as the international business community, (1) making IP administrative processes more efficient; (2) coordinating common procedures and criteria to be followed in each IPO's processes and products; and (3) providing productive services to international clients. The Patent Cooperation Treaty (PCT) system has been a major step in reaching cooperative solutions as parties can file a single international patent application through a number of IPOs designated as 'International Search Authorities.' Another major cooperative effort among IPOs is the Global Patent Prosecution Highway (PPH), allowing patent applications accepted in one country to request expedited examination in other countries. This improves efficiency and saves costs through reduced duplication and more timely outcomes for applicants. Quality should be preserved as IPOs converge to common examination procedures. An additional effort relevant to reducing transaction costs is the Madrid Protocol, which harmonises and streamlines international trade mark applications.

KEY FINDINGS

- **Special entities** are key enablers of IPO independence. IPO UK has a Trading Fund status, provides commercial services and obtains income almost entirely from activities where a fee is payable in accordance with statute. The USPTO is funded by fees and has the authority to adjust these through the regulatory process. CIPO is a Special Operating Agency and can be financed by revenues from services provided on a fee-for-basis service under a cost-recovery mode. IP Australia is a cost-recovery agency and most of its revenue comes from the administration of IPRs, relying on demand for IPRs and their renewals. IPOS was established as a separate and self-financing legal entity.
- **Organisational design** is a critical step to ensure that the strategy of an IPO is achieved. Proper design ensures selection and management of aspects of structure and culture. In particular, the Strategic Transformational Plans of an IPO require the organisational design to integrate with its processes, policies, procedures and products, encouraging the use of new technologies whilst enabling increased access to the global IP environment.
- **Legal framework** and **financial and policy autonomy** are the major drivers of an IPO structural organisation. Both drivers are affected by the country's institutional evolution and by the global IP regime.
- **Cooperation activities among IPOs** reduce transaction costs and make services more attractive to the international business community, (1) making IP administrative processes more efficient; (2) coordinating common procedures and criteria to be followed at each IPO as it delivers its services; and (3) providing productive services which are able to attract international clients.

6. Quality

The Concept of Quality and its Importance in the IPOs' Activity Evolution

Quality is a fundamental matter for IPOs. It was first related to patent validity²³ and later, gradually, involved all IPO processes and products. As quality management took on increased prominence in most sectors and services of economic activity, it became an issue of major importance in IPOs and a key component in the strategic plans of each of the six IPOs under examination in this report. For that reason, in this benchmarking study, we considered the quality issue from an organisational perspective, examining the relationship between quality and an IPO's strategic objectives. These are key elements of the methodology applied in this section. Quality has been a relevant component of the six IPOs' strategic plans and a substantial factor in their performance.

The overall literature on patents stresses the importance of quality in the patent process. This was important even before the introduction of Quality Management Systems (QMS) in processes and products related to IPRs delivered by an IPO. This development resulted from worldwide patent activity growth and concerned patent prosecution,²⁴ considering quality as one of its significant goals. Moreover, patent quality is part of the standards of patentability. High-quality patents should (1) clearly meet the standards of patentability (i.e., to be novel, non-obvious, as well as clearly and sufficiently described); (2) be explained in the context of the prior art; and (3) draw clear and unambiguous lines around their subject matter.²⁵

In the 2000s, there was much discussion about “decreasing patent quality” among policy makers and in academic circles due to the decreasing patent office “service quality.”²⁶ More recently, in the last decade, introduction of QMS in IPOs' processes and products is aimed at providing high quality products and services delivered in an efficient and consistent manner.

Approaches to the Quality Issue in IPOs' Activities

The evolution of IPOs offers a good perspective on the importance of the issue of quality. The literature on the subject is an important reference to understand the role of patent quality in the quality policy pertaining to the six IPOs' processes and products.. For that purpose, it is important to consider three major approaches related to the issue of quality in IPOs' activities.

The first approach relates quality standards to the patent granting process as well as the provision of reliable patent validity in courts. Patent quality has been gradually institutionalised by forming internal offices in IPOs that were tasked with assessing and disseminating information about patent quality.²⁷

The second approach was defined as the ‘quality factor Under .’services examination in patent²⁸, that approach, quality is defined as the extent to which a patent system complies with its legal standards in a transparent way. A methodological framework assesses quality in patent systems

²³ Thomas, John R., The Responsibility of the RuleMaker: Comparative Approaches to Patent Administration Reform, Berkeley Technology Law Journal, Vol. 17, 2002, p. 730.

²⁴ The patent prosecution refers explicitly to filing a patent application. The examination phase is part of the patent prosecution.

²⁵ Polk Wagner, R., Understanding Patent-Quality Mechanisms, University of Pennsylvania Law Review, Vol. 157, 2009, p. 2138.

²⁶ Burke, Paul F. and Markus Reitzig, Measuring patent assessment quality – Analyzing the degree and kind of (In)consistency in patent offices' decision making, Research Policy, Vol. 36, 2007.

²⁷ Polk Wagner, R., Understanding Patent-Quality Mechanisms, University of Pennsylvania Law Review, Vol. 157, 2009, p. 2160.

²⁸ Concept introduced by Bruno van Potellsberghe de la Potterie, The Quality Factor in Patent Systems, 2010.

to identify the extent to which these systems differ in the 'delivery' or 'quality' of patent examination services. Patent systems include (1) legal standards and (2) operational designs. Operational designs (i.e., elements that shape the rigour and transparency of the examination processes) differ across IPOs and lead to different degrees of rigour and transparency of the examination processes.²⁹ The approach focuses (1) on assessing the extent to which quality varies across IPOs and (2) on helping to bridge the gap between the complex world of patent professionals (examiners, attorneys and experts) and the world of policy makers, research scholars and potential users. The literature on the subject considered a 'vicious cycle' hypothesis to explain structural differences among IPOs in which (1) a low-quality examination process leads to (2) the filing of more low-quality applications, which in turn (3) further reduces the examination quality because examiners become overloaded.³⁰

The third approach is based on the adoption of an operational and effective Quality Management System (QMS) that meets the international standard ISO 9001:2015 for an IPO's processes. A QMS is a management technique used to communicate to employees what is required (1) to produce the desired quality of products and services and (2) to influence employee actions to complete tasks according to the quality specifications.

The Quality Issue in IPOs Governance Evolution

Data collected from the benchmarking questionnaire show that quality management is (1) part of the operational process and (2) under the responsibility of each division for the six IPOs. Moreover, quality management policies have been implemented in the IPOs in a number of different ways.

- IPO UK implemented ISO 9000 in 2016, originally to Trade Marks and Patents but has since expanded to Designs and the peripheral areas of the Patents Designs Trade Mark Directorate (PDTMD).
- The USPTO has always had quality management policies; in the past, some departments have also been ISO certified. At the time of the questionnaire (October 2020), it did not have any ISO certified departments, but the USPTO employs a quality management system and associated policy.
- In 2017, the CIPO's Patent Branch obtained ISO 9001:2015 standard certification which defines the requirements for the IPO in terms of its QMS.
- Since 2005, IP Australia has applied a QMS to its IPRs groups (patents, trade marks, designs, and plant breeder's rights) and to the administrative functions that support them. In addition, IP Australia has maintained ISO 9001 certification since 2006 to monitor, measure and manage the quality of its products and services.
- IPOS was first certified for ISO 9001:2008 in 2014 and achieved ISO 9001:2015 certification in 2018, covering the patent application and payment processes for both national and international patent applications, as well as for its patent analytics services.
- KIPO achieved the ISO 9001 certification on its quality management system in 2014 and has implemented various quality management policies and measures based on its

²⁹ De la Potterie, Bruno van Potellsberghe, The Quality Factor in Patent Systems, Bruegel Working Paper 2010/03, July 2010, p. 2.

³⁰ Jaffe, Adam B. and Josh Lerner, Innovation and its Discontents, in Innovation Policy and the Economy, Volume 6, National Bureau of Economic Research, 2006.

internal annual quality management plan and examination performance management plan. However, KIPO has not subsequently maintained this certification.

Regarding the quality management department/team, data collected from the benchmarking questionnaire provide some useful information:

- The IPO UK quality team forms part of the Customer Experience Unit, which is led by a Deputy Director.
- At USPTO, the Office of Patent Quality Assurance (OPQA) reviews the work of patent examiners, mostly by Review Quality Assurance Specialists (RQASs) which are primary examiners with a proven history of high-quality patent examination. Moreover, the USPTO Trademark Operations has a quality management department called the Office of Trademark Quality Review and Training, which is staffed by experienced, senior-level attorneys and by program analysts.
- The CIPO has a Quality of Patents team that is housed within the Patent Services and Strategic Affairs Division.
- The IP of Australia quality team is led by a Director (Executive Level 2), which is the highest level of management prior to senior executive.
- At the KIPO, the Office of Director for Examination Quality Assurance is responsible for the overall quality management work, and it is composed of 12 staff members with more than 7 years of experience.

Quality Management System (QMS) Improving IPO's Processes

1. **QMS application on IPOs processes:** The QMS of an IPO is certified under an ISO 9000 standard. By applying a QMS that meets this standard, certified IPOs demonstrate their commitment to high-quality IPO processes and procedures to their clients and stakeholders. Regular internal audits of QMS processes are required by the ISO 9001 standard. These audits establish whether the QMS is being effectively implemented and maintained. The following aspects have been identified as relevant by IPOs for quality, and the EPO Quality Policy³¹ addresses them:

- Legal certainty (i.e., granting patents with the highest presumption of legal validity);
- Classification (i.e., accurate and timely classification lays the foundations for quality at subsequent stages of the patent granting process);
- Timeliness of procedures;
- Openness (i.e., dialogue about quality with users);
- Continual improvement (as highly skilled and motivated staff, through continually improving trainings, tools, procedures and processes);
- Working closely with other IPOs; and

³¹ EPO Quality Policy, <https://www.epo.org/about-us/services-and-activities/quality/policy.html>

- Collaborative work (i.e., three-person patent examining divisions)

As an example, in patent classification, the Cooperative Patent Classification (CPC), initiated as a partnership between the USPTO and the EPO, is compliant with the International Patent Classification system (IPC) standards administered by the World Intellectual Property Organization (WIPO). Currently, 29 IPOs are classifying based on the CPC, including the CIPO, KIPO and INPI (since 2014) and over 45,000 examiners worldwide use the CPC in their search work, retrieving prior art from many different sources, regardless of language.³²

2. **Quality Performance:** Quality-based measures of performance are **metrics provided by quality indicators**. The European Patent Office (EPO) has established a set of quality indicators to monitor procedural delays and provide, timely, searches, examinations and opposition decisions, as follows:

- Patent grant procedure search timeliness (from date of receipt at the EPO to dispatch of search report)
- Examination timeliness (from valid examination request to dispatch of examiner's intention to grant)
- Duration of opposition procedure (from expiry of opposition filing period to date of opposition decision)
- Percentage of international searches on-time (percentage of PCT Chapter 1 international searches completed in time for publication along with the application, A1 publication).
- Time to accelerated examination action (mean time in months calculated from the examination procedure start date to examiner's first communication or decision to grant).
- Timeliness of customer services.
- Complaints (complaints are a particularly valuable source of user feedback, as they enable the IPO to identify areas where changes may be needed to further improve quality).

3. **Effects of QMS in IPOs 'results:** When analysing the number of people involved in quality management, the benchmarking questionnaire provided the following information:

- At IPO UK, quality management is embedded in Patents Designs Trade Mark Directorate (PDTMD) where it relates to examination;
- At USPTO, the Office of Patent Quality Assurance currently employs 91 staff members (including 67 patent review quality assurance specialists), while the Office of Trademark Quality Review and Training currently employs 42 (including 29 attorneys and 13 other staff);
- The CIPO has a team of four people who are responsible for the Quality Management Framework and the Audit function. The Quality Control function is the responsibility of supervisors from both an examination and operations perspective;

³² European Patent Office (EPO), Quality Report 2019, EPO, 2020, p.13.

- The IPA has two small teams responsible for quality management, setting quality standards and oversight with resourcing supplemented from the IPRs 'groups;
- The KIPO has 12 staff members at the Office of Director for Examination Quality implementing overall quality management. In addition, directors and deputy directors of examination divisions carry out their own quality checking activities daily.
- The IPOS does not have a quality management team.

The six IPOs promote **incentives to encourage high levels of quality and efficiency** from staff, as highlighted in responses to the benchmarking questionnaire:

- IPO UK conducts regular audits and a variety of quality assurance measures such as sampling. This is fed back to staff with learning points on best practice. In addition, IPO UK analyses customer feedback showing where quality improvements are needed.
- The USPTO provides employees with performance appraisal plans that provide clear expectations to the staff and are used to hold employees accountable. In addition, there are targets and goals set at various levels within the USPTO to encourage high levels of quality and efficiency. The USPTO undertakes employee engagement efforts to encourage and reinforce employee support for organisational goals. In addition, the USPTO has performance and incentive bonuses that are tied to achieving goals, including high levels of quality and efficiency.
- At the CIPO, the Patent Branch has a quality management framework, and each examiner has quality as part of their performance agreement. In the Trademark and Industrial Branch, all new examiners are subjected to a thorough 8-week training program and then an experienced coach guides them to meet gradually increasing quality and production targets. After the coaching period, examiners must maintain a level of quality and production as indicated in their yearly performance objectives. Their results are monitored monthly and feedback is provided accordingly. Examiners who demonstrate the best performance are often chosen to participate in special projects.
- The IP Australia staff is supported through quality standards, manuals and training. Quality is monitored and measured through quality review processes that support continual improvement. Staff members who attain high level quality outcomes are recognised and rewarded to support a culture of quality. Efficiency is also monitored and measured with commitments set to align to customer expectations. There are no legal barriers to encourage high levels of quality or efficiency. The Quality Review System is integral to meeting customer needs and expectations and supporting continuous improvement. QMS and quality review activities have an integrated risk management approach which ensures both internal and external factors are recognised and managed.
- Even without a quality management team, the IPOS achieves quality and efficiency through rewards and recognition, continual training and development, continuous and formal performance management process between staff and supervisors, and system innovations to enhance internal processes.
- The KIPO supports its examiners to set their own performance goals and rewards them for reaching the goal through performance bonus or promotions. They receive regular

education and training opportunities as well as advisory support. The KIPO aims to raise the quality of IP administration and reduce first action pendency.

The questionnaire answered by the IPOs provided additional information on quality and efficiency. The ratio of staff hours to grant can be taken as a proxy to assess examiners performance in four IPOs. The KIPO has a substantial advance over other IPOs in patent grants, consistent with its training efforts and the introduction of new technologies to improve the number of patent applications per examiner and the total number of patent filings. However, on trademarks and industrial design, the IPO UK has been more efficient given a better distribution of work across examining teams, working smarter and offering a number of accelerated processing services to applicants.

Levels of Quality and Efficiency				
	IPO UK	IP Australia	KIPO	IPOS
Patent (National) (staff hours to grant) (1)	25	12,5	2,5	25
Patent (PCT) (staff hours to grant) (1)	12,5	35	2,5	25
Patent Cooperation System (PCT) (2019) (2)	5.711	1.768	19.085	1.029
Number of patent applications/full-time examiner (per year) (1)	100-200	56	300	NA
Total number of patent grants (2019) (1)	31.331	21.857	172.361	7.228
Trade marks (staff hours to grant) (1)	2,5	7,5	2,5	2,5
Total number of trade mark registrations (2019) (2)	1.146.455	253.857	308.437	116.670
Design rights (staff hours to grant) (1)	2,5	12,5	2,5	2,5
Total number of industrial design registrations (2019) (2)	192.349	20.046	130.344	9.104

Figure 4. Levels of Quality and Efficiency across selected IPOs, Source: (1) Questionnaire answered by the IPOs, (2) WIPO Statistical Country Profiles - https://www.wipo.int/ipstats/en/statistics/country_profile/

KEY FINDINGS

1. Quality has been a **relevant component of IPOs' strategic plans** and a substantial factor of their performance. The issue of quality has been considered from an organisational perspective as well as through the lens of examining the relationship between quality and an IPO's strategic objectives.
2. The importance of a **quality policy** has been steadily growing in recent years and now became **a major focus of the six IPOs** under examination. Advances in quality management should have an additional impact on IPOs' processes and products, increasing the relevance of quality departments/teams and the IPO's overall efficiency in delivering its products.
3. The six IPOs promote **incentives to encourage high levels of quality and efficiency**. These incentives range from (1) regular audits and quality assurance measures fed back to staff with learning points on best practices, to (2) training programs and quality review processes that support continual improvement, and to (4) performance bonus or promotion.

7. Process

In considering the issue of process, it is useful to consider the range of various stakeholders who influence the internal processes of an IPO in different ways. These include, but are not limited to:

Intellectual Property Office stakeholders	
IP Professionals	Attorneys, lawyers & their representative organisations
IP Service Providers	IP strategists, advisors, analysts, valuers, search services, SaaS providers
Clients	Innovators, entrepreneurs, incubators, accelerators
Government	Ministers, officials, regional representatives
International Bodies	WIPO, regional organisations, treaty interactions
Public	Consumers, Cultural organisations, Indigenous communities
IP Market	Licensing executives, VCs, funding organisations, collective groups
Research community	Universities, Research Organisations, Researchers, TTOs
Business Agencies	Chambers of Commerce, Export Associations, trade bodies
Miscellaneous organisations	In-country regional associations, border control and agricultural organisations, innovation organisations

Table 2. Stakeholders of Intellectual Property Offices

Table 2 does not refer to patents, trademarks or industrial designs. Rather it looks at IPOs from a high-level perspective, and considers the stakeholders with whom IPOs interact, for often quite different reasons, but always on issues related to intellectual property.

From an inward-looking perspective, an IPO may also be considered in the manner outlined by IP Australia in Figure 6.

