

Sub-Theme: 13. Management and capacity building for effective engagement in Triple Helix partnerships: challenges and possible solutions

13.1. Skills, knowledge and experience required for building effective partnerships between universities, business, government and the community.

Title: The Teaching of Intellectual Property: Mapping the Global Network of Academies¹

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1. Introduction

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) introduced a new standard for protection of intangible assets. In the knowledge-based economy, the ability to generate and diffuse innovations has a direct relationship with levels of productivity and competitiveness achieved by countries. In this context, the structuring of teaching and research activities in the field of Intellectual Property (IP) increases, either in developed or in developing countries.

The first IP academy, Worldwide Academy of the World Intellectual Property Organization (WIPO) was founded in 1998. It aims to meet the new demand for IP knowledge and expertise, and is addressed to the IP education and research. Currently, over 20 countries have established their IP academies, and the majority is linked to institutions responsible for intangible assets protection. Usually, these academies offer specialized professional training; training courses for managers, and postgraduate courses, besides developing research in order to raise the level of knowledge and to contribute to national and international debate in this field.

This paper presents results from an international survey conducted among 21 Intellectual Property Academies (IPAs), aiming to respond to questions related to the movement of foundation and institutionalization of IPAs: how and why are they founded; how do they characterize; what do they do; and how are they structured.

Data were collected through a questionnaire sent to the IPAs. The analysis enabled the mapping development of: (i) the reasons for the emergence of these institutions; (ii) how they are structured; (iii) the training activities they provide; (iv) the profile of the faculty and of the audience to whom they

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* The opinions expressed in this article are the sole responsibility of the authors.

are addressed; and (v) identification of possible impacts of their programs on the future development of teaching and research in IP.

Furthermore, the present paper aimed to describe some aspects of the global context in which the IPAs emerged. The survey sought to verify how the national IP offices adjusted to the socioeconomic context of the rising valuation of intangible assets and how they adjusted to meet the rising demand of trained professionals specialized in the management of public policies and business strategies related to IP protection and commercialization.

The initial part of this paper discusses the IP subject relevance in a global context characterized by an intense technological development and an important commercial dynamism. Aspects concerning the teaching of IP and the structuring of the Global Network on Intellectual Property Academies (GNIPA) are presented. Afterwards, the paper reports the main results of the survey through data processing and analysis, and finally it concludes with a reflection on the perspectives for further studies to be conducted in the IP teaching and research areas.

2. Background - The Global Context and Intellectual Property: Implications

The aim of the survey was to understand the rising importance of knowledge in shaping the development models of countries. As a matter of fact, the globalization movement, which significantly reinforces the relationship between competitiveness gain and innovation, has been strongly pushing the search for new products and processes, in addition to new models of business management. At the core of this transformation lies what some authors acknowledge as the revolution in the production, processing and communication techniques that took place with the development of information and communication technologies (ICTs). The application of such technologies leads to production change. Instead of focusing on the use of intensive techniques and procedures related to capital and energy, and on its corresponding form of organization based on the principles of standardization and homogenization of processes and products, now the production addresses the use of intensive techniques in order to handle information and knowledge. From the year 1990 onwards, with the development and expansion of the ICTs, biotechnology and new materials, a new wave of “creative destruction” emerges², bringing a change based on knowledge, information and valuation of intangible assets.

For Tigre (2006), ICTs allowed enterprises to integrate global supply chains, bringing suppliers closer to users with real time information. As a result, new business models were developed and the information content in production arose. [It] This was translated by the investments growth in the field of Research & Development (R&D), marketing and design³ to generate differentiation in products and processes, besides ensuring resulting gains in an increasing competition. Hence, what is already perceived is the rising importance of both knowledge and the management of intangible assets in business, and even in academic institutions.

² According to Tigre (2006), the term “creative destruction” was used by Schumpeter to describe the phenomenon of the end of a cycle of economic recession and the beginning of a new era of economic growth, brought about by the rapid spread of an important technological innovation.

³ The composition of the price of a product exemplifies significantly the relevance of intangible assets: “Less than 5% of the price of a chip consists of direct costs of manufacturing, and the remainder is primarily attributed to marketing expenses and R&D. (...) the design of a chip changes entirely every two years. The importance of intangible capital embedded in tacit and codified knowledge is therefore increasing.” (Tigre, 2006, p. 56).

According to Lundvall (2005), the interaction between science, technology and innovation is very important to the promotion of learning and to the use of knowledge broadly in a process characterized by the interactive learning between producers (universities and public or private research centers) and users of technology (private sector/firms). The author argues that “the most important resource in economy is knowledge and the most important process is learning.” (2005:11)

Intangible assets of a technological, cultural and informational nature play a central role in the future growth of countries in an environment of productive evolution, where knowledge is understood as an economic resource negotiable in commercial transactions. Knowledge becomes the economy driving force, perceived as an intangible asset of a great economic value⁴, which in turn reorganizes the relationships between the State and the economic actors, producers and users of this asset.

This change has imposed pressures worldwide for the transformation of knowledge into an asset to be protected and, in the late 80s, it caused the developed countries, as technology exporters, to propose an agenda for discussing the subject of intellectual property (IP)⁵ no more under the World Intellectual Property Organization (WIPO) - a specialized agency of the United Nations, but in the sphere of the international trade regulatory body - the World Trade Organization (WTO). In this new economic context, the consequences on the appropriation of intangible assets and the expansion of international trade lead to the search for a new standardization of national rules and to the harmonization of rules at international level, which is expressed in the approval of the Trade-Related Aspects of Intellectual Property Rights (TRIPS)⁶ Agreement.

According to Drahos (1995), the developed countries led by the United States, developed an agenda for discussing the IP subject using some points towards higher levels of harmonization of the IP system such as: a) to obtain more security and predictability to the international activities of enterprises, preventing competitors to misappropriate technologies developed by a company; and (b) a strategy for creating repression mechanisms to prevent unfair competition.

TRIPS was adopted in 1995, and Gontijo (2007) believes that its three key points were: a) the definition of high level standard minimum rules; b) the introduction of implementation mechanisms for member states, i.e. administrative and judicial procedures (enforcement⁷); and c) the creation of a strong international system of dispute resolution procedures. TRIPS established this series of procedures to be adopted in all national legislations, with rigid instructions on how the laws of various countries should act when applying the new IP rules.

⁴ Many authors criticize the rise of intellectual property rights as a process of “privatization and commercialization” of knowledge. Others understand knowledge as “a global public good”. For more information see Lastres *et al.* (2005) and Stiglitz (1999, 2005).

⁵ According to Carvalho (2006) Intellectual Property (IP) is as a set of principles and rules governing the acquisition, exercise and loss of rights and interests on differentiating intangible assets susceptible of being used in the economic production of goods and services. The concepts of novelty, creativity, originality and distinctiveness are important for its application.

⁶ TRIPS (Trade-Related Aspects on Intellectual Property Rights) - Agreement signed in 1994 under the treaties of the Uruguay Round of GATT (General Agreement on Tariffs and Trade). “The GATT negotiations were called rounds. A total of 8 (eight), the Uruguay Round was the most famous, because it reached a final agreement for the broad liberalization of trade in goods and services with the creation of the World Trade Organization - WTO. It is noteworthy that among the annexes of this agreement is the Agreement on Aspects of Intellectual Property Rights Related to Trade (TRIPS).” Source: http://www.inpi.gov.br/menu-esquerdo/patente/pasta_acordos/omc.html. Accessed 04/06/2009.

⁷ Enforcement aims the compliance with legal provisions and administrative rules which shall be included in the domestic legislation of each country, as for example, severance and seizure of property.

With the approval of TRIPS, WTO member states adopt measures for the new rules related to intangibles trade. Although the mentioned authors consider TRIPS an instrument that led to an upsurge of demands for protection, this Agreement also establishes financial and technical cooperation⁸ to assist the developing countries (DCs) in adapting to the new global IP standard, and pointing the importance of promoting technology transfer. At this time, WIPO assumes a key role in the assistance to these countries through capacity-building programs; legislative assistance; awareness-raising activities promotion; and other services and programs developed taking into consideration the member states demand.