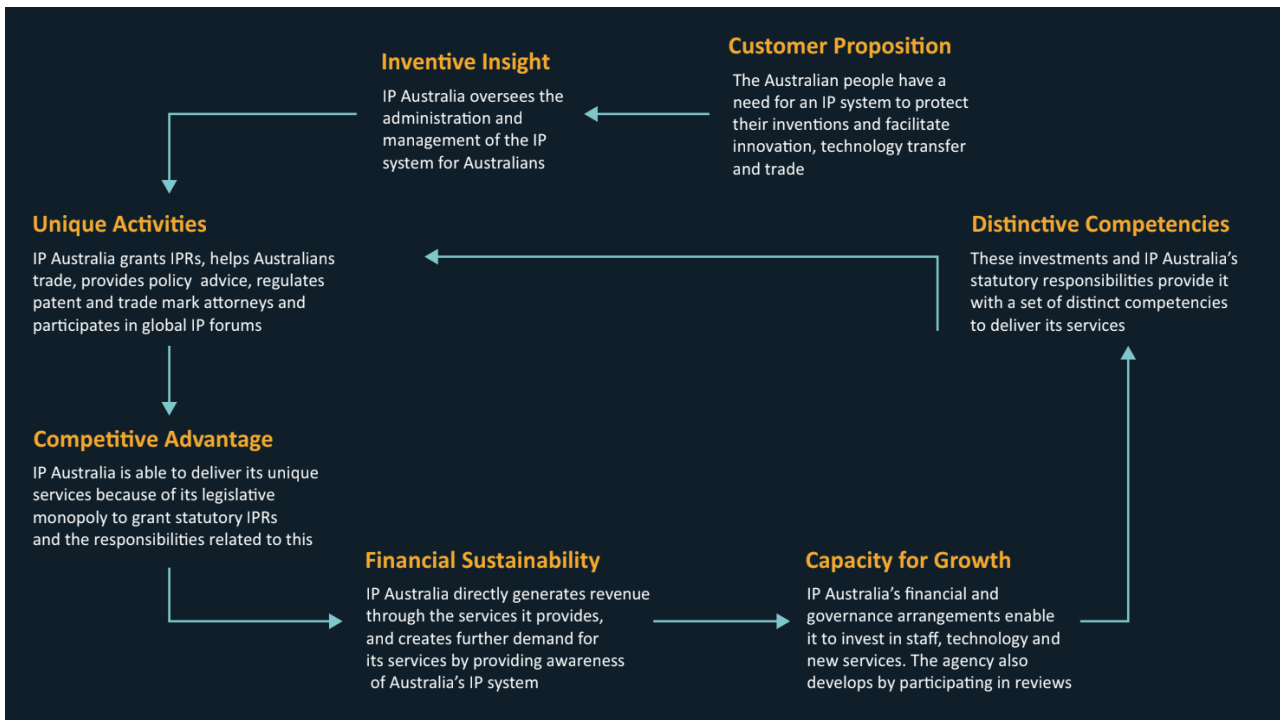


Figure 5. The Focus of IP Australia³³

Whether an IPO is seeking to deliver on the wider goals expressed in “The IPO of the Future”, or is more inwardly focused, processes, or the lack there of, will have a major impact on its success.

In most IPOs, processes are focused on driving efficiency. IP Australia even has a Customer Service Charter.³⁴ Processes are normally derived from the organisational structure and are strongly impacted by IPO strategy. In our research we found that most IPOs undertake regular reviews with the aim of delivering continuous improvement:

Q21 To enable efficient processes, has a major organisational change been carried out in your IPO within the last 5 years?

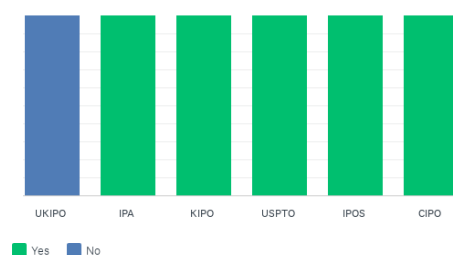


Figure 6. Organisational Change at the IPOs

³³ This graphic is shared under a Creative Commons CC-BY licence 4.0. More details are available at: https://www.ipaustralia.gov.au/sites/default/files/ip_australia_and_the_future_of_intellectual_property.pdf

³⁴ More information is found at: <https://www.ipaustralia.gov.au/about-us/doing-business-us/customer-service-charter>

It is important to note that the above question is focused on *major* organisational change. Many offices will engage in regular minor process reviews within individual departments. As an example, IPO UK recently instituted a new renewals process for applicants whereby rights holders can renew more than one type of right at the same time, thus creating significant time-savings for rights holders.

As each IPO looks to how it will deliver services in the 21st century, and to whom, each office will take a slightly different approach as it is primarily seeking to deliver services in a way which benefits national interest. This is to be expected. Each office will have a primary focus on delivering an excellent service as an intellectual property rights registrar. The processes involved in registering intellectual property rights are widely known, and it is not the purpose of this report to provide a deep analysis of each of the numerous processes involved in registering rights and providing services which support the IP ecosystem. In this report we did not engage with questions such as “How many webpages does an online patent applicant need to complete to make an application?”³⁵ or address process productivity. However, we note that at IPO UK an exercise was undertaken to benchmark productivity against the EPO and DPMA.³⁶ The offices of many global IPOs provide applicants with graphics outlining the process of rights registration. An example of this is found in Schedule 2 from IPA. Examples from the KIPO are also available on their website.³⁷ Other offices indicate the process to applicants by way of a timeline.³⁸

A key ingredient in process is staff numbers. If staff numbers are inadequate, an IPO can have numerous excellent processes but inadequate staff to execute them. The topic of human resources is dealt with elsewhere in this report and is undoubtedly a major factor in delivery of process. Figure 8 gives some insight on this topic as it shows the number of patent examiners in various IPOs.

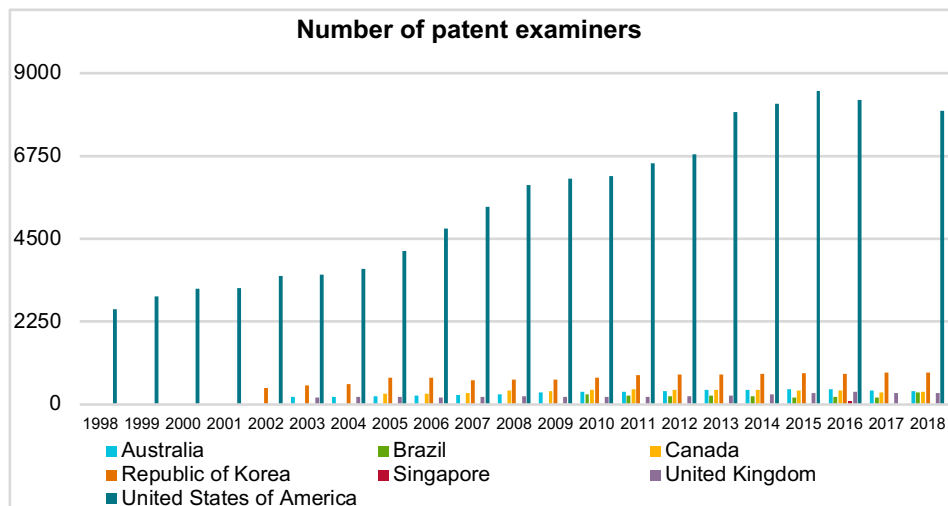


Figure 7. Number of Patent Examiners in Patent Offices³⁹

³⁵ At IPO UK, when applying for a patent application for educational purposes in May 2020 this process involved the applicant completing 14 separate webpages to make a successful application.

³⁶ This report can be downloaded at this link: <https://www.yumpu.com/en/document/view/23492201/benchmarking-project-productivity-of-the-epo-uk-intellectual-/81>

³⁷ For patents full information on the application process (including a graphical guide) is available at this link: https://www.kipo.go.kr/en/HtmlApp?c=30101&catmenu=ek03_02_01 For trade marks similar information is available at this link: https://www.kipo.go.kr/en/HtmlApp?c=30103&catmenu=ek04_02_01

³⁸ The IPO UK takes this approach. Its patent timeline is shown at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/826223/patent-timeline.pdf , with a whole range of patent fact sheets available at: <https://www.gov.uk/government/publications/patent-fact-sheets>

³⁹ Information from WIPO IP Statistics Data Center: <https://www3.wipo.int/ipstats/>

What is interesting in this graphic is that despite processing the 3rd most patent applications globally - approximately one third of the volume of that processed by the USPTO - the KIPO manages to only require 875 patent examiners for nearly 210,000 applications. This is reflected further in figure 7 in the amount of time that the KIPO takes to process a patent, trade mark or design:

On average, how many staff hours are required to grant an IP right from application through to grant date?

Answered: 6 Skipped: 0

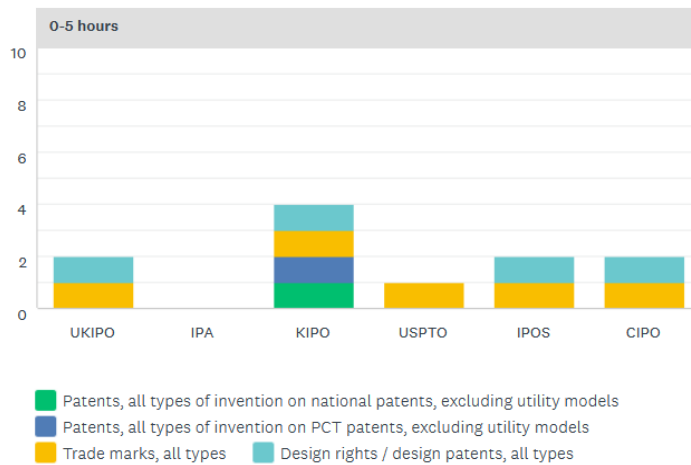


Figure 8. IPOs Taking 0-5 Staff Hours to Grant an IP Right⁴⁰

It is clear from Figure 9 that the KIPO differs in its approach to patents as it is in the only office taking 0-5 hours of staff time to grant a patent. This merits a deeper analysis beyond the scope of this study. From a different angle, it can be observed that UK and Canada have a similar staff count to Brazil (above) yet their patent pendency periods differ significantly:

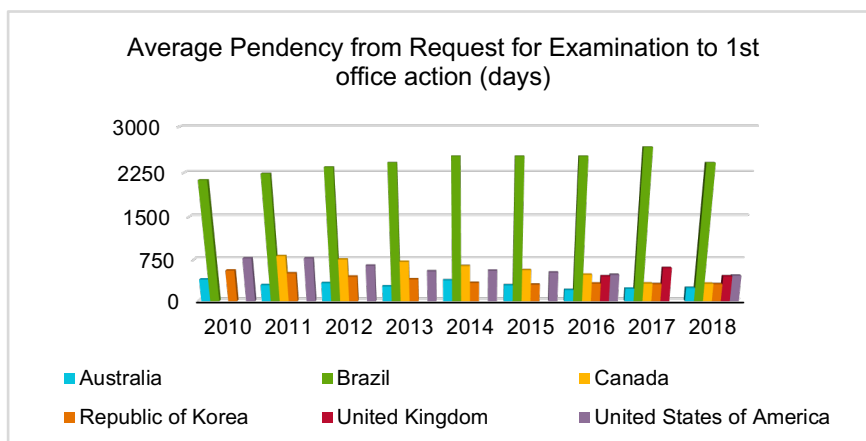


Figure 9. IPOs Taking 0-5 Staff Hours to Grant an IP Right⁴¹

⁴⁰ Other responses for all countries and all rights are detailed in the responses for other time periods within the Benchmarking Questionnaire.

⁴¹ Other responses for all countries and all rights are detailed in the responses for other time periods within the Benchmarking Questionnaire.

One possible step to encourage successful processes is transparency on statistics relating to the activities of IPOs. This is the approach of the CIPO.⁴² An additional practical step which many offices have taken, including Brazil,⁴³ is to join the Patent Prosecution Highway (PPH). This enables offices to benefit from the work of other IPOs. Whilst PPH could be viewed as encouraging offices to unfairly benefit from the work of others, it is a reality that some offices are simply better positioned to examine patents in a much shorter timeline than other offices. In addition, when a fast-granting IPO office signs an agreement with a slower granting office, the innovators of the fast granting IPO benefit, since they will be able to exploit their innovations in another country in a reduced time period than would otherwise have been the case.

In addition to PPH, many offices give fast-tracking options to applicants:

Q28 At your IPO, what methods are available to Fast-Track a trade mark examination?
Please select all that apply:

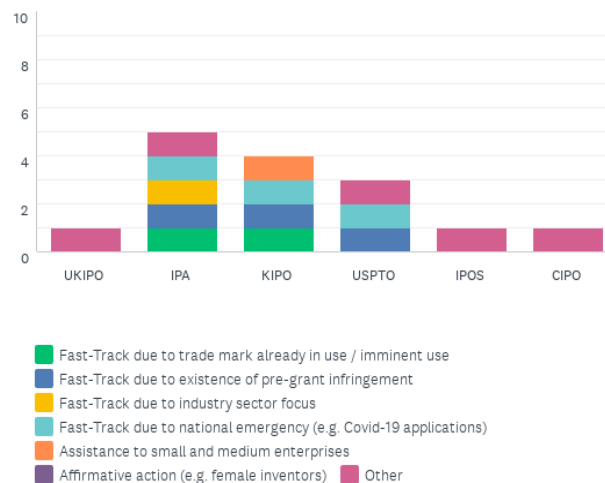


Figure 10. Availability of Fast-track Trademark Examination at IPOs

Only three offices we surveyed had fast-track systems to assist in a national emergency, and no office had an affirmative action fast-track. Notably, the KIPO was the only office which answered that it had a trademark examination fast-track for small and medium size enterprises. It is not clear why there is so much disparity in processes between the offices. One office, IPOS, allowed a trademark examination to be expedited if it was related to a patent application that had been accelerated under the SG Fast⁴⁴ programme. This requirement would appear to be rather arbitrary. At IPO UK there is currently no trademark fast-track option. On reflection there did appear to be value in a fast-track system where there is pre-grant infringement. We also asked the IPOs about fast-track systems for patents.

⁴² Example details available at: <https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr04855.html> and <https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr04858.html>

⁴³ Details of some of the agreements Brazil has signed: <https://www.gov.br/economia/pt-br/assuntos/noticias/2020/01/inpi-reduz-estoque-de-pedidos-de-patente-em-2019>

⁴⁴ Details of this scheme are found online at: <https://www.ipos.gov.sg/protect-ip/apply-for-a-trade-mark/the-sg-ip-fast-track> (Accessed 24th February 2021).

Q26 At your IPO, which schemes exist for faster granting of patent (invention patents – both national and PCT) applications (e.g. Fast-Track)? Please select all that apply:

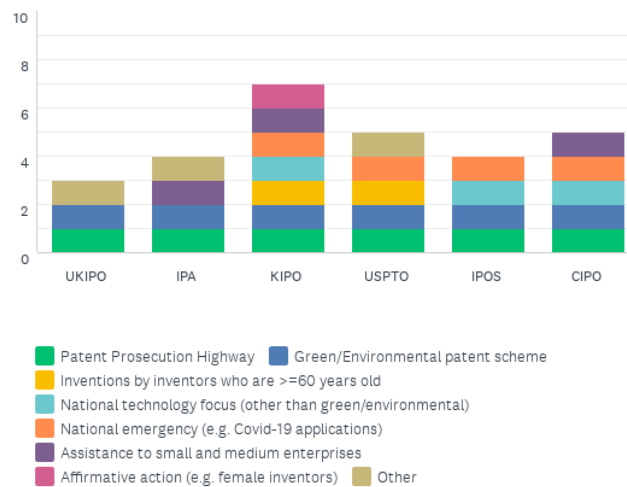


Figure 11. Schemes at IPOs for Faster Granting of Patents

All offices were members of the PPH, and all had some type of "green" or environmental fast track service. IPA, the CIPO and KIPO had fast-track systems for small and medium-sized enterprises. Given the frequent need for SMEs to secure investment to grow, and the value investors place on granted patents, this seemed like an economically useful choice. As such, it is surprising that more offices do not offer a fast-track options for SMEs.

One area where we found significant variation in IPO performance was in the time taken to respond to an applicant’s appeal for an IP right. This was Question 35 of our survey:

“What is the average time taken (in days, unless otherwise stated) to respond to an applicant’s appeal, following rejection of the following rights?” The table below shows each office's response.

	IPA	CIPO	IPOS	IPO UK	KIPO	USPTO
Patent	3 months	18-24 months	176 days	N/A	12.2 months	N/A
Design right	20 days	18-24 months	44 days	7 days	11.3 months	N/A
Trade mark	20 days	N/A	120 days	10 days	9.1 months	14.3 weeks

Table 3. Applicant time to respond to an applicant's appeal.

Some offices responded to this question in an ambiguous way (answering in months or weeks rather than working days), and it is not clear that all used the same measuring metric, i.e., it was not clear when the clock started – did it start when the appeal was examined or when the appeal first arrived in the IPO? Nonetheless, IPO UK appears to be faster than other offices for industrial design and trade mark appeals. It is not clear if this is also the case for patent appeals. We also

believe that of the offices we reviewed, IPA should also be commended for its quick response time regardless of the nature of the appeal, especially in relation to patent appeals which have the capacity to be quite complex. On the topic of appeals we were asked by the INPI to inquire about the involvement of senior examiners in this process:

Q34 When a trade mark or patent is rejected, are senior examiners involved in the appeal process?

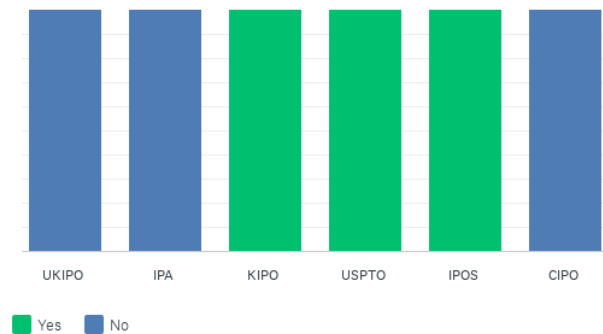


Figure 12. Involvement of Senior Examiners in Appealing Trade Marks or Patents

It is notable that the members of the Vancouver Group of IPOs (IPO UK, CIPO and IPA) did not involve senior examiners in this process. It is unclear why this is the case, and it would be useful to understand more about the process by which examiners are authorised to lead appeals. It speaks highly of the training processes of these organisations, as whilst these offices are giving autonomy to examiners to deal with appeals, they will no doubt be seeking such appeals to be conducted with a high level of quality. Equally, were we to examine this question in further detail, it would be useful to understand why the other IPOs involve senior examiners in the appeal process, i.e., if there is a lack of confidence in examiners to properly conduct an appeal.

In reviewing Key Performance Indicators (KPIs), we asked if each IPO had KPIs for patents, trademarks, industrial designs, acting as an International Authority under the PCT, managing ICT, budgetary and financial management, logistics and infrastructure management. All offices had KPIs for all 7 of these themes. As an example of openness on performance, the IPO UK publishes monthly statistics on patents, trademarks and designs,⁴⁵ and also publishes monthly information on all payments that it makes.⁴⁶

This exercise also sought to assess whether there were any specific processes in place in relation to recent or future challenges, including technologies such as artificial intelligence or blockchain. All offices had some type of process in place to engage in “horizon scanning”, however from the responses we received this appeared to be *ad-hoc* rather than a specific focus or process. The USPTO did not answer this question although they have an initiative in place on artificial intelligence.⁴⁷

In relation to the impact and growth of technologies such as big data, the internet of things, blockchain, artificial intelligence (AI), and how each of technologies can interact with the other, as well as with traditional technologies to create new intellectual property challenges and

⁴⁵ Details are provided at this link: <https://www.gov.uk/government/statistics/monthly-statistics-patents-trade-marks-and-designs-september-2020>

⁴⁶ Details are provided at this link: <https://www.gov.uk/government/publications/ipo-payments-2020>

⁴⁷ Details are provided at this link: <https://www.uspto.gov/initiatives/artificial-intelligence>

opportunities, we noted that IPOs are reacting to these technologies at different speeds and in different ways. There is clearly an opportunity to harness the power of these technologies in innovative ways. Some IPOs are using AI and big data to offer trademark and design rights searching tools to rights applicants. In the coming years it is likely that further implementations of advanced technologies will be deployed in each of the IPOs we reviewed. We deal with this topic in greater detail in our section on Information and Communications Technologies.

A final issue on process that we address here is the processes related to staff training:

Q33 For staff training, what are the options? Please select all that apply.

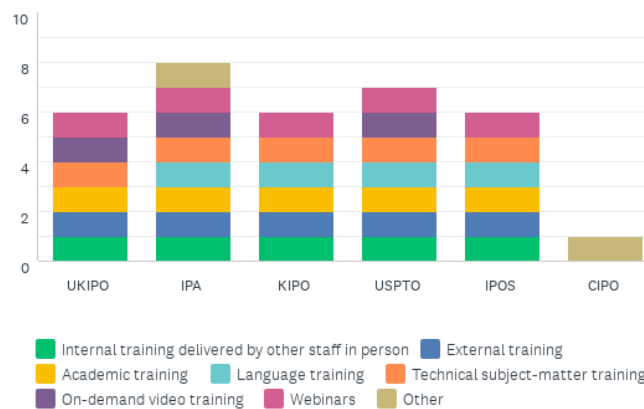


Figure 13. Options for Staff Training

Whilst we can see from the graphic that all offices had a diverse selection of training processes in place except for the CIPO. In fact, the CIPO answered “Other” and then advised in a free text response that they provided all types of training, but only provided “some” academic training in relation to patents, not trademarks. The training offering across the IPOs is provided in a range of formats and demonstrates a recognition of the need for staff to be regularly trained.

Conclusion

In this section our main observation was that process touched every part of the organisation. Processes also varied considerably within each IPO depending on the type of outcome that the process sought to achieve. Furthermore, efficient and well-designed processes were the key to delivering good outcomes to the IPO’s stakeholders. Finally, where IPOs had transformed and re-configured processes to meet the needs of the 21st century end-user, we found that IPOs had laid a solid foundation for the future, in particular one which may involve much higher numbers of IP rights being filed than are currently filed today. Therefore, processes are of critical importance, and any IPO seeking to prepare for the demands of the 21st century must ensure that its processes are the best that they can be and that they are functioning at high levels of efficiency.

KEY FINDINGS

1. The majority of IPOs had undergone major organisation change in the last five years. As such we understand that change is important to these offices.
2. On average, the KIPO is the only office using 0-5 hours of patent examiner time to grant a patent.
3. Only half of the IPOs used senior patent or trade mark examiners to examine appeals. The 3 IPOs not included correlated with the membership of the Vancouver Group. This may also be connected to high-quality patent examiner training.
4. All IPOs except for the USPTO stated that they engaged in horizon-scanning to understand and respond to both cultural and technological changes. As such horizon-scanning is a key process for successful IPOs.
5. Most IPOs offered their staff access to internal training, webinars, academic training, external training and technological subject-matter training. Well-trained staff therefore are a key feature of top IPOs.

8. Pricing

In the world of intellectual property rights registrations, pricing has a decisive influence on the actions of users of an IPO. For some applicants it can make the difference between applying or not applying. Pricing also heavily influences IP strategy decisions, such as if an applicant should seek a patent examination or, in different circumstances, if the applicant should renew its rights at a periodic renewal stage. Given that not all applicants will be equal in terms of access to financial resources, for applicants of limited financial means the pricing of access to IP rights can determine whether or not an applicant engages with the innovation ecosystem.

Payments for IP activities are impactful for patent offices. When funds retained by the IP office enable it to operate, the more funds that are raised, the more activities the office can fund. Conversely, the less funds an IP office raises, the greater the challenges faced by that office as it seeks to deliver a plethora of registration and other IP services. As IPOs seek to act for the benefit of all citizens, not just those of means, establishing pricing which enables wider access to IP rights is also desirable.

IP registrations in a national jurisdiction do not operate in a vacuum, existing in a globally competitive marketplace. The decision to register and pay for rights from the very beginning is also impacted by the wider innovation ecosystem of a country, and the extent to which this landscape is encouraging of innovation, its generation, protection and exploitation. In addition, pricing is not separate from the cost of delivering IP services. Rather there is a clear linkage between the two. As we looked at pricing, our terms of reference were focused on the pricing for services of IPOs rather than the whole transaction cost of accessing IP rights. Whole transaction cost is a highly useful topic that merits further consideration if it is desired to give citizens (and their companies) greater access to the benefits of IP rights. Our focus in this part of the report is on pricing itself, rather than costs *per se*. Finally, we always seek to understand the IP office from the viewpoint of the end-user, whether it be an individual inventor simply filing a national patent, or a multinational company filing in Brazil as part of a large global family of trade marks.

Pricing is therefore not an easy tool to wield. An IPO cannot simply amend prices without considering the full picture and to do so would be unwise. Regular review of pricing takes place in all IPOs as they tweak their prices both to encourage local innovators, as well as to attract foreign innovating companies seeking access to new markets.

In the benchmarking questionnaire we assessed a wide range of questions important to IPOs, having listened to the feedback from both INPI and IPO UK. We began by simply enquiring how prices were calculated. Question 38 addresses this issue. A range of insightful free text responses were provided by the IPOs.

For example, the USPTO advised that under section 10 of the America Invents Act⁴⁸ (AIA), the USPTO has the power to set fees without recourse to legislative instruments. As we can see below from our research at Question 42, it is the only IP office that we reviewed with this ability.

⁴⁸ America Invents Act: https://www.uspto.gov/sites/default/files/aia_implementation/20110916-pub-1112-29.pdf pp. 34. See also 35 U.S. Code § 42 for further details of Patent and Trademark Office funding: <https://www.law.cornell.edu/uscode/text/35/42>

Q42 At your IPO, is the office empowered to change the pricing of any or all services without recourse to legislative or statutory amendments?

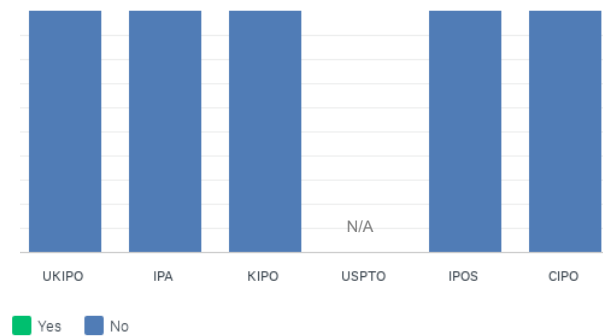


Figure 14. IPO Empowerment to Change Pricing of Services

The expectation at the USPTO is that fees for services will match the estimated aggregated costs of providing the activities to which the fees relate.⁴⁹ Whilst this is the case, the Director of the USPTO has discretion to set different prices to advance key policy objectives. Changes to fees occur following consultation with groups such as the Trademark Public Advisory Committee. The fees set by the office are expected to be adequate both to cover costs as well as to enable an operating reserve to be held at a sufficient level. Reserve funds are held in a special Patent and Trademark Fee Reserve Fund at the US Treasury. The AIA also gave the USPTO the capacity to set fees. This right is reviewed from time to time, with the current permission to set fees expiring in 2026.⁵⁰

It is not clear whether power to change prices is a good or a bad power to have. It is worth considering though that the USPTO enjoys a healthy operating budget,⁵¹ so it is possible to connect pricing empowerment to operating in fiscal health. The link may not be causal, but equally it cannot be denied.

In Canada, the Service Fees Act governs the fees of the CIPO, which operates as a Special Operating Agency. It aims at being financed by revenues from services provided to its clients on a fee-for-basis service, under a cost-recovery model based on revenue from IP applications and maintenance fees. However, the reality is a little different. We note the CIPO is running at a substantial deficit in its operating costs, as the office is costing 20% more to operate than the revenues it generates.⁵² This is highlighted in the answer to our Question 44, below:

⁴⁹ The USPTO expands on this point in its answer to Question 38 of the Benchmarking Questionnaire.

⁵⁰ USPTO Strategic Plan 2018-2022: https://www.uspto.gov/sites/default/files/documents/USPTO_2018-2022_Strategic_Plan.pdf p.22

⁵¹ For more information on the USPTO budget, refer to: <https://www.uspto.gov/about-us/performance-and-planning/budget-and-financial-information>.

⁵² For further information on these finances, please refer to this link: <https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr04859.html>

Q44 Are the incomes to your IPO, as a total sum, adequate to cover all the running costs?

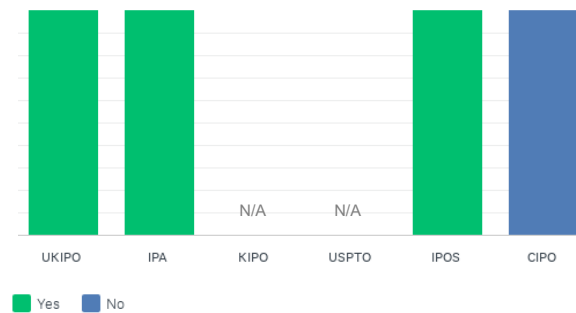


Figure 15. Adequacy of IPO Incomes to Cover Running Costs⁵³

It is noteworthy that the CIPO delivers an extensive range of additional services beyond the classic role of an IP office. It offers free of charge business services aimed at Canadian innovators, so this may impact the ability of the office to cover costs,⁵⁴ particularly when one considers the number of registrations that it receives annually. At IPOS, which was established as a separate and self-financing legal entity, the approach taken to price is cost recovery. This is also the case at IP Australia, which is also a cost-recovery agency with most of its revenue coming from the administration of IP rights and relies on demand for these rights and their renewals.

In South Korea, the office sets its fees after engaging in an internal review followed by consultation with stakeholders including relevant users. Notably, the KIPO did not state if they operated at a deficit or if they operated within the revenues raised. Rather, the KIPO stated in their answer to Question 44 that this information is not available to the public. Full transparency on this issue is to be encouraged as it enables a better discourse of the reasons for any lack of cost recovery.⁵⁵

IPO UK operates as a Trading Fund⁵⁶ and provides commercial services, obtaining its income from activities where a fee is payable in accordance with statute. In terms of pricing policy, IPO UK takes the approach of back-end loading when it comes to pricing. In practice this means that pre-grant fees are kept low (thus encouraging innovative businesses to engage with the IP system), whilst the deficit incurred is recovered from renewal fees paid by customers who retain their rights over many years. It is clear from the Question 46 (below) that IPO UK is not alone in taking this approach:

⁵³ This graphic does not record an express answer from the USPTO, rather for Question 44 the USPTO referred to us their answer to Question 38. The USPTO produces a Performance and Accountability Report annually. These reports are available at: <https://www.uspto.gov/about-us/performance-and-planning/uspto-annual-reports>

⁵⁴ More details on the revenues of CIPO are available at: <https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr04859.html>

⁵⁵ Details of the prices charged by KIPO are available at this link: Actual prices Korea: https://www.kipo.go.kr/en/HtmlApp?c=92004&catmenu=ek03_04_01

⁵⁶ Trading funds are established in statute and classified outside central government as public corporations. The Permanent Secretary of HM Treasury appoints the IPO UK Chief Executive as Accounting Officer of IPO UK in accordance with the Government Trading Funds Act, being personally responsible for safeguarding the public funds for which he or she has charge as well as propriety, regularity, value for money and feasibility in the handling of those public funds.

Q46 Does any activity at your IPO subsidise another one?

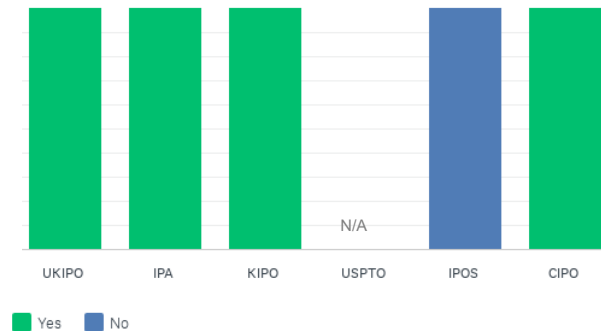


Figure 16. Activity Cross-Subsidisation

On the separate question of whether IPOs could change their prices with full autonomy, the international position is negative apart from the USA. As we focus on pricing it is worth considering, for a moment at least, the orthodox view that IPOs must cover their costs. If IPOs are viewed in the context of the wider innovation ecosystem, the rationale for them to fully recover their costs is not strong, especially in countries where the number of filings is currently low and IPOs have minimal income with which to fund their activities. Governments globally invest billions into innovation ecosystems to facilitate innovation, as this leads to job creation. The national IP office is a key part of the national innovation system and has an important role to play. Without doubt each office should operate within a planned budget, but it is questionable logic that an IPO must be required itself to recover its costs of operation if its goal is to support the national good. Other public bodies do not have this requirement, so why should this apply to an IPO? On the other hand, if an IPO is given full autonomy to set its prices, has a reasonable number of filings, and is given the power to direct its policies, then the rationale for it to have responsibility to recover its costs is much stronger. We also suggest that the economic and IP policies of a nation can have a direct impact on the incomes of an IPO. If a country is unattractive for innovators, (for example because there is a high tolerance of IP infringement in a country), then fewer applicants will file for rights and the challenges for the office to keep within budget whilst being an IP office fit for the 21st century will be significant. On the other hand, if the innovative environment is friendly to commercialisation of intellectual property and other forms of intangible assets, e.g., with tax advantages, access to research funding to develop new technologies, and access to skilled staff for innovative businesses (supported by a functioning educational system), the desire to file IP rights will be greater, and rights holders will be more likely to hold more rights for longer periods,⁵⁷ which in turn will generate more revenues for the IPO.

Across the IPOs we reviewed we found a range of reasons guiding the process of amending prices of IP services. In providing further details to this question, Canada observed that it abides by the Services Fees Act, but that this requires prior consultation with stakeholders and clients.

⁵⁷ Whilst China is outside this study, it is a good example of a country which has regularly reformed its IP environment over the past 12 years or so. Alongside these changes it has also made significant funds available to support innovation. More applicants now file in China than any other country. Whilst there are other influences affecting these developments, an advanced legal framework and economic policies supportive of innovation are clearly benefitting innovators. In the UK there are excellent levels of support for research developments, tax structures and a solid legal framework. Yet still relatively few patents are filed in the UK. This may be due to the fact that it is possible for UK applicants to file a patent directly at the European Patent Office and designate GB as part of your European Patent filing, thus removing the need to file in the UK. This is unaffected by Brexit.

At IPO UK, price changes also take account of stakeholder views: an example of this occurred in 2017.⁵⁸

Q43 At your IPO, how do changes to service pricing policy happen? Please select all that apply.

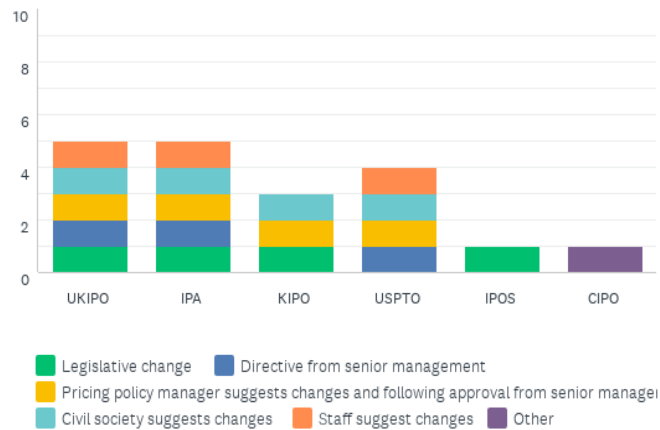


Figure 17. Changes in service pricing policy

In Question 41, we enquired of the IPOs if they offered any pricing discounts. This answer showed some disparity across our sample, both between offices and within offices related to different IP rights. For example, neither IPO UK or IPA offer any discount for any of their services, yet it is normal for the USPTO to offer small and micro entities a reduced rate for patent filings,⁵⁹ and trade mark filings discounts are available for electronic filings compared to the cost for a paper filing.⁶⁰ The KIPO was silent on discounts in our survey, whilst in the CIPO we were advised that discounts were offered to small entities in relation to patent fees.⁶¹ IPOS does not provide a discount for its services⁶² – this is consistent with its focus on cost recovery and non-subsidisation of one service with revenues from another service. However, the IPOS did offer a discount during 2018 to encourage local designers to register their designs. On the topic of discounts, it is not clear to what extent applicants realise that the discount they receive is (where back-loading of fees occurs) a subsidy, and that this subsidy will be repaid by applicants if they keep their IP rights for a longer period of time. It may be useful to educate smaller businesses (who often have limited understanding of the IP system) on the life cost of IP rights, as this may prevent SME applicants filing for rights which they cannot afford, and incurring costs detrimental to their long-term financial health.