In the context in which the adoption of strategies for conquering foreign markets by domestic enterprises and the attraction of foreign direct investment from Governments become key elements in economic development policies, the existence of professionals trained in the use of the IP system and in the management of intangibles emerges as a new demand for human resources development. In 1998, four years after the approval of TRIPS, the first IP Academy is founded, the WIPO Worldwide Academy. It aims to meet this new demand for IP knowledge and skills, and dedicates to the advancement of education and research in this field. Through partnerships with WIPO or through their own initiatives, over 20 countries have established their own IP academies. WIPO currently implements a project that supports the creation of start-up Academies⁹ in response to a growing interest in a structure for IP training.

Next, we will present a summary on various aspects related to the teaching of intellectual property.

3. The Teaching of Intellectual Property

Drahos (1995) raises the issue of knowledge and lack of expertise on intellectual property in most countries at the time of the TRIPS agreement negotiations. According to him, “IP” was considered an incipient subject that did not attract much attention in the sphere of global trade. TRIPS itself foresees technical and financial assistance from developed countries to developing countries (DCs) in the adequacy processes of domestic laws and of human resources training programs. WIPO has an active role in assisting DCs, especially as regards education and training programs. On the other hand, the national IP offices begin to expand their activities beyond the traditional role of the technical analysis of requests for patents, trademarks and other registers. Hence, they begin to develop joint activities between the actors of the IP systems and the actors of innovation systems, besides adopting actions to disseminate IP knowledge through teaching and research.

According to Takagi *et al.* (2007), the “IP” theme was already being researched and discussed in several national and international forums for a long time. Nonetheless, such discussion was approached from the perspective of a traditional model of training and capacity building that did not meet the growing demand for skilled professionals resulting from the intensification of commercial transactions on a global scale. The accelerating globalization of trade and the Information and Communication Technologies (ICTs) development have given rise to the “information society”¹⁰ and

⁸ It is important to have in mind that according to the article n. 7 of TRIPS its goal is the promotion of technological innovation, transfer and dissemination of technology “to the mutual advantage of producers and users of technological knowledge addressed to social and economic welfare and to a balance between rights and obligations”.

⁹ For more information see http://www.wipo.int/academy/en/ipacademies/startup_academies/index.html

¹⁰ For more information on “information society” see Castells (1999, 2006 and 2007).

to a new economy increasingly based on knowledge. If in the eighties 40% of total assets of the American private enterprises were intangible, this percentage today is around 70%. The number of worldwide patent applications, from 1985 to 2004, increased at the same rate of the world economy, i.e., 5% per year, from 884,000 claims in 1985 to 1,599 million in 2004. Even though 75% of patent applications and 74% of granted patents are concentrated in five IP offices (U.S.A, Japan, Korea, European Union and China), the use of the IP system in developing countries is increasingly significant.¹¹

The authors report that, for many decades, IP was the exclusive domain of lawyers specialized in this field whose expertise was acquired by working in enterprises with significant IP portfolios or representing clients with issues related to IP rights. In this case, the so-called on-the-job training was the way to complement the few opportunities to study IP in universities. Most part of the training programs available today is structured by national or regional IP Offices. Although having played a central role in the process of developing skills and disseminating IP knowledge, those offices do not seem to meet the current demand of the market.

When they discuss national and international experiences relating to teaching and research in IP, Amorim-Borher *et al.* (2007) reinforce the lack of understanding about the use of protection mechanisms for policy makers. According to them:

“To identify and to interpret constantly the several dimensions of the matter in question is a precondition for the formulation of public policies addressed to innovation and competitiveness. In this sense, one of the major deficiencies concerning the subject of intellectual property is capacity building and human resources development at different levels and skills.” (2007: 283)

Amorim-Borher (2008) refers to the “information age” to express an increasing demand for multidisciplinary professionals who work at the interface of the know-how, technology, law, economics, sciences, and intellectual property management. This increasing need will require human resources able to work with the management of knowledge within institutions of science and technology, development agencies, and R&D centers.

The intensification of trade relations based on products with high added value and technological complexity brings the IP theme to a very important level which had not been much considered up to a certain time. This leads to the growing demand for professionals with multidisciplinary training.