⁵⁸ Full details of this consultation are available at: <https://www.gov.uk/government/consultations/proposed-changes-to-statutory-patents-fees>

⁵⁹ Sample USPTO patent fees are detailed here: <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule#Patent%20Maintenance%20Fee>

⁶⁰ USPTO trade mark fees are detailed here: <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule#Trademark%20Fees>

⁶¹ CIPO patent fees are detailed at: <https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr00142.html>

⁶² Details of Patent fees at IPOS are found here: <https://www.ipos.gov.sg/resources/patent>. Equally for registered designs further information is found here: <https://www.ipos.gov.sg/resources/design>

Q45 Are there any innovative pricing policies at your IPO?

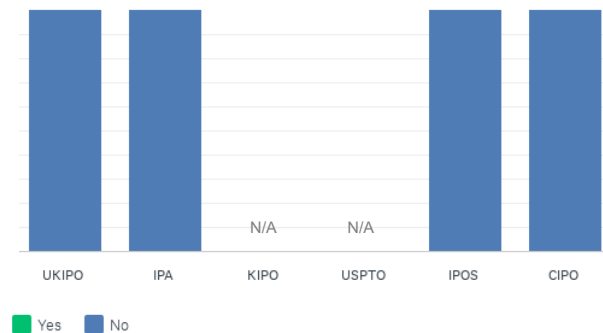


Figure 18. Existence of Innovative Pricing Policies

Interestingly, whilst no IPO suggested that it had any innovative pricing policies (Figure 18) most offices were operating some sort of subsidy scheme to support specific policy goals. We were also interested in better understanding any subsidies which were being implemented, perhaps to support specific policies of an IPO (Q 47).

Q47 Is there any price subsidy scheme based on affirmative action or on supporting specific policy goals? If yes, please select all that apply:

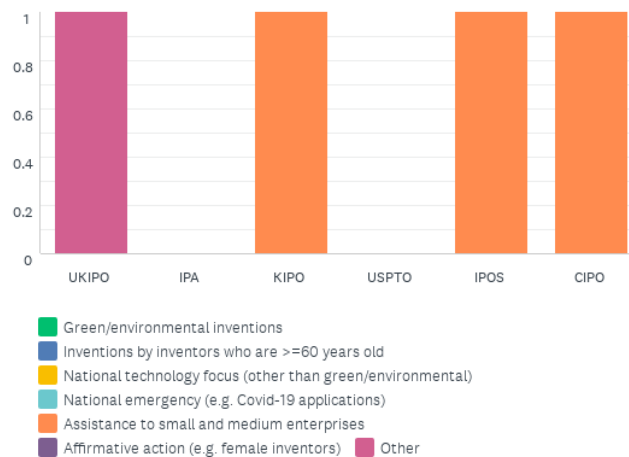


Figure 19. Price Subsidies for Affirmative Action or Supporting Specific Policy Goals

In particular, we wanted to establish if any countries were seeking to encourage female inventors, or perhaps inventors from indigenous or other historically disadvantaged communities. It was impressive to see that IPO UK had temporarily amended many fees to zero or £1 to offer support to those impacted by Covid-19.⁶³ Whilst we recognise that low female participation in inventorship is a systemic issue which occurs for a number of reasons, it is nevertheless disappointing to learn that there are no financial incentives in any of the countries surveyed to encourage women to participate more in the acquisition of IP rights. IPO UK has, to its credit,

⁶³ Details of these temporary fees are found here: <https://www.gov.uk/government/news/temporary-fee-changes>

recognised this deficiency in a 2019 report.⁶⁴ We sense an opportunity for all countries to go further than recognising this deficiency and to act to facilitate greater participation from female inventors. In their answer to another question in our questionnaire, the KIPO noted that it acts to “encourage and support women to invent daily-usable household items, supporting those who wish to open their own business based on their inventions.” We provide further detail on current female inventor participation in Schedule 3.

Concluding this section, we have found that top international IPOs often operate in a similar way on pricing, but that each IPO is nonetheless different. All offices except IPOS used cross-subsidisation of services as incentives for applicants to engage with the IP system. The USPTO even has 3 pricing levels. No office operated what it believed to be innovative pricing models, yet IPO UK had managed to implement a Covid-19 pricing policy to be applied to specific service fees. Given that IPOs are all about innovation, and the limited levels of innovative pricing that the IPOs provide, there may be an opportunity for IPOs to experiment with innovative pricing structures, as whilst this carries risk, it may encourage positive behaviours from IP innovators and creators.

KEY FINDINGS

1. Most of the IPOs surveyed manage to recover costs equivalent to or greater than their operational costs.
2. The majority of the benchmarked IPOs engage in cross-subsidisation of one service using surplus from another service. Often this is done in order to incentivise initial innovation so that the barrier to entry is less significant.
3. At least half of the benchmarked IPOs use pricing to assist SMEs.
4. Most IPOs empower pricing policy managers to seek approval for pricing policy changes from senior management.
5. Despite IPOs being focused on innovation, no office stated that it had innovative pricing policies. Notwithstanding, evidence from IPO UK showed that an innovative pricing policy had been created for innovations related to Covid-19.
6. No IPO had an IP right registration scheme to encourage inventors who were female or disabled. We recognise the challenges of assisting one community more than other. IPOs may wish to consider if this area represents an opportunity for pricing policy innovation.

⁶⁴ “Gender profiles in worldwide patenting: an analysis of female inventorship,” further details at: <https://www.gov.uk/government/publications/gender-profiles-in-worldwide-patenting-an-analysis-of-female-inventorship-2019-edition>

9. Information Communication Technologies (ICT)

In considering ICT for the purposes of this benchmarking report, the team was asked to poll questions from a separate workstream focusing on ICT improvements. This team was interested in deeply functional questions. In addition to these questions, the benchmarking team had its own questions which were related to what can be achieved using ICTs, rather than the methodologies of how such ICTs are deployed. In the main, the responses we received to these questions were free text, and less capable of visualisation.

To begin, we sought to understand the IT services provided by each IPO. The KIPO noted that details of its IT services were not available to the public. Notwithstanding this response, we note that the KIPO IT provides a wide range of IT services ranging from basic, such as an online version of the English-language version of their website (a useful feature for non-Korean speakers), to more advanced features such as online learning. The KIPO website includes details of KIPOnet.⁶⁵ KIPOnet is described as “an integrated information system established to computerize all the administrative processes, from application filing to examination, registration, trial and gazette publication, of the Korean Intellectual Property Office (KIPO) that used to depend on manual labour.” We know from elsewhere in our report that the KIPO is extremely efficient, and we expect that this is aided by advanced process mapping, with electronic systems to enable these processes to occur as quickly as possible. Just like most other administrative services, the IPOs will benefit from robotic process automation, so given the goals of KIPOnet we would not be surprised if RPA is already in use.

At the IPOS the goal is a one-stop online platform to conduct IP transactions. This answer only focussed on the registration side of IPOS. In the Covid-19 era, like many IPOs, the IPOS now offers hearings and mediation sessions online. From our research it is apparent that IPOS offers much more than registration, particularly training and online webinars. At IPO UK, there are both internal and external IT services, with an internal helpdesk for staff, plus business services provided in relation to patents, trade marks and industrial designs. The CIPO response to this questionnaire outlined how project management approaches were being used in the activities of the ICT team, from ideation to delivery of a release. At IPA, the focus was on transactions (filing, payment, correspondence, etc.), but also on register search systems and platforms. We were encouraged that the IT department was focused not just on classic IPO functions but also on these additional services such as search.

The benchmarking exercise identified that IT departments of most IPOs were deploying agile methodologies to provide their services. One office, the IPOS, noted that most of its projects were outsourced. We note that this allows the office to choose from a range of providers with different approaches. At the CIPO, whilst work was in-house it followed project-based approaches which may suggest a range of different methodologies should be used, according to the nature of the project. There appears to be a lot of value in this context-based approach, as inflexibly applying the same approach to different challenges is unlikely to be prudent.

Another functional question posed related to the use of IT service management. In IPO UK, ITIL is the framework which is used. At the CIPO it appears that this is sometimes used and the IPOS

⁶⁵ Further details at this link: https://www.kipo.go.kr/en/HtmlApp?c=90101&catmenu=ek02_05_01

uses a “common central platform.” Elsewhere IPA use LANDesk (e.g. for management of software releases), the KIPO uses ITSM, based on ISO20000, whilst somewhat cryptically USPTO advised that it uses Agile for IT Service Management. In terms of IT governance, we also saw a range of different approaches across the IPOs. At the USPTO, the governance approach is the Technical Business Model, the KIPO uses a Government-wide Enterprise Architecture Portal, IP Australia uses ITIL, v.3, and the CIPO uses a Stage-Gate Process (“a conceptual and operational road map for moving a project from idea to completion”). IPO UK is aligned with UK government frameworks, which in turn are defined by the Cabinet Office and the Government Digital Service, and IPOS is unable to disclose details of its IT governance frameworks as these are confidential. What we learn here is that every country is taking a local approach to governance. Despite this disparity, each of these IPOs is, from a global perspective, a well-performing IPO. We are loath to draw a line of causation here, however it does demonstrate that many different IT governance approaches can be successful. Equally, if IT departments exist within a well-managed and sufficiently empowered IPO, then they too can succeed.

Stepping beyond governance we also asked the IPOs if they had any focus on continual improvements. Each of the IPOs was engaged in continuous improvement, although the answers we received ranged from the brief (IPA, IPOS, USPTO), to those providing a richer picture of how this was achieved (KIPO, IPO UK and CIPO). At the CIPO we noted that the IT team was refining its vision around the CIPO client, rather than around the IPO itself. This interest extended beyond classic IPO clients such as IP firms to include services for non-represented clients. At IPO UK there is a significant transformation project underway to create a unified system for patents, trade marks and designs, as well as to introduce new digital services for customers. At IPO UK there is also a specific project on automation to enable delivery of continuous improvement at a higher pace. As IPOs look to the future, we expect that engaging with those who are currently absent (but who could derive value from the IP system) will present systemic challenges for IPOs, and the effective delivery of these services to the under or non-represented will certainly involve innovative uses of ICT.

Given the current speed of developments in the IT sector more generally (i.e., disruptive technologies such as internet of things, big data, artificial intelligence, quantum computing, virtualisation, machine learning, deep learning, blockchain, augmented reality, and virtual reality), and the implications these developments have for any administrative service providing office, IPO or not, it was unsurprising that all IPOs planned to improve their IT systems in the next 5 years.

Q53 Does your IPO plan to improve its IT systems in the next 5 years?



Figure 20. Plans to Improve IT Systems

This corresponds with the rate of change we see in society today, and the impact this could have on IPOs (e.g., applications rising exponentially due to artificial intelligence being used by applicants to invent).⁶⁶

We asked a question related to the societal move to home-working, which also had impact during the pandemic, as IPOs staff migrated to working in home environments. This also sought to address cyber-security. Offices differed in their approach to this question. Some such as IPOS stated that this type of information was confidential. In contrast, the USPTO directed us to the cybersecurity standards of the federal government.⁶⁷ At IPO UK, a Security Operations Centre is in place, and encryption is used (in transit and at rest). At KIPO, the Government Virtual Private Network is used, alongside Government Public Key Infrastructure. IPA and the CIPO took similar approaches to the KIPO. The KIPO provided more detail around their activities, advising that staff were not allowed to take screenshots or print documents with home computers. The KIPO also monitored how confidential data was being accessed by staff, provided training to staff on data security, and it requires staff to comply with data security guidelines such as the “Work Management Guidelines for Public Servants in Tackling COVID-19.” This quick interaction between ICT and Human Resources teams will no doubt have been helpful for staff.

We have thus far predominantly considered functional elements of ICT services within IPOs. This is not the full picture. IPOs today rely on ICT to evangelise their message. Whilst the message will differ from nation to nation, it is clear that ICT is nowadays an increasingly powerful tool which, if used correctly, can produce exceptional outcomes. Of course, these exceptional outcomes are innovations in and of themselves. For this reason, these outcomes are likely to come from outside of the IPO and not from within. This is not a criticism of any IPO, but a simple recognition of innovation concepts such as open innovation.⁶⁸ The simple idea is that any one organisation is inadequate to find innovative solutions to all its challenges, and using other providers is key. The IPOS have advised that it makes use of external providers for IT projects. This is an alternative approach to that used by other offices; however, it may offer benefits e.g.,

⁶⁶ This is not in reference to inventions where the inventor is an artificial intelligence system, but rather inventions where the applicant is human but has been greatly aided by the use of an artificial intelligence system.

⁶⁷ Details of these standards are found at this link: <https://www.nist.gov/topics/cybersecurity>

⁶⁸ Open innovation has been expounded in depth by many, such as Henry Chesbrough. For further details of his seminal paper on this topic visit this link: <https://sloanreview.mit.edu/article/the-era-of-open-innovation/>

enabling innovative external thinking to be deployed, without the burden of taking on staff engaged in these tasks for a long time.

As we go beyond the limits of functional assessment to a communicative interactionism type approach, where responsiveness is a key ingredient in delivering successful outcomes, there is a need for ICT departments to perceive the needs of the user community, both internal and external prior to it being required, and to plan technology solutions which deliver benefits. Using technology to create whole system solutions for end users of the IPO is a worthy goal for ICT actors in IPOs. IT teams will however face challenges as they embrace new technologies. Like many job roles in the 2020s, new technologies are reducing the need for some jobs and creating the need for others. We do not expect that IPOs will escape this technological whirlwind. There are opportunities (which some IPOs are starting to examine) which will lead the way to faster examination and faster granting of rights. ICT is also supporting online training, webinars, appealing examiner decisions online, and using blockchain certificates as an easily verifiable way to demonstrate IP ownership.⁶⁹

This benchmarking exercise sought to find out what types of uses of new technology were occurring in the IPOs reviewed. Specifically, we inquired about artificial intelligence (AI):

Q54 Is your IPO considering the use of artificial intelligence-based systems (e.g. machine learning, deep learning, etc.) to assess patents, trade marks or design right applications?
Please select all that apply.

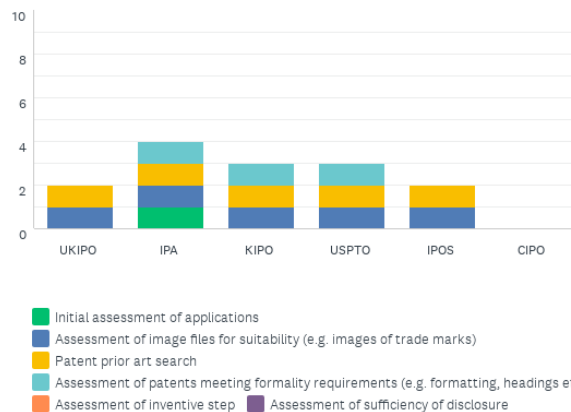


Figure 21. Considering Use of Artificial Intelligence

The offices also provided a range of free text answers. We learnt that IPO UK and the IPOS are considering the use of AI for assessing figurative images in trade mark applications and for prior art search of patents.⁷⁰ The CIPO is also considering use of AI for trade marks and industrial designs, including helping users of the trade mark system choose their NICE classification.⁷¹ Both these areas are also being considered at IPA, the KIPO and at the USPTO, plus these offices are each considering using AI to assess patent formality requirements. One office, IPA, is also considering using AI in its initial assessment of the intellectual property rights registrations.

⁶⁹ One example of ICT being used to prove IP ownership is WIPO Proof. Details of this are available at: <https://wipoproof.wipo.int/wdts/>

⁷⁰ It is unclear if this prior art search usage is intended for use internally by examiners or if it will be extended to end users. If provided free of charge to end-users we expect this could impact private companies which provide such services. This will necessitate and incentivise adaptation in this industry.

⁷¹ We expect this will be similar to the system used by the EUIPO who have a TMclass system: <https://tmclass.tmdn.org/ec2/>

For IPA, the focus is on augmenting current systems and providing additional tools to examination teams.

Another area of our research focussed on the technical steps which IPOs were taking regarding information on IP rights (e.g., details of individual applications, granted rights, imagery and legal status). The answers here focussed on specific IP information such as search services for the public at IPA, e.g. AusPat,⁷² providing IP data at the IPOS, KIPO, IPO UK and the USPTO, an online self-service tool to develop an IP Strategy⁷³ at the CIPO, e-learning tools at the CIPO and USPTO. IPO UK also provides educational videos on YouTube. The USPTO is notable in that it provided a comprehensive two-page answer to this question in relation to trade marks.

Our final question to IPOs on ICT matters related to the use of information technology to facilitate quicker patent examinations. The CIPO currently uses online search databases for prior art search. It was not clear if these were free of charge resources such as Espacenet⁷⁴ or WIPO databases,⁷⁵ or if instead this referred to proprietary search tools. At the KIPO the system used is KIPOnet, a system developed internally since 1999. At IPO UK, the IPO is looking at digital services to resolve any issues for applicants at the pre-submission stage. It also intends to use AI technologies within the examination process, such as for prior art search or assisting in the allocation of patents to examination teams. At IPOS, the response related to the IPOS IP2SG e-filing system. IPA is clearly addressing this challenge as it is developing a range of systems to support patent examination including:

- Patent Auto Classification;
- Preliminary Automated Search; and
- Family Member Analysis.

IPA also noted that it was also seeking to use technologies to improve examination efficiency as well as to improve quality.

Conclusion

Having reviewed ICT at the six IPOs, we found that each office was technically advanced, and that its functions were supported by an organizational structure which was serving the needs of the office. From a wider perspective, we also found the offices to be either using or considering using advanced technologies to serve the needs of both their stakeholders as well as the internal IPO. As we have seen this multi-level approach delivers beneficial outcomes for IPOs.

⁷² This patent search service is available at this link: <https://pericles.ipaustralia.gov.au/ols/auspat/quickSearch.do>

⁷³ This tool is available at this link: https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr04622.html

⁷⁴ The Espacenet database is available at this link: <https://worldwide.espacenet.com/>

⁷⁵ One such database is the WIPO trade mark database available at: <https://www3.wipo.int/branddb/en/>

KEY FINDINGS

1. All IPOs intend to improve their IT systems over the next 5 years.
2. The majority of IPOs are considering the use of AI to assist with prior art search of patents and to assess image files submitted in relation to trade mark applications.
3. Only 3 of the 6 offices are considering using AI to assess compliance with formality requirements. Given that major corporations are now using AI to produce advanced inventions, we suggest that IPOs may wish to consider if AI can be used for at least some parts of formality assessment, particular given that some formality requirements are quite basic and as such involve binary decision-making.

10. Human Resources

Relevance of Human Resources for the IPO Performance

Human resource management (HRM) plays a key role in providing an efficient administrative support structure that enables an IPO to deliver its programmes.⁷⁶ In its most recent evolution, HRM has been considered from an organisational point of view, taking into account governmental and regulatory frameworks, and encompassing the development of all aspects of an organisational context. HRM is essentially a strategically-driven activity, being a major contributor and a determining part of the process.⁷⁷

In IPOs' strategic plans, the policy on human resources is a substantial support to ensure the plan's success. The ambition of 'IPO of UK 2018 Strategy' is to be the best IP Office and help the UK to become the most innovative and creative country in the world, and for that purpose the UK IPO intends to create a high-performing team.⁷⁸ Accomplishment of the 'USPTO 2018-2022 Strategic Plan' objective to issue highly-reliable patents depends on increasing examiners' ability to obtain the best prior art during examination.⁷⁹ The 'Canadian IPO Five-Year Business Strategy 2017-2022' intends to provide a consistent and client-centric service experience and consequently intends to implement a service excellence training program.⁸⁰ The 'IP Australia Corporate Plan 2019-2020' objective is to create a better workplace and thus it plans to equip staff with the knowledge and ability to maximise the benefits of an activity-based work environment using technology solutions, and to be more flexible regarding when and where people work.⁸¹

IPO Governance and Human Resource Management

Human resources are a major component in IPOs strategic plans. In its Corporate Plan 2019-20, IPO UK set out its intention to be a superlative place to work with high-performing teams, providing a strong foundation for the IPO's activity. Digital transformation will contribute to that objective, requiring rethinking of the IPO's organisational design (with consequences for its organisational structure), as well as the appropriate workforce for the new model where customers access common services across all IP rights. The three focus areas to make the IPO UK an excellent place to work are (1) having solid foundations to retain and attract the right people; (2) having a great culture, with shared values and behaviours, a respect of difference and a common purpose; and (3) having healthy people working in a healthy environment.⁸²

In 2019-2020, HR played a relevant role in the USPTO plan, (1) improving the workspace conditions for innovative thinking thereby increasing productivity; (2) expanding telework programs as a corporate business strategy; and (3) overseeing administrative and employee service programs responsive to the needs of the USPTO workforce.⁸³ On the technological side, this involved four extensive training activities addressed to patent examiners and trade mark examining attorneys on legal, technical and IT systems. In addition, four new technology-specific

⁷⁶ WIPO Human Resources Strategy 2017-2021, Document prepared by the Secretariat, WIPO Coordination Committee, 2017.

⁷⁷ Beardwell, Ian, Len Holden, and Tim Claydon, Human Resource Management – A Contemporary Approach, Prentice Hall, 2004, p. 12.

⁷⁸ IPO UK, The IPO Strategy 2018, p. 9.

⁷⁹ USPTO, 2018-2022 Strategic Plan, p. 6.

⁸⁰ CIPO, Five-Year Business Strategy, 2017, p. 30.

⁸¹ IP Australia Corporate Plan 2019-2020, p.12.

⁸² IPO UK, The Patent Office Annual Report and Accounts 2019-2020, p. 9.

⁸³ USPTO Fiscal Year 2019 Congressional Justification February 12, 2018, p. 86.

legal and technical training courses were developed to address those training needs identified through patent and trade mark examination reviews, focus group feedback, or staff requests.⁸⁴

The CIPO's pace of change requires a high-performing organization. It is facing a generational shift in its workforce and will need new highly-trained patent, trade mark and industrial design examiners, as well as a diversity of skills (technology-savvy employees and knowledgeable IP experts). Continued investments will be made to modernize the work environment and develop a skilled, diverse and inclusive workforce in an evolving innovation landscape, including opportunities for cross-organizational experiences and learning, and the development of leadership competencies. Moreover, it will enhance recruitment efforts and inclusion by targeting diverse talent pools in Canada and promoting leadership competencies and encouraging employees to find innovative solutions.⁸⁵

IP Australia is a leader in teleworking, located across the country and providing flexible working arrangements for many employees. It is planning to develop and implement a structured approach to capability development and succession planning.⁸⁶

The IPOS management monitors and discusses the matching of human resources with workload requirements, for both examiners and administrative staff. The examiners are supported by a policy of regular review of workload and, where necessary, re-distribution of workload.⁸⁷ In addition, a recruitment process with clear requirements for candidates and a systematic training programme are in place.

Diversity, Engagement and Innovative Workplace at the IPO

Human resource management deals with essential aspects of organisational performance. Workforce diversity, training and job satisfaction are critical in influencing the IPO's performance. Moreover, workforce motivation and employee engagement are critical and usually improved by job satisfaction. The IPO UK achieved an overall engagement score of 68% in its People Survey 2019.⁸⁸ In the USPTO 2018-2022 Strategic Plan, employee engagement is a priority throughout the IPO and defines the relationship between the agency and its employees. "Engaged employees" are knowledgeable about strategic priorities and have positive attitudes toward their organisation, that is, they are absorbed by, and enthusiastic about, their work so that they take positive actions to further their organisation's reputation and interests.⁸⁹ USPTO includes as Objective 1 in its Mission Support Goal to achieve Organisational Excellence, Enhancing Human Capital Management and Fostering Employee Engagement.⁹⁰

Capability and Performance

Capability development through the introduction of new technologies has an effect on IPOs' **performance**. The questionnaire answered by the IPOs provided some interesting information on that matter. The ratio technical staff/total number of employees can be taken as a proxy to assess examiners' performance in four IPOs. The KIPO has a substantial advance over other IPOs in all items, consistent with its training efforts and the introduction of new technologies using

⁸⁴ USPTO FY2019 Performance and Accountability Report.

⁸⁵ Canadian IPO Five-Year Business Strategy, 2017-2022, p. 37.

⁸⁶ IP Australia Corporate Plan 2019-2020, p. 25.

⁸⁷ Initial Report on Quality Management Systems prepared by Intellectual Property Office of Singapore, WIPO, 2019, p.10.

⁸⁸ IPO UK, The Patent Office Annual Report and Accounts 2019-2020, Performance Summary, p.11.

⁸⁹ USPTO 2018-2022 Strategic Plan, p. 26.

⁹⁰ USPTO 2018-2022 Strategic Plan, p. 30.

artificial intelligence and big data to improve the number of patent applications per examiner and the total number of patent filings.

Some Patent performance data across IPOs				
	IPO UK	IP Australia	KIPO	IPOS
<i>(ratio technical/total employees)</i>				
Patents	0,63	0,18	0,10	0,32
Information Technology and Communication	0,03	0,01	0,25	0,57
Number of patent applications/full-time examiner (per year)				
Patent Cooperation System (PCT) (2019)	5.711	1.768	19.085	1.029
Total number of patent filings (2019)	54.762	12.568	248.427	7.354

Figure 22. Patent Performance Data Across IPOs

Workforce Diversity and Inclusion

The six IPOs of the Benchmarking exercise have been implementing an active policy on workforce **diversity and inclusion**. IPO UK is working to create an inclusive culture and environment. In 2018, the IPO commissioned ‘Collaborating with Men study’ to better understand how to make workplace culture more inclusive for everyone. Despite making up 43% of the IPO’s workforce, women are under-represented in specialist Science, Technology, Engineering and Maths (STEM) roles (21%) and in SCS positions (29%). In 2018, IPO UK launched a structured mentoring scheme to help junior women in STEM find experienced mentors. The greater proportion of men in their highest grades is also reflected in the gender pay gap. Only 22 percent of women play patent examining roles which attract higher salaries due to their specialism. IPO UK is working (1) to promote the IPO as an inclusive employer and understand if there are barriers for people from minority groups applying for posts, (2) to ensure people managers and leaders are equipped to deal with wide age-ranging teams across different generations and (3) to ensure working environment and policies for working parents, carers and grandparents are supportive and in line with best practice⁹¹.

USPTO is committed to supporting women in innovation and to creating a more inclusive intellectual property community. A recent report on women’s participation in the country’s patent system shows an increasing share of all new entrants to the patent system, rising from about 5% of new inventor-patentees in 1980 to 17.3% by 2019⁹².

CIPO is exploring the participation of Canadian women in international patenting and developing the first CIPO gender-based analysis on the use of IP for development of new services⁹³.

IP Australia seeks to empower women and promote the key priorities of Australia’s Department of Foreign Affairs and Trade’s Gender Equality and Women’s Empowerment Strategy. As shown in the questionnaire answered by IP Australia, it aims to improve gender representation in

⁹¹ IPO UK, Inclusion and Diversity Annual Report 2018-19.

⁹² Progress and Potential - 2020 update on U.S. women inventor-patentees, Office of the Chief Economist, IP Data Highlights, No 4, USPTO, 2020.

⁹³ Five-Year Business Strategy, 2017-2022, CIPO, p. 15.

science, technology, engineering and mathematics (STEM) roles to 50:50 by 2030 and has updated recruitment and selection systems for transparency, providing panel training, diversity and unconscious bias training, and is working on establishing merit pools.

KIPO has special employment opportunities dedicated to women.

IPOS advance in women access is shown in the following table based on information provided by the questionnaire answered by the six IPOs. In fact, of the 664 patent applications to IPOS in 2017, 41.7 per cent of them included women⁹⁴. Sharmaine Wu, Director of Patents, Designs and Plant Varieties Department (PDPV), has been named as World Intellectual Property Review (WIPR)'s Influential Women in IP 2020, having led recent efforts in launching the SG Patent Fast Track, a pilot programme to accelerate grants of patent applications in all technology fields to as fast as six months. The programme is the world's fastest application-to-grant process of its kind, supporting innovators and their solutions in addressing global developments in areas such as sustainable development and public health⁹⁵.

Women access to IPOs						
Women share on (in percentage)	IPO UK	USPTO	CIPO	IP Australia	KIPO	IPOS
Total employees	41-60	21-40	41-60	41-60	21-40	61-80
Total patent examiners	0-20	21-40	21-40	21-40	21-40	61-80
Total trade examiners	61-80	41-60	61-80	41-60	21-40	41-60
Senior middle management	21-40	21-40	41-60	41-60	0-20	41-60
Board of Directors	21-40	NA	41-60	41-60	0-20	21-40

Figure 23. Women Access to IPOs

Disadvantaged Communities

IPO UK undertakes a number of actions to attract people from disadvantaged communities, focusing on areas where data indicate particular problems.

CIPO is committed to a diverse and inclusive work environment where employees feel respected and valued to deliver its priorities. This includes providing employees with the tools, resources, and training they need to succeed. CIPO proactively try to hire employees that identify as belonging to employment equity groups. While not mandatory, employees can voluntarily self-identify as part of employment equity groups. In Canada, under the Employment Equity Act, the government is required to strive to meet representation levels, based on estimated workforce availability, for the four employment equity designated groups: women, Aboriginal people, persons with disabilities and members of visible minorities.

IP Australia's Diversity and Inclusion Strategy was launched in 2020 and includes a number of actions to encourage people from disadvantaged communities to work for it. These include

⁹⁴ Tan Shu Yan, Singapore a hotbed for female inventors, new figures show, The Straits Times, Singapore, April 27, 2018.

⁹⁵ IPOS Media Release, June 15, 2020 (<https://iposinternational.com/media/Media-Release-IPOS-Director-Named-as-Influential-Women-in-IP-2020-by-World-Intellectual-Property-Review.pdf>)

people who are Indigenous, culturally, and linguistically diverse people, people with disability, people from the LGBTIQ+ community. IP Australia runs a number of affirmative measures to employ indigenous people and people with disability.

KIPO has special employment opportunities dedicated to hiring residents from disadvantaged regions and people with disabilities.

During recruitment, IPOS does not require candidates to specify certain criteria (race, age, gender) in their application form so as to extend equal opportunities to all.

Human Resources Strategy as part of the IPO Strategy

HRM leads to higher performance when there is an alignment between the organizational strategy and HRM. Organisational strategies form the basis for human resource strategies. An optimal HR strategy for an IPO was developed by WIPO⁹⁶ and includes the following principles:

1. Full understanding of the IPO's internal capabilities regarding its business goals and the market forces that shape the national IP services, which requires a refined workforce planning framework and the formulation of workforce action plans that facilitate effective monitoring and implementation of staffing and work plans.
2. Establish a diverse and inclusive workforce to create an innovative workplace, an inclusive environment that values diversity and ensuring multiple perspectives, generating novel ideas and innovative performance.
3. Promote the IPO as an employer of choice through best talent management practices to invigorate the workplace, keep skills sets adapted to business needs and motivate not only talented staff to stay at the IPO, but also discretionary efforts from staff members who feel appreciated and empowered. An important tool to increase levels of expertise and effectiveness within the IPO is the performance management and development system to identify and monitor staff development needs along with their progress towards agreed objectives throughout the performance cycle.
4. The HR Strategy will be implemented in an enabling environment with three essential attributes: (1) service-oriented processes, (2) client-responsive communications and (3) data-driven decision making. Simplification of HR functions will be sustained through self-service functions. The IPO's core value of service-orientation will continue to reinforce further refinements and efficiencies in HR processes. Effective, client-responsive communication is critical to establish trust and create better relationships. To this end, staff will be given clear, coherent and timely information about new initiatives and policies or amendments of existing policies and initiatives. Various communication channels will be put to optimal use to facilitate information delivery in the most effective format in each case. Feedback will continue to be encouraged and staff surveys will remain an important tool in evaluating HRM initiatives and projects. Consultation mechanisms, such as feedback from individual staff members, dialogue with staff representatives, staff-management working groups and staff participation in policy-making all contribute to establishing a harmonious and respectful workplace where staff see that their opinions are valued and hence take ownership of sustained organizational growth.

⁹⁶ WIPO, Human Resources Strategy 2017-2021.

KEY FINDINGS

1. **Human Resource role in the IPO strategic plans.** The HR strategy and its implementation cannot function in isolation but most operate alongside other critical strategies of an IPO, including its (1) financial strategy, (2) information technology strategy and (3) operational strategies of the different sectors of the IPO, all of which support the overall strategic direction and goals of the IPO. Interdependencies and links between these strategies must be identified and coordinated to ensure a well-structured, well-led and integrated process for the organization-wide change process currently underway in the IPO.
2. **Capability and performance.** Development of new capability through the use of advanced technologies and training efforts improves IPOs performance and increase its productivity. This should become a major feature in human resource development in the next decade and for 'the IPO of the future'.
3. **Diversity and inclusion.** Most of the six IPOs are committed to create an inclusive culture and environment, improving women access and encouraging members of disadvantaged communities to become employees. Diversity and inclusion have a major impact on IPOs future development as it reduces gender inequality and promotes a comprehensive view/perception in the decision-making process and the workplace.

11. Key Learnings

1. Long-term strategy

The IPOs assessed in the Benchmarking exercise each use advanced resources and long-term strategies which impact each area/section of the IPO. The six IPOs are each highly developed and have been at the forefront of the IP evolution over the last 20 years. Financial and political autonomy are among the major factors that have enabled the distinctive evolution of these IPOs. This lays the foundation to deliver quality and efficiency to the processes delivered by each IPO.

2. End-user focused

Each of the IPOs we assessed had one clear focus – enable citizens and innovators worldwide to register their intellectual property rights as quickly and as easily as possible in the national IPO. The IPOs were constantly reviewing their processes and their approach with an internationally competitive mindset. That is to say, they realised that their office was not a stand-alone national bureaucratic agency; rather they clearly understood that the IPO was the entry point for national and international investment, and that their actions or inactions, to facilitate IP protection and the growth of use of intangible assets, had a major impact on the ability of their country to thrive. In addition, as an office they were competing with other offices globally, so quality and response times mattered. This understanding was then used as a tool to crystallise the thinking of team members in the IPO and to ensure that meaningful actions occurred which delivered results. This manifested itself in many ways from faster granting to a pricing policy which made the cost of registration negligible – thus freeing up the resources of applicants. End-user focus was always paramount.

3. Growing cooperation and collaborative activities.

The increasing internationalisation of intellectual property and the importance of multilateral IP treaties has gradually encouraged cooperation among the six IPOs, with each adapting skills and services to integrate its IPO with the IP global regime. Harmonisation of IP laws, and convergence together with common standards has accelerated the promotion of innovation in these countries. The Vancouver Group (involving IPO UK, the Canadian IPO and IP Australia) is a good example as the IPOs share information and experiences on common issues and areas to eliminate unnecessary rework for an effective multilateral approach. Similarly, KIPO and USPTO are both members of the IP5 group of offices.