From the 90s onward, the national IP offices begin to expand their training activities and to develop programs addressed to favor a better understanding of intellectual property as an instrument to increase innovation. Many of these programs are based on strategies for the capacity building of professionals to work in an integrated way with the national policies for innovation and industrial development.

Thus, a significant number of worldwide national IP offices launches a process of establishing units in IP teaching and research in IP, called Intellectual Property Academies (IPAs). In this context, the next session will describe the emergence of the Global Network of IP Academies (GNIPA). Its main objective is to facilitate international cooperation in the field of teaching and research in IP.

¹¹ Kamil, Idris *apud* Takagi *et al.*

4. The Global Network of Intellectual Property Academies

The IPAs were established with the aim of contributing to a greater production of knowledge and skills in IP subject.

As we mentioned before, the term Intellectual Property Academy was coined by WIPO at the time of the WIPO Worldwide Academy (WWA) installation in 1998. The WWA aims to meet the new demand for knowledge and expertise in IP and to become a center of excellence in teaching, training and research. It offers programs for the most distinct target audiences, such as managers, inventors, policy makers, government officials, diplomats and students, among others.

According to WIPO, its Academy's major challenge is to train professionals from different areas to use the IP system. Programs are designed to meet the diversity of demand and the need for a multidisciplinary IP approach, comprising disciplines such as management, economics, law, engineering, public policies, biological sciences, among others. From WIPO's pioneering experience, and with its support, over 20 countries have established or are in the process of establishing their Academies. Usually, they are characterized for providing specialized professional training, promoting a culture of the IP system uses, and for offering long-term training courses, including postgraduate ones. Besides, some of these academies develop research and studies to raise the level of knowledge and to build skills of the agents involved in the IP and innovation systems in each country. The majority of these IP Academies belongs to the Global Network of IP Academies (GNIPA). Two important points shall be considered now: how does this network emerge and how is it formed.

The Brazilian National Institute of Industrial Property (INPI) organized with WIPO the First Symposium of Intellectual Property Academies when human resources development was seen vital to IP management. It took place in Rio de Janeiro, March 2007. This event aimed to promote the sharing of experiences in education, teaching and research in IP, and it assembled seven countries and two regional institutions. During this symposium the participants agreed to create GNIPA. This Symposium's outcomes are summarized in the "Rio Declaration", whose key agreed points were:

- a. To create a Global Network on Intellectual Property, opening the possibility of participation to other countries;
- b. To cooperate in the creation of performance indicators for implementing benchmarking for its activities;
- c. To strengthen international cooperation, proposing periodic meetings to exchange experiences and jointly develop plans and goals;
- d. To promote access to the source of relevant information through links on their respective websites;
- e. To develop electronic publication on methods and policies on IP education and research; and
- f. To organize a task force to implement the aforementioned measures and organize the symposium of the following year.

In May 2008, WIPO organized with the national Chinese IP Office, State Intellectual Property Office (SIPO), the Second Symposium with the participation of 12 countries and three regional institutions. The participants agreed with the following Action Plan:

- a. To formally establish the academies' network – GNIPA, under WIPO's secretariat;
- b. To create the network website and provide teaching materials and other documents;
- c. To conduct a research with all network members and those interested in joining the organization in order to collect data and information on the academies;
- d. To study the feasibility of creating an International Journal on Education, Training and Research on IP;
- e. To study the feasibility of adopting an e-Learning platform compatible with all countries;
- f. To offer scholarships in postgraduate courses for network members; and
- g. To compile a list of books and publications on IP, which will be available on the website.

It is important to point out two actions already implemented. The first one refers to item *d.* of the Second Symposium Action Plan, in 2009 WIPO launched the electronic journal titled *The WIPO Journal: Analysis and Debate of Intellectual Property Issues*¹². It aims to promote an environment of debate and theoretical development on IP and its implications, with analytical and theoretical contributions of researchers, scholars, and those involved in the IP debate. The second one refers to item *c.* of the Second Symposium Plan of Action. A survey was carried out enabling the collection of data and their respective analysis that we will show later in the current paper.