4. Deepening intersection between Intellectual Property, trade, and innovation.

The six IPOs have an innovative mindset and are end-user focused across the full breadth of their operations, using disruptive technologies (e.g., artificial intelligence, and Robotic Process Automation) to speed up their activities and to become more efficient. This approach has supported the use of IPRs as a tool for economic development.

5. Embracing disruptive technologies.

Each of the IPOs we reviewed had already made the easy changes to its processes. They were clearly at a point of minimal gain with each new change. As such they still had an appetite to improve user experience and to enable their office to continue to be internationally competitive. It is therefore not surprising that they have chosen to embrace disruptive technologies to support their agendas and that they expect to accelerate this usage in the years ahead. The impact of Robotic Process Automation (RPA) will affect most offices that use computers in the coming years. RPA offers unique benefits to automate simple tasks. KIPO have begun to use RPA. Elsewhere we see countries using Artificial Intelligence (AI) techniques to assess figurative image trade marks. This is an obvious use of AI as image recognition is a highly developed technology. If anything, the IPOs have been a little slow to use image recognition. We encourage INPI not just to use 'mature disruptive' technologies but also to use disruptive technologies as they arise. IPOs have the superb advantage of being exposed to new technology as it arises. Some of these disruptive technologies do not require huge amounts of risk or cost to develop. Riskier technology deployments could even be outsourced to third parties, so that they take the financial risk instead of INPI.

6. Flexible business models.

As the six IPOs face institutional, business, and technological specific conditions in each country, they use flexible business models with appropriate focus on their national IP market. This is designed to meet the needs of different user communities and to provide the best outcome to the whole economy. In one example the IPO of Singapore has become a hub and a regional leader in Intellectual Property, improving its companies' access to foreign markets and taking advantage of the IP partnerships forged by the country.

12. Conclusion

In this report we looked at six key themes. As we consider our findings and seek to highlight the most important of these, the insights below are perhaps the most significant:

- A well-planned IPO organisational structure managed using a strategy that is designed around national needs, whilst honouring international obligations, is a key foundation stone to a successful IPO. Such an IPO is appreciated both locally and by international clients and stakeholders.
- An IPO which is focussed on delivering quality at all levels of its organisation and empowered to enact the changes required to enable all quality goals to be realised, is positioned to achieve quality. We observed that either holding, working towards, or internalizing ISO standards was one path to quality, but not the only one.
- Processes hold the key to providing successful end-user outcomes. When processes undergo regular transformation with end-user outcomes as a focus, this results in better communication with end-users and faster granting of rights.
- Pricing is a major factor in decisions by applicants to engage with the system. Whilst our questions had a report on the prices charged by the IPO, we also noted that the whole transaction cost of IP registration is a factor which determines access to the IP system. This topic of complete transaction cost merits further study. Across all IPOs we found that the goal of the IPO was not to use the IPO as a tariff maximising body, but rather to use pricing for cost recovery, to adequately cover the costs of running the office, and no more. Excess revenues were not desired.
- Information and Communication Technologies were being used with different levels of advancement at the IPOs. IPOs all used ICTs internally to run their operations and were at different stages of development. Some were already using robotic process automation whilst others were at the stage of considering use of various tools and technologies at different levels of the organisation. All IPOs intended to deploy disruptive technologies to a larger extent than currently in the coming years.

The conclusion from this benchmarking exercise is there is now a genuine opportunity for INPI to become an IPO to rival the examples of global best practice which we reviewed. This would not be a minor achievement, however with a revised business model, empowerment, and adequate financial support to engage with the challenge ahead, we see no reason why this could not happen. We do not doubt that if INPI is correctly supported to embrace some of the findings of this International Benchmarking report, it could lead the Brazilian innovation ecosystem into a new phase of development, ushering in a new era of prosperity and progress for the citizens and the country of Brazil.

Schedule 1

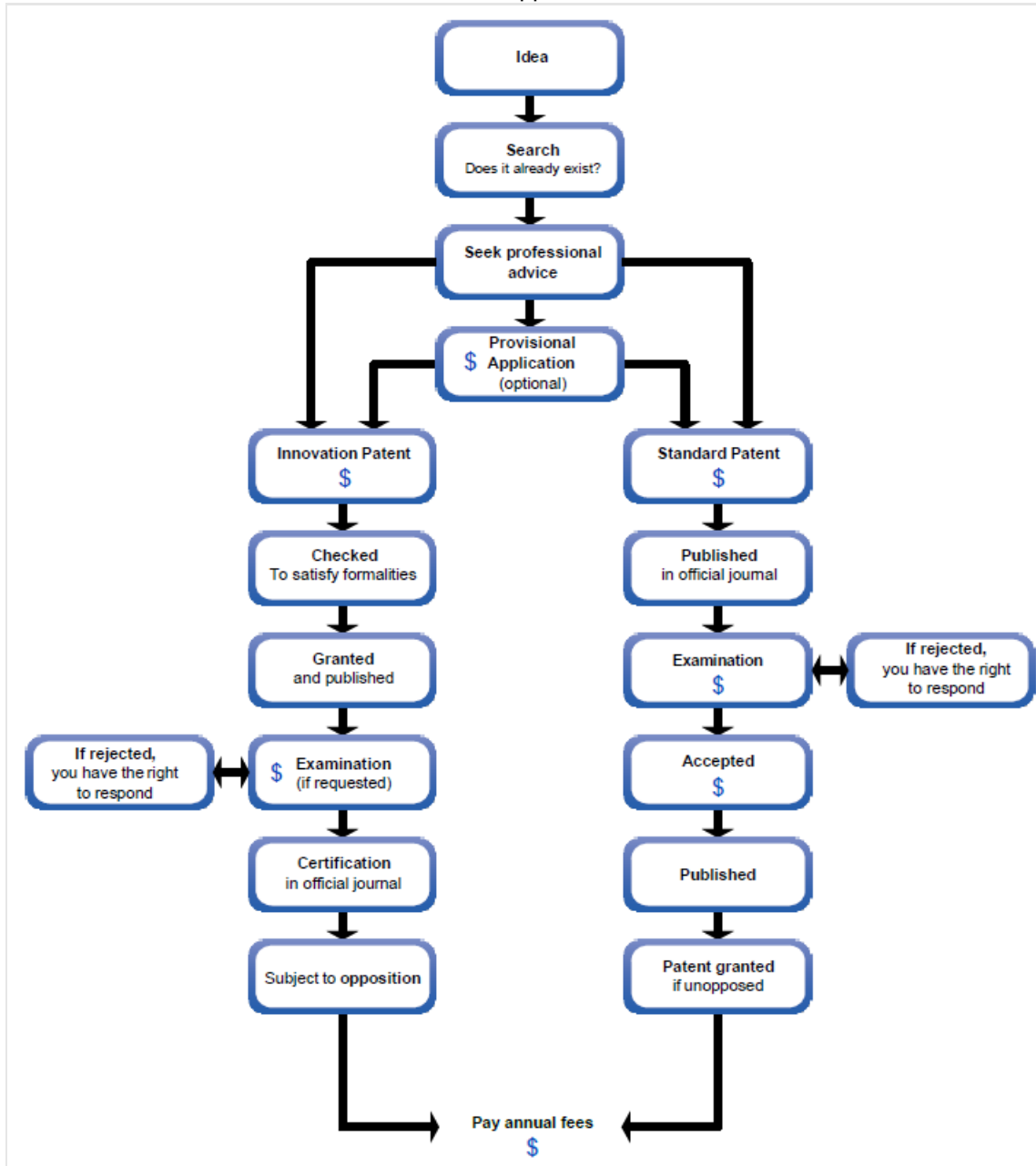
IPOs and overall data on each country						
Country	UK	USA	Canada	Australia	Singapore	South Korea
Population in 1.000 people (2020) (1)	67.886	331.003	37.742	25.500	5.850	51.269
GDP (US\$ millions, current prices) (2019) (2)	2.829.108	21.433.226	1.736.426	1.396.567	372.063	1.646.739
GDP/capita (US\$) (2019) (3)	42.330	62.298	46.195	55.060	65.233	31.846
GDP per capita growth (2019) (in percentage) (4)	0,9	1,7	0,2	0,6	-0,4	1,8
Ease of doing business (ranking and score) (5)	8th (83,5)	6th (84,0)	23th (79,6)	14th (81,2)	2nd (86,2)	5th (84,0)
Global Innovation Index (ranking and score) (6)	4th (59,78)	3rd (60,56)	17th (52,26)	23th (48,35)	8th (56,61)	10th (56,11)
International IP Index (7)	2nd (93,92)	1st (95,28)	16th (72,86)	14th (79,62)	11th (84,42)	13th (82,20)
OECD membership (8)	1961	1961	1961	1971	No	1996
IPO	IPO UK	USPTO	CIPO	IP Australia	IPOS	KIPO
Year of creation/incorporation	1852	1849	1991	1904	2001	2000
Financial autonomy	yes	yes	yes	yes	yes	yes
Political autonomy	yes	yes	yes	yes	yes	yes
Number of employees (2020) (9)	1.347	12.945	1.122	1.128	161	1.675
Number of patent filings (2019) (10)	54.762	521.145	24.469	12.568	7.354	248.427
Number of patent applications (2019) (10)						
Resident	18.204	285.113	4.238	2.637	1.727	171.603
Non-Resident	7.189	336.340	32.250	27.121	12.409	47.372
Abroad	36.558	236.032	20.231	9.931	5.627	76.824
Number of patent grants (2019) (10)						
Resident	7.203	167.115	2.035	829	264	94.852
Non-Resident	2.867	187.315	19.974	16.181	3.924	30.809
Abroad	21.261	142.529	12.601	4.847	3.304	46.700
Number of trade mark applications (2019) (10)						
Resident	175.043	460.197	91.91	78.307	11.121	228.511
Non-Resident	77.935	212.484	101.760	61.791	42.167	55.557
Abroad	1.077.509	1.413.916	181.332	133.708	63.783	149.743
Number of trade mark registrations (2019) (10)						
Resident	154.002	267.828	54.228	57.831	11.193	119.267
Non-Resident	80.679	171.655	103.169	62.101	46.148	55.994
Abroad	911.774	1.287.811	135.714	133.925	59.329	133.176
Madrid System (2019)	3.460	10.087	359	2.094	735	1.392
Hague System (2019)	185	418	35	4	16	1.174
Patent Cooperation System (PCT) (2019)	5.711	57.840	2.711	1.768	1.029	19.085
Cooperation with other IPOs						
Madrid Protocol	Vancouver Group since 1995	IP5 since 2003	Vancouver Group since 2019	Vancouver Group since 2001	none since 2000	IP5 since 2003
Budapest Treaty	since 1980	since 1980	since 1996	since 1987	since 1995	since 1988
Singapore Treaty	since 2012	since 2009	since 2019	since 2009	since 2009	since 2016

Sources:

- (1) United Nations - <https://population.un.org/wpp/Download/Standard/Population/>
- (2) World Bank, GDP (current US\$) <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=chart>
- (3) World Bank, GDP per capita (current US\$) <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?view=chart>
- (4) World Bank, GDP per capita growth (annual %) <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG>
- (5) Doing Business 2020, The World Bank, 2020
<http://documents1.worldbank.org/curated/en/688761571934946384/pdf/Doing-Business-2020-Comparing-Business-Regulation-in-190-Economies.pdf>
- (6) Global Innovation Index 2020, Cornell University, INSEAD and WIPO -
<https://www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GII-2020-report.pdf>
- (7) U.S. Chamber International IP Index, 2020
https://www.uschamber.com/sites/default/files/023881_gipc_ip_index_2020_fullreport_final.pdf
- (8) OECD, List of OECD Member countries - Ratification of the Convention on the OECD, 2020
<https://www.oecd.org/about/document/list-oecd-member-countries.htm>
- (9) Questionnaire answered by the six IPOs - please see pdf document as Annex
- (10) WIPO Statistical Country Profiles - https://www.wipo.int/ipstats/en/statistics/country_profile/

Schedule 2

IP Australia Patent application Flowchart⁹⁷



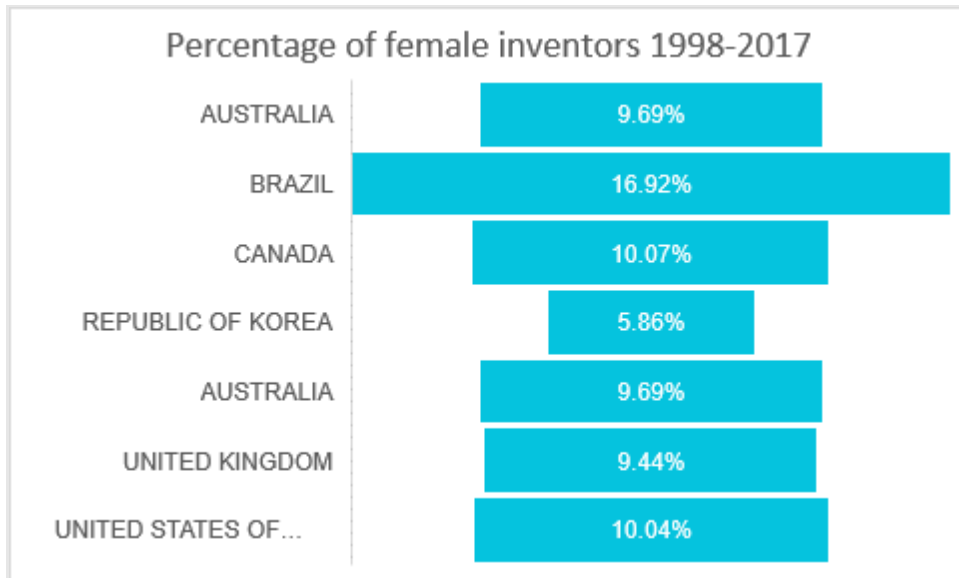
It is notable that IP Australia recommend searching prior to seeking professional advice. This is a prudent move as it is in the commercial interest of IP professionals to register rights, rather than to engage in a search and review process prior to filing (which may show filing to be a bad idea). Despite the existence of IP search providers, and IP consultants who will assess intangible assets and their impact on a business from a commercial perspective, IPOs commonly recommend inventors to go directly to attorneys for advice. We note however that

⁹⁷ This graphic is found on the IP Australia website at the following link: https://www.ipaustralia.gov.au/sites/default/files/reports_publications/patent_application_guide.pdf and is shared under the Creative Commons CC-BY 4.0 license.



IPOS and KIPO have recognised the need for a wider perspective on IP and intangible assets than just the perspective of the attorney.

Schedule 3



This graphic was produced using underlying data produced by IPO UK in its 2019 Gender Profile study which we referred to in our Pricing section.

Schedule 4

International Benchmarking - Questionnaire for International IP offices⁹⁸

The Foreign, Commonwealth & Development Office of the United Kingdom (FCDO) through the Prosperity Fund Global Trade Programme, is providing assistance using Overseas Development Funds, to the Instituto Nacional da Propriedade Industrial (INPI) of Brazil to modernise processes, improve office efficiency and increase the quality and speed of granting intellectual property (IP) rights.

This questionnaire presents a range of questions related to the organisation and function of national intellectual property offices (IPOs). Top global IPOs were selected for their high-performance standards and their proven positive impact in innovation, ease of doing business and forward-thinking policies. The countries selected were UK, US, South Korea, Singapore, Canada and Australia.

To deliver the objectives of the Global Trade Programme (for which the primary objectives include poverty reduction and improving gender equality), the Intellectual Property Office of the United Kingdom (IPO UK), in conjunction with FCDO, have collaborated with INPI to design a transformational project entitled “A Brazil IP Office for the 21st century”. The desired outcome of the project is a much more effective IP regime in Brazil – this will enable and encourage innovation, greater international trade, investment, and interaction with global value chains. It will also enable job creation and support inclusive growth and poverty reduction.

Palladium International, an international management consultancy, has been appointed by FCDO to deliver this project. Palladium has appointed Collier IP (an UK IP consultancy company) and FGV Projetos (a Brazilian consultancy) to deliver an international benchmarking report. Palladium, Collier IP and FGV Projetos are now seeking to enlist the support of top global IPOs to provide crucial learnings to inform the early stages of the project, which has already begun.

The time that IPOs take to share their experiences and lessons learned is greatly valued, and we expect that this exercise will yield important insights for the next three years of the programme “A Brazilian IP Office for the 21st Century.”

It is preferred that the results of the benchmarking are public domain information. If you would prefer that information provided by your IPO is kept confidential, this will be respected without question. Furthermore, the benchmarking team are willing to sign confidentiality agreements directly with your IPO. In this case, please let us know through the contact information below.

To the extent that questionnaire information is made public, it will be possible for the benchmarking team to share the results of this benchmarking exercise with your IPO. It will also facilitate wider public discourse on IPOs and encourage higher quality operations within IPOs globally.

To assist with follow up questions, queries, or confidentiality issues, please find below contact details:

⁹⁸ As distributed to IP Offices on September 8th, 2020.

Name	Company	Email address	Phone Number
Richard Nugent	Coller IP	richard.nugent@collerip.com	+447715748003
Otávio Mielnik	FGV Projetos	otavio.mielnik@fgv.br	+5511982631412

We would be grateful if you could provide a coordination contact at your IPO to liaise with the Benchmarking team members above in relation to the questionnaire.

We thank you in advance for your cooperation in this Benchmarking exercise.

- 1) We ask that you fill in your information below, so that the system can identify you when processing responses, and that we can contact you if necessary:

Name	
Job position	
Name of your IPO	
Email	
Phone number	

ORGANISATIONAL STRUCTURE

- 2) What is the corporate form of your IPO? (Please select whichever applies)

Government department	
Cost centre of a larger government department	
Independent organisation	
Other	

If Other, please provide details:

- 3) How is your IPO structured in terms of departments? Please describe the structure of your IPO. If possible, provide details of the benefits and/or shortcomings of this structural approach:

.....

4) At your IPO, where do ideas related to changing your organisation’s strategy originate? (Please select all that apply)

Suggestions from dedicated policy team	
Suggestions from senior management	
Suggestions from wider society	
Suggestions from IP professional bodies	
Changes arising from legislation	
Other	

If Other, please provide details:.....

5) Is your IPO empowered to make major changes to the workings of the organisation independent of outside interference?

Yes	
No	

Please provide further details relevant to your response:

6) The existing organisational structure in your IPO is due to:
(Please select the most appropriate answer)

Technical reasons to follow a divisional pattern	
A strategic path/choice to develop specific tasks	
Historical evolution of the office related to global IP policy or developments (e.g. international conventions or agreements)	
Political conditions defined by the country’s government	
Other	

If Other, please provide details:

7) Is your IPO's policy and overall governance:

(Please select the most appropriate answer)

Defined by its own board of directors	
Set up by the country's government	
A mix of both	
Other	

If Other, please provide details:

8) In your country, does your IPO have financial and policy autonomy to:

(Please select all that apply)

Charge for services	
Retain the income generated	
Retain the surplus	

9) How did your IPO evolve to reach the legal status to act as an independent organisation? (Please select the most appropriate answer)

For historical reasons related to the IP and innovation policy evolution in the country	
For political reasons due to institutional development and reform in the country	
For economic and managerial reasons to become more efficient	
Other	

If Other, please provide details:

10) What barriers, if any, have obstructed improvement of the organisational structure at your IPO?

Please provide further details:

Does your IPO have policies targeted at increasing IP rights registrations from disadvantaged and/or under-represented social groups (women, people with disabilities, indigenous communities, faith groups, lower income groups, people in remote areas, other minorities)?

Yes	
No	

Please provide further details:

11) Is there anything about the way your IPO is organised that could be changed to increase social inclusion and/or improve social cohesion in your country?

Yes	
No	

Please provide further details:

12) Does your IPO request information about applicants for IP rights in relation to their:

(Please select all that apply)

Gender	
Race or ethnicity	
Age	
Colour	
Religious belief	

13) Do you ask patent, trade mark or design applicants about the corporate size of their own organisations?

Yes	
No	

14) Is quality management considered:

(Please select all that apply)

As part of operational processes	
Under the responsibility of each division	
Other	

If Other, please provide details:

15) Has ISO 9001 or any other quality management policy been applied in your IPO?

Yes	
No	

If yes, please advise when this was implemented, and to which parts of the organisation the approach was applied:

16) Does your IPO have a quality management department / team?

Yes	
No	

If yes, please advise at what level of seniority this department / team operates within your IPO:

17) How many people are involved in quality management at your IPO:

18) How does your IPO encourage high levels of quality and efficiency from staff? Are there legal barriers?

Please explain:

19) On average, how many staff hours are required to grant an IP right from application through to grant date?

a. Patents, all types of invention on national patents, excluding utility models:

0-5	
5-10	
10-15	
15-20	
20-30	
30-40	
>40	

b. Patents, all types of invention on PCT patents, excluding utility models:

0-5	
5-10	
10-15	
15-20	
20-30	
30-40	
>40	

c. Trade marks, all types:

0-5	
5-10	
10-15	
15-20	
20-30	
30-40	
>40	

d. Design rights / design patents, all types:

0-5	
5-10	
10-15	
15-20	
20-30	
30-40	
>40	

PROCESS MANAGEMENT SYSTEM

20) To enable efficient processes, has a major organisational change been carried out in your IPO within the last 5 years?

Yes	
No	

If yes, please provide further information about this change:

21) How often does your IPO review internal processes to increase efficiency?

22) Please provide details of KPIs (Key Performance Indicators) used at your IPO in the areas below:

a) Patents:

b) Receipt of requests and acting as international authority under the PCT:

c) Trade marks:

d) Industrial designs:

e) Management of Information and Communication Technology:

f) Budgetary, financial and accounting management:

g) Logistics and infrastructure management:

23) At your IPO, are processes being changed for faster search and grant of national patent applications (excluding design rights and utility models)?

If so, which?

24) At your IPO, are processes being changed for faster search and grant of PCT patent applications (excluding design rights and utility models)?

If so, which?

25) At your IPO, which schemes exist for faster granting of patent (invention patents – both national and PCT) applicatio (e.g. Fast-Track)? Please select all that apply:

Patent Prosecution Highway	
Green/Environmental patent scheme	
Inventions by inventors who are >=60 years old	
National technology focus (other than green/environmental)	
National emergency (e.g. Covid-19 applications)	
Assistance to small and medium enterprises	
Affirmative action (e.g. female inventors)	
Other	

If Other please provide details:

26) What percentage of overall pending patent examinations in any year can be entered into the following schemes (e.g., 500 patents allowed to enter PPH per year, 10000 pending patents = 5%):

Patent Prosecution Highway	
Green/Environmental patent scheme	
Inventions by inventors who are >=60 years old	
National technology focus (other than green/environmental)	
National emergency (e.g. Covid-19 applications)	
Assistance to small and medium enterprises	
Affirmative action (e.g. female inventors)	
Other	

If Other, please provide details:

27) At your IPO, what methods are available to Fast-Track a trade mark examination? Please select all that apply:

Fast-Track due to trade mark already in use / imminent use	
Fast-Track due to existence of pre-grant infringement	
Fast-Track due to industry sector focus	
Fast-Track due to national emergency (e.g. Covid-19 applications)	
Assistance to small and medium enterprises	
Affirmative action (e.g. female inventors)	
Other	

If Other, please provide details:

28) At your IPO, what processes exist to perceive and respond to technological and cultural changes that could affect your activities (e.g. artificial intelligence, blockchain, gender equality, Black Lives Matter, global IP policy developments)?

Please provide details.....

29) At your IPO, what processes exist to encourage greater understanding and use of IP rights and intangible assets by women and people within disadvantaged communities?

(Disadvantaged communities could include communities of people grouped by gender, ethnicity, colour, faith groups, traditional communities – e.g. indigenous tribes, lower income groups, residing in a disadvantaged locale or region)

Please provide details.....

30) At your IPO, how do you communicate the commercial and cultural benefits of intangible assets to the national population? Please select all that apply and whether or not they require financial payment.

Process	Free of charge	Access on payment only
In-person workshops		
Website information		
Webinars		
Video channels (e.g. YouTube or equivalent)		
Social media		
Published material (e.g. booklets, leaflets etc.)		
Direct engagement with civil society organisations (e.g. women's groups, black entrepreneurs' organisations, etc.)		
Other		

If Other please provide details:

31) When you hold events, on average how much of the audience is comprised of women?

0-10%	
11-30%	
31-50%	
51-70%	
>70%	

If Other please provide details:

32) For staff training, what are the options? (Please select all that apply)

Internal training delivered by other staff in person	
External training	
Academic training	
Language training	
Technical subject-matter training	
On-demand video training	
Webinars	
Other	

33) When a trade mark or patent is rejected, are senior examiners involved in the appeal process?

Yes	
No	

34) What is the average time taken to respond to an applicant's appeal, following rejection of:

	Working days
a patent application	
an application for a design right	
a trade mark application	

Service Pricing Policy

35) What is the cost in your currency to Fast-Track a patent application?

36) What is the cost in your currency to Fast-Track a trade mark application?

37) How do you decide upon the price (for the applicant) for each of the services offered at your IPO?

38) What percentage of the price for patent services at your IPO is:

(Feel free to indicate an approximate number)

	Percentage
Fixed cost	
Operational cost	
Mark-up (revenue exceeding cost of provision of the services)	

39) What percentage of the price for trade mark services at your IPO is:

(Feel free to indicate an approximate number)

	Percentage
Fixed cost	
Operational cost	
Mark-up (revenue exceeding cost of provision of the services)	

40) Is there any type of discount policy in your IPO? (e.g. for applicants from disadvantaged communities, or for small businesses). Please provide details:

Patents:
 Trade marks:
 Designs:
 No discount policy is in use at our IPO.....

41) At your IPO, is the office empowered to change the pricing of any or all services without recourse to legislative or statutory amendments?

Yes	
No	

42) At your IPO, how do changes to service pricing policy happen? Please select all that apply.

Legislative change	
Directive from senior management	
Pricing policy manager suggests changes and following approval from senior management implements the suggested change	
Civil society suggests changes	
Staff suggest changes	
Other	

If Other please provide details:

43) Are the incomes to your IPO, as a total sum, adequate to cover all running costs?

Yes	
No	

44) Are there any innovative pricing policies at your IPO?

Yes	
No	

If yes, please provide details:

45) Does any activity at your IPO subsidise another one?

Yes	
No	

If yes, please provide details:

46) Is there any price subsidy scheme based on affirmative action or on supporting specific policy goals?

If yes, please select all that apply:

Green/environmental inventions	
Inventions by inventors who are ≥ 60 years old	
National technology focus (other than green/environmental)	
National emergency (e.g. Covid-19 applications)	
Assistance to small and medium enterprises	
Affirmative action (e.g. female inventors)	
Other	

If Other please provide details:

Information Technology Services

47) Which practices and/or processes are used for IT Service Management (ITSM) at your IPO?

Please provide details including the framework version and/or update year:

48) Which frameworks are used at your IPO for IT Governance?

Please provide details including the framework version and/or update year:

49) Which IT services does your IPO provide?

Please provide details of these services:

50) Is the provision of IT Services at your IPO based on agile methodologies?

If yes, please specify which methodologies and corresponding tools:

If no, please specify why your IPO does not use any agile methodology:

51) Does your IPO have routines (process, practices, activities, etc.) focused on continual improvement of IT Services and Technologies?

If yes, please provide details of the routines used:

If no, please explain why continual improvement practices are not used:

52) Does your IPO plan to improve its IT systems in the next 5 years?

If yes, please provide details:

53) Is your IPO considering the use of artificial intelligence-based systems (e.g. machine learning, deep learning, etc.) to assess patents, trade marks or design right applications? Please select all that apply.

Initial assessment	
Assessment of image files for suitability (e.g. comparing images of registered trade marks against images provided by an applicant in a trade mark application)	
Patent prior art search	
Assessment of patents meeting formality requirements (e.g. formatting, headings etc.)	
Assessment of inventive step	

Assessment of sufficiency of disclosure	
--	--

54) What are the technical steps your IPO is taking to make information available to the public related to IP rights (e.g. details of individual applications, granted rights, imagery, legal status)?

a) Patents (both national and PCT):

b) Trade marks:

c) Design rights (including design patents):

55) Which technical approaches or solutions (e.g. related to information security or cyber-security) are used by your IPO to ensure client confidentiality in working from home environments? Please provide details:

56) How is your IPO using information technology to facilitate quicker patent examinations?

Human Resources

57) What is the total number of employees at your IPO?

58) What percentage of your employees are women?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

59) How many pending patent applications are there for each full-time equivalent patent examiner? (E.g., if there were 100 pending patents and 10 examiners available to examine them, the average number of pending patents per examiner would be 10).

Average number of pending patent applications per examiner:

60) What percentage of your patent examiners are women?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

61) How many pending trade mark applications are there for each full-time equivalent trade mark examiner at your IPO?

(E.g., if there were 100 pending patents and 10 examiners available to examine them, the average number of pending patents per examiner would be 10).

Average number of pending trade mark applications per examiner.....

62) What percentage of your trade mark examiners are women?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

63) What percentage of staff have a university degree?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

64) What percentage of trade mark examiners have a Master's degree?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

65) What percentage of patent examiners have a PhD?

0-20%	
21-40%	
41-60%	
61-80%	
81-100%	

66) What percentage of the following areas are comprised of women?

	Senior or middle management	Board of directors
0-20%		
21-40%		
41-60%		
61-80%		
81-100%		

67) How does your IPO encourage people from disadvantaged communities to become employees?

(Disadvantaged communities could include communities of people grouped by gender, ethnicity, colour, faith groups, people with disabilities, traditional communities (e.g. indigenous tribes), lower income groups, residing in a disadvantaged locale or region)

Please explain:

.....

68) Please specify the number of full-time equivalent (a) administrative and (b) technical/professional employees who work at your IPO for each of the following activities:

69)

Activity	Number of administrative employees	Number of technical/professional employees
Patents		
Trade marks		
Industrial designs		
People management/ HR/personnel		
Information Technology and Communication		
Budgetary, financial, and accounting		
Logistics and infrastructure		

69) How does a staff member progress from being a junior employee to becoming a senior employee?

70) What performance criteria are used by your IPO in relation to people management?

71) How many hours per year do staff spend on training, on average?

	Hours per year
Junior professional staff	
Mid-career professional staff	
Support staff	

72) How many days of holiday (including national holidays and excluding weekends) do staff have available to take as leave?

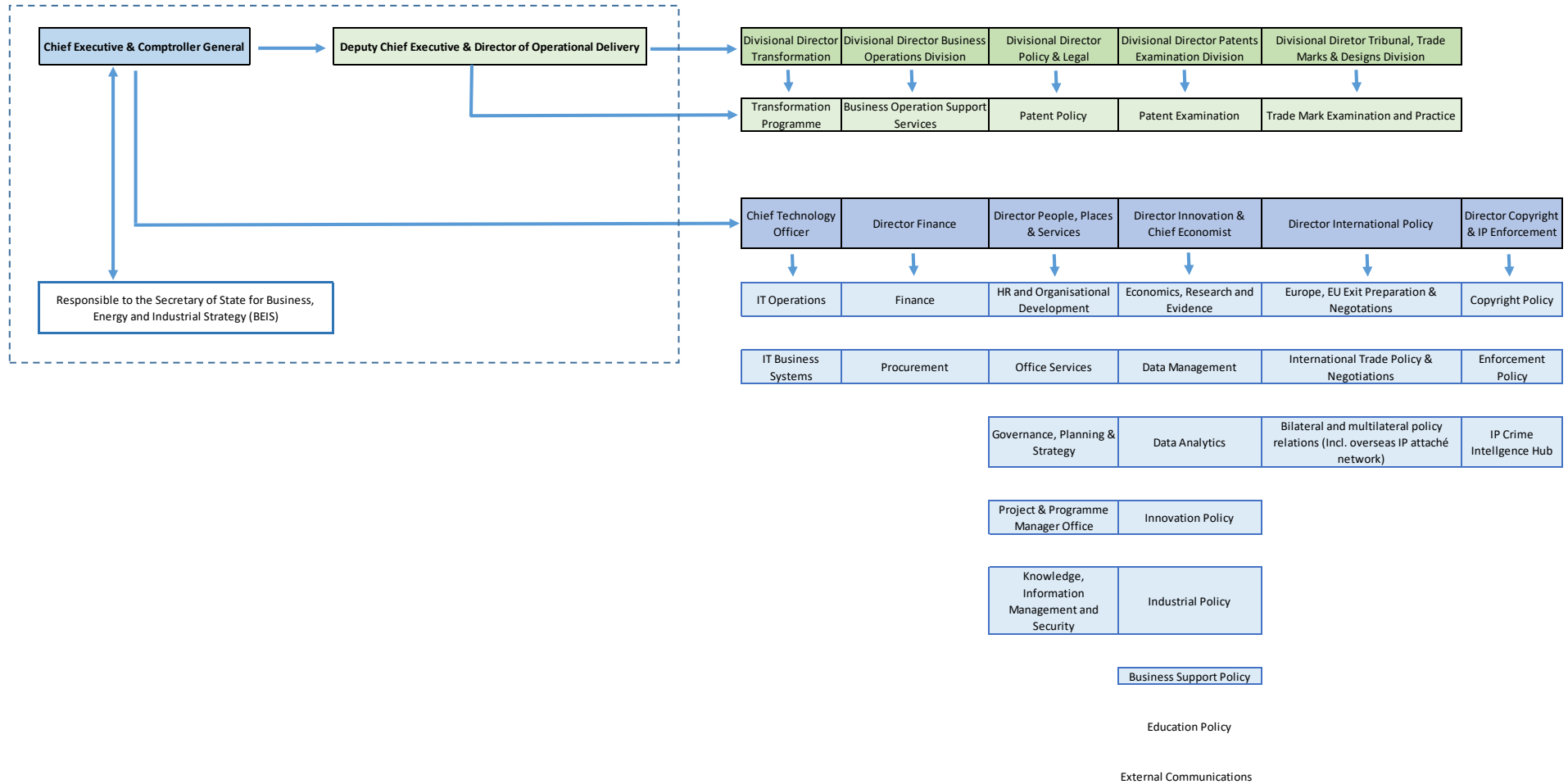
73) How many patent applications is a full-time patent examiner expected to examine each year?

- 74) How many trade mark applications is a full-time trade mark examiner expected to examine each year?
- 75) How many industrial design right applications is full-time examiner of industrial designs expected to examine each year? (If industrial designs are not examined in your jurisdiction, please indicate "Not applicable").
- 76) How is workload distributed between junior and senior patent examiners, e.g. criteria for allocation of applications /examinations/ revisions, etc?
- 77) How do you reward and recognise exceptional work within your IPO?
- 78) How does your IPO retain good staff?