In 2009, the third edition of the Symposium was held in Munich, attended by 10 countries and three regional institutions. The attendees defined the main issues to be discussed:

- a. To develop e-Learning compatible platforms;
- b. To study alternatives for funding and sustainability of the Academies in the long run;
- c. To propose studies for the assessment of methodologies, teaching materials and impact of the courses offered;
- d. To develop programs to exchange expertise and information in the IP field;
- e. To study modalities of scholarships to be awarded to the Master students of the Academies.

In 2010, the Fourth Symposium was held in Seoul with the attendance of 12 countries, two regional organizations, besides WIPO. The attendees agreed to develop studies in the following areas:

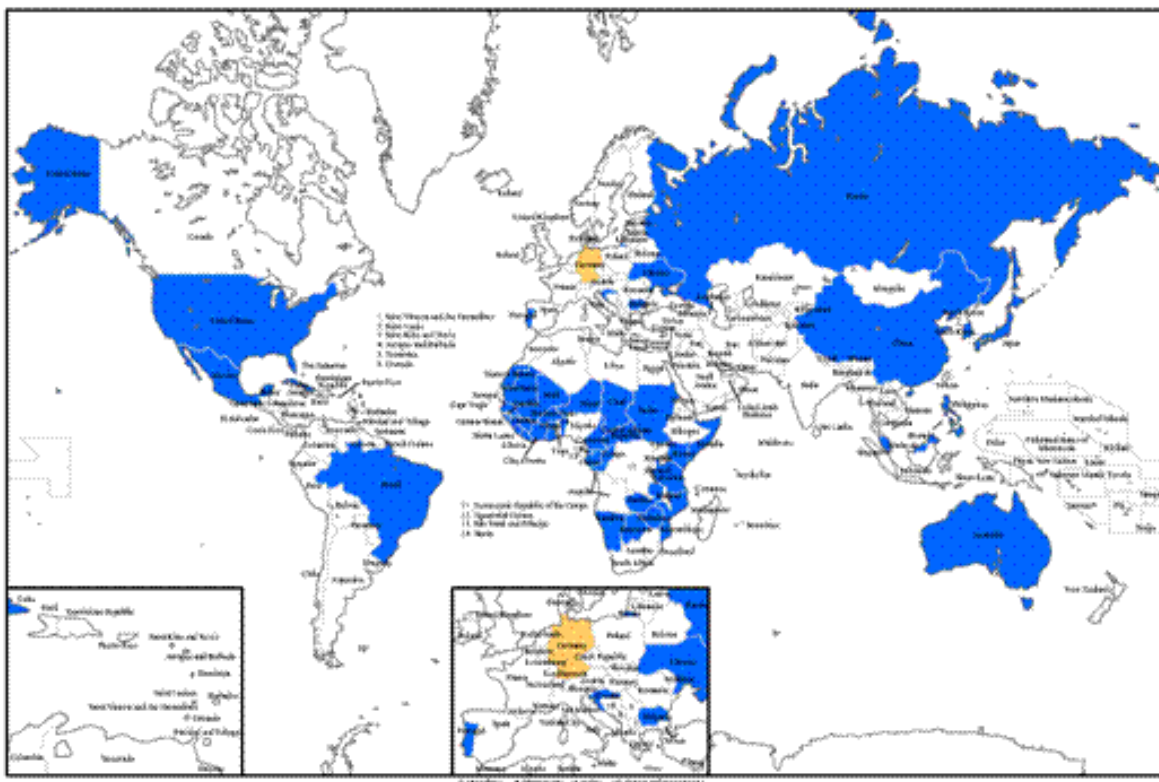
- a. E-Learning;
- b. New techniques to raise awareness on the importance of IP;
- c. Publication of researches and other subjects related to IP;
- d. Interdisciplinarity in IP teaching;
- e. Development of methodology for sector economic studies, based on the subject of Intellectual Property.

Until October 2010 nineteen countries participated at GNIPA as the following figure shows - Australia, Brazil, Bulgaria, China, Singapore, Croatia, Cuba, the Philippines, Japan, Macedonia, Mexico, Nigeria, Pakistan, Portugal, Republic of Korea, Russia, Switzerland and Ukraine; three

¹² See <http://www.sweetandmaxwell.co.uk/wipojournal/index.html>

regional institutions: African Regional Intellectual Property Organization (ARIPO)¹³, European Patent Office (EPO)¹⁴ and *Organization Africaine de la Propriété Intellectuelle* (OAPI)¹⁵, and WIPO¹⁶. There are other countries interested in joining the network after having had the experience of attending in previous Symposium. They are Sudan, Thailand, Turkey, Vietnam and Indonesia.

Figure: Location world map of the GINIPA’s IP Academies -2010.



Legend:

- Countries with IP Academies or supported by regional institutions that integrate GNIPA.
- WIPO (Switzerland) and EPO (Germany) headquarters.

Source: Elaboration from a map available at http://edit.freemap.jp/en/trial_version/edit/world. Accessed in Mar.10t, 2010.

5. Mapping of Academies: Analysis of Main Results

The IP Academies (IPAs) emerge to enhance the knowledge and expertise in this area. Their goals are to promote specialized professional training for IP Offices technicians; to promote the

¹³ Member states of ARIPO: Botswana, Gambia, Ghana, Kenya, Lesotho, Malawi, Mozambique, Sierra Leoa, Somalia, Sudan, Swaziland, Uganda, Tanzania, Zambia and Zimbabwe.

¹⁴ Member states of the European Patent Office: Switzerland, Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, United Kingdom, Greece, Croatia, Holland, Hungary, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxemburg, Monaco, Macedonia, Malta, Norway, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia, Turkey and San Marino.

¹⁵ Member states of OAPI: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Ivory Coast, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Mali, Mauritania, Nigeria, Senegal and Togo.

¹⁶ Currently, WIPO comprises 184 member states.

capacity building for IP and innovation system; to provide a better understanding of the IP system; and to offer training and courses in short, medium and long terms, including postgraduate courses.

It was possible to raise a survey with a very large and complex number of items (more than 30 variables), despite facing some challenges, such as poor literature about the subject, the pioneering nature of this survey, the socioeconomic diversity of the countries, and the lack of systematic information and data. The items investigated were:

- characteristics of the institution: size, infrastructure, budget and main activities;
- training and education programs offered: course types - regular, e-learning, postgraduate and other programs, as well as the number of participations along the academies' history;
- profile of students/participants: background areas, age, gender and professional activities;
- profile of professors/instructors, background areas, research areas, published articles and books, age and gender;
- motivations and perspectives: how and when the idea of establishing an academy emerges; reasons for the creation of an academy; challenges in establishing an academy; list of the weaknesses and strengths; partners; and goals for the next two years.

Questionnaires were sent to 18 IPAs members of GNIPA (Australia, Brazil, China, Singapore, Croatia, Cuba, the Philippines, Japan, Macedonia, Mexico, Portugal, Republic of Korea, Ukraine, ARIPO, EPO, OAPI and WIPO); and to three IPAs from countries interested in integrating GNIPA (Sudan, Thailand and Vietnam). From a total of 21 IP Academies, 17 responded the questionnaires, which comprises 81% of the total universe investigated.

Among the 17 IP Academies that responded the survey are the WIPO Academy, which works with the 184 member states of the Organization; nine IPAs in developing countries (Brazil, China, Croatia, Cuba, Mexico, the Philippines, Sudan, Vietnam and Ukraine); four IPAs in developed countries (Australia, Singapore, USA and Japan); two regional organizations (ARIPO, which comprises 16 English-speaking African countries and EPO, which comprises 36 countries).

The next section presents the data collected and the analysis of the main figures, aiming the construction of IPAs' first map.

5.1. Intellectual Property Academies Features

This section describes some aspects of the IPAs features. It presents their foundation year, institutional linkage, main goals, the audience targets of their training courses and other programs.

There are IPAs established over a decade ago as those of China (1994), Ukraine (1996), and WIPO (1998). Among the 17 IPAs that responded the questionnaire, 13 were established after 2002. Mexico IPA was still being structured at the survey time. Croatia and Portugal