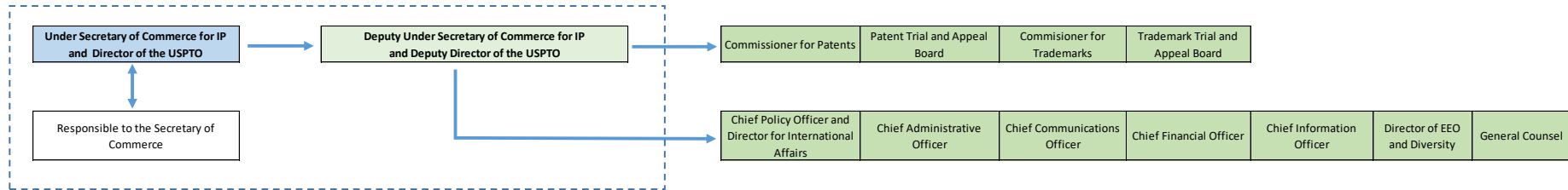
Schedule 5

IPOs Organisational Charts

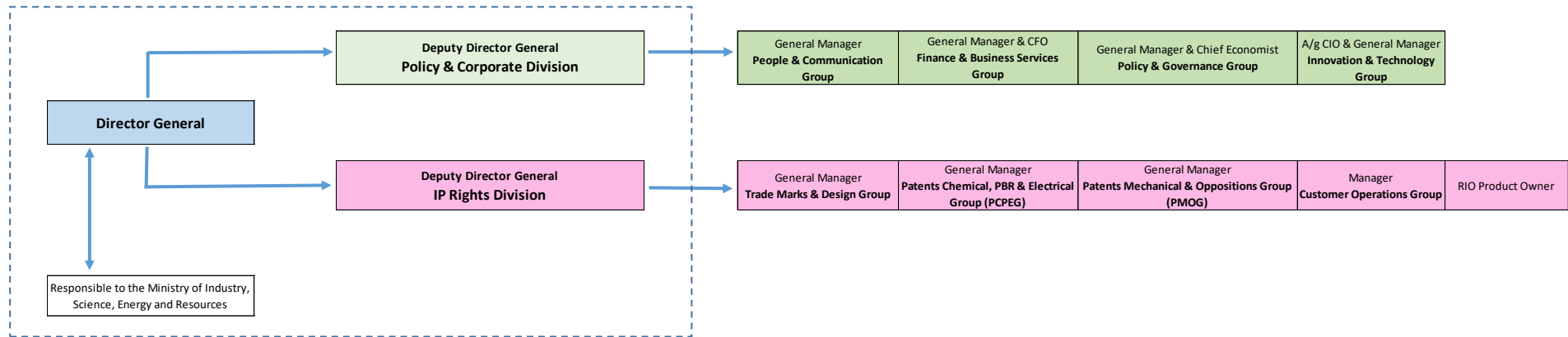
UKIPO



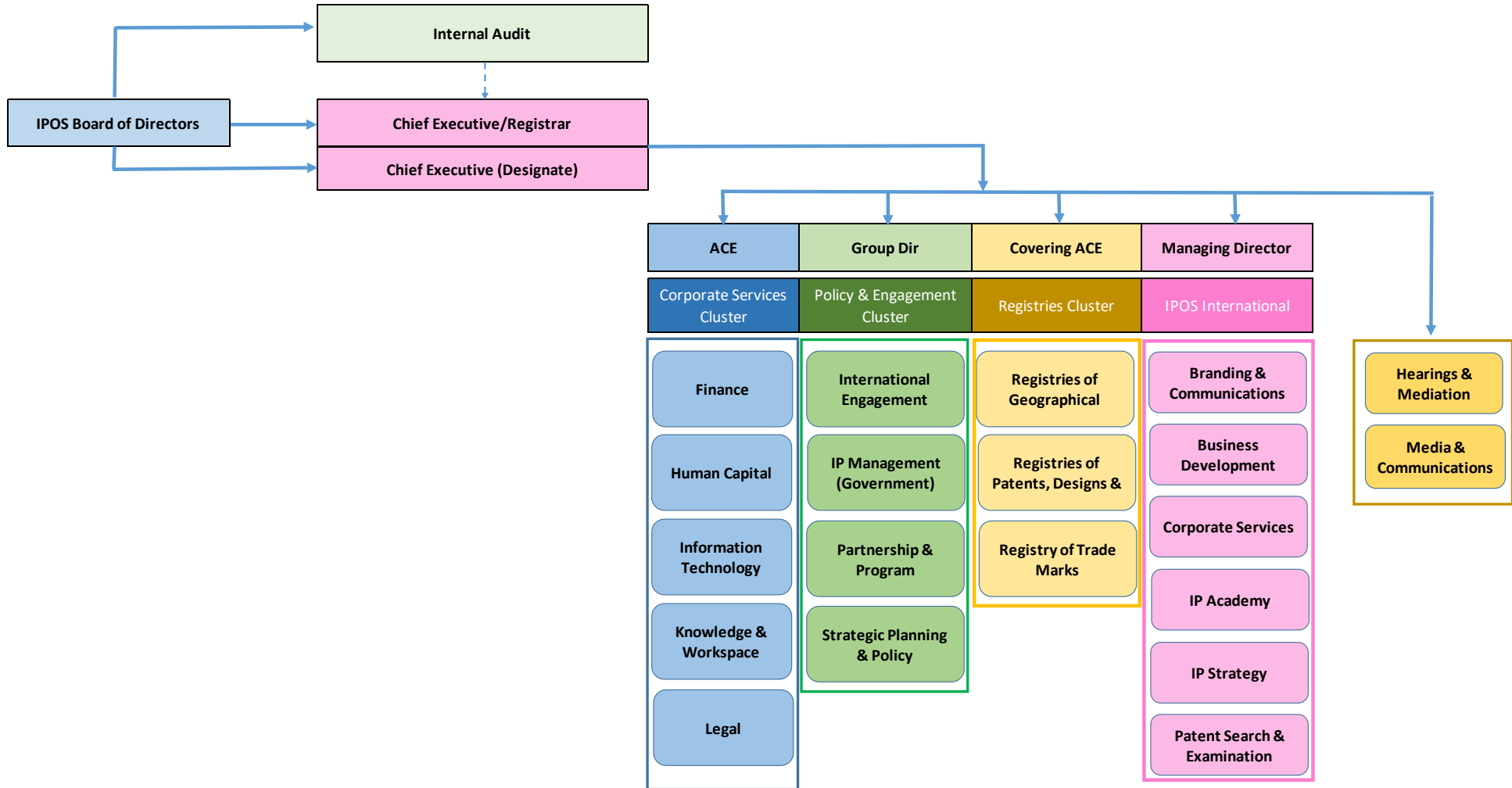
USPTO



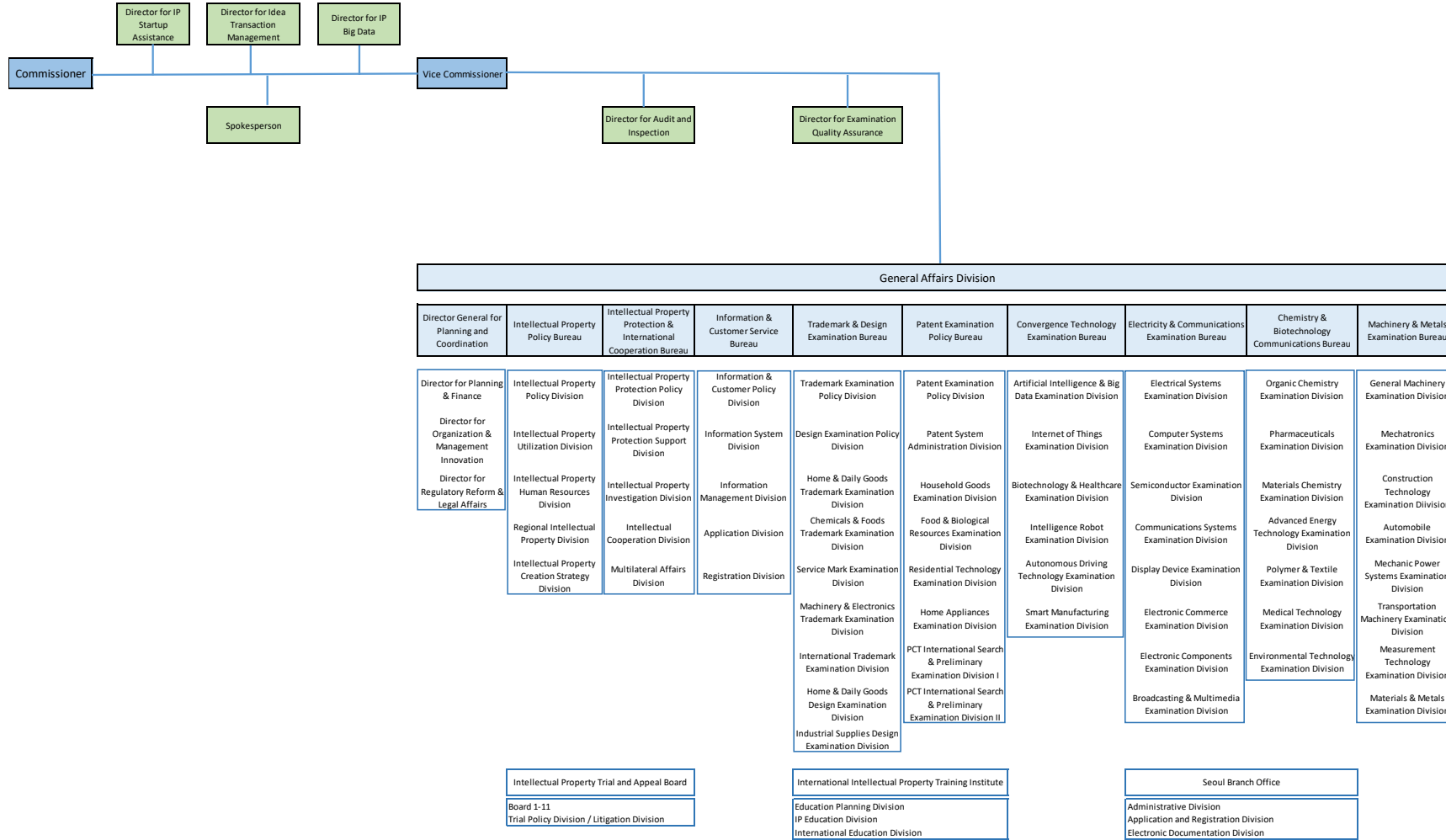
IP Australia



IPOS



KIPO



Schedule 6

Usefulness of the International Benchmarking Report to INPI and the Consulting Work

The Project workstream leaders have been working with INPI staff on the most relevant questions for improvement of the office activities in each area. For that reason, the Benchmarking team had a series of meetings with the workstream leaders to assess the usefulness to INPI of the International Benchmarking Report (v5-final). In those meetings, the following topics from the Benchmarking Report have been considered appropriate and applicable to INPI's future developments:

Workstream on Organisational Structure

1. The Benchmarking Report indicated that for the six IPOs, any required **organisational redesign involves the integration of structure, processes and people** to support the implementation of the new strategy, which is appropriate for INPI to include people's management as part of the organisational structure.
2. The International Benchmarking Report pointed out that **autonomy is important, and if not adequately given, it will disempower the IPO from the level of power and flexibility it requires to adequately perform its duties**. Hence, INPI must have flexibility to design and redesign its own organizational structure, lowering the interference of external stakeholders, specifically when the modification does not imply new or enhanced costs.
3. Organisational Structure is the specific arrangement that governs each IPO. It is not the same in each country and evolves over time. It is institutionally determined and defined under a policy framework set up by the country's government. This is relevant for INPI to set up its strategy.

Workstream on Quality

1. The International Benchmarking Report pointed out the IPOs commitment to high-quality as their **processes and procedures** meet the **international standard ISO 9001:2015**;
2. Even without a specific quality team, **each area in the IPOs is responsible for the quality issue** in its processes;
3. There are few staff members in the IPOs' areas involved in quality but they have **consistent experience and work at a senior executive level**;
4. Quality improvement systems include **regular internal audits required by the ISO 9001:2015 standard** regarding legal certainty (granting patents with the highest presumption of legal validity), its accurate and timely classification, working in cooperation with other IPOs and oriented to the procedures and processes continual improvement;

5. Relevance of the **quality indicators** developed by the European Patent Office (EPO) to **monitor procedural delays** for patent grant procedure search timeliness, examination timeliness, duration of opposition procedure, percentage of international searches on-time and complaints.

The Benchmarking Report results and findings were particularly useful to diagnose INPI's current maturity status of its quality system and to point out some alternatives for improvement (i.e., gaps to overcome to achieve higher quality standards).

The analysis was carried out focusing five determinant facts that characterise a quality system:

- a. Importance of QMS for the organisation;
- b. Methodology for conducting the QMS;
- c. QMS governance;
- d. Improvements stimulated by the QMS;
- e. Quality assessment indexes.

Workstream on Process

1. The International Benchmarking Report stated the importance of considering the range of various **stakeholders who influence the internal process** of an IPO in different ways. This is being taken into account by INPI as strategic stakeholders are taking part in working meetings in the Process workstream;
2. The Benchmarking Report pointed out the importance of **regular reviews** with the aim of delivering **continuous improvement**. This is a critical aspect of INPI work in the Process workstream and is being discussed in all INPI macroprocesses;
3. The relevance of the **process of rights registration** through graphics and timelines was also considered in the Benchmarking Report and has been considered useful and applicable by INPI;
4. The Benchmarking Report considered **staff number** as a key ingredient in Process calling attention that an IPO can have numerous excellent processes but inadequate staff to execute them. That issue is relevant to INPI and is being applied in its working capacity planning;
5. The Benchmarking Report defined **transparency on statistics** relating to the IPO activities as a critical step to encourage successful processes. INPI will set up a statistical panel for all its processes. Moreover, INPI is considering a process status follow-up and more transparency for external users in the trade mark registration;
6. Improving the **openness on performance**, the Benchmarking Report pointed out the importance of monthly statistics on patents, trade marks and industrial designs, as well as monthly information on all payments. These measures meet INPI's PI Digital plan to improve the information access and its effects on all processes.

Workstream on Pricing

1. Considered in the Benchmarking Report, the importance of an IPO **autonomy to set its prices** is relevant to INPI's current concerns on price setting as well as to enforce the required changes in the current pricing process;
2. The Benchmarking Report raised the relevant question applicable to INPI's pricing policy that each office should **operate within a planned budget** either to recover its cost of operation as well as to generate a financial reserve for investments;
3. Alternative pricing policies applying **crossed subsidies** among activities versus **individual performance assessment** by activity has been developed in the Benchmarking Report and it is appropriate to INPI current concerns;
4. The Benchmarking Report examined the reasons for **pricing policy changes** on the IPOs that are useful and applicable to INPI;
5. It is also relevant to INPI's current concerns the development of **pricing discount policies** to be applied to educate smaller businesses on the life cost of IP rights.

Workstream on Information Communication Technologies

1. The International Benchmarking Report clearly stated the six IPOs have **good practices** on IT service management that can be applied at INPI:
 - a. ITIL is the framework used by the IPO UK;
 - b. ITL is sometimes used by CIPO;
 - c. A common central platform is applied by IPOS;
 - d. LANDesk is used by IP Australia;
 - e. KIPO uses ITSM, based on ISO20000;
 - f. USPTO uses Agile for IT Service Management.
2. The International Benchmarking Report showed the IPOs implemented the concept of **IT governance**, which is quite relevant to INPI as IT departments can succeed if they exist within well managed and sufficiently empowered IPO. The Report indicated differential approaches that can be applicable to INPI:
 - a. The Technical Business Model at USPTO;
 - b. The Government wide Enterprise Architecture Portal at KIPO;
 - c. ITIL, v.3 at IP Australia, and
 - d. The Stage Gate Process ("a conceptual and operational road map for moving a project from idea to completion") at CIPO.
3. **Continual improvements** is a relevant issue to INPI also stressed by the International Benchmarking Report in two examples:
 - a. CIPO's IT team has been refining its vision around the CIPO client, rather than around the IPO itself. This interest extended beyond classic IPO clients such as IP firms to include services for non-represented clients.

- b. At IPO UK, there is a significant transformation project underway to create a unified system for patents, trade marks and designs, as well as to introduce new digital services for customers. Moreover, a specific project on automation should enable delivery of continuous improvement at a higher pace.
4. **Planning for the next five years.** Along the same line as INPI's concern and recent discussions, the International Benchmarking Report pointed out the IPOs plan to improve their IT systems in the next five years through disruptive technologies, such as internet of things, big data, artificial intelligence, quantum computing, virtualisation, machine learning, deep learning, blockchain, augmented reality, and virtual reality. These developments should have for any administrative service providing office, IPO or not, and on IPOs (e.g., applications rising exponentially due to artificial intelligence being used by applicants to invent.
5. On the use of **disruptive technologies**. The International Benchmarking Report considered the uses of new technology in the IPOs reviewed and specifically on artificial intelligence (AI). In particular, it should create whole system solutions for end users of the IPO as a worthy goal for ICT actors in IPOs:
 - a. IPO UK and the IPOS are considering the use of AI for assessing figurative images in trade mark applications and for prior art search of patents;
 - b. CIPO is also considering use of AI for trade marks and industrial designs, including helping users of the trade mark system choose their NICE classification;
 - c. Trade marks and industrial design are being considered at IP Australia, KIPO and at USPTO; moreover, these offices are each considering using AI to assess patent formality requirements;
 - d. IP Australia is considering using AI in its initial assessment of the intellectual property rights registrations. Its focus is on augmenting current systems and providing additional tools to examination teams.

Workstream on Human Resources

1. The Benchmarking Report showed that **focus areas** making IPOs an excellent place to work are (1) having **solid foundations to retain and attract the right people**; (2) having **a great culture**, with shared values and behaviours, a **respect of difference and a common purpose**; and (3) having **healthy people working in a healthy environment**. These are useful and appropriate concepts for INPI to define and value aptitudes in the performance assessment process as well as in corporative training.
2. Human resource has a relevant role (1) to improve the workspace conditions for **innovative thinking thereby increasing productivity**; (2) **to expand telework programs as a corporate business strategy**; and (3) **to oversee administrative and employee service programs** responsive to the needs of the IPO workforce. This is applicable to INPI to introduce a common measurement process relating telework program and flexible working arrangements able to improve the IPO employees' productivity.
3. On **capability development** through introduction of **new technologies**, the Benchmarking Report shows that IPOs consistent with its training efforts and the introduction of new technologies using artificial intelligence and big data to improve the

resolution of patent examination and the total number of patent filings. This is relevant to INPI as a reference to its performance measurement process in the “finalistic” areas.

4. The Benchmarking Report stressed the importance of the **active policy on workforce diversity and inclusion**, creating an inclusive culture and environment, special employment opportunities dedicated to women and to minority communities. INPI can consider those policies in its corporative training as well as to define mobility rules and opportunities in the organisational structure at direction level.

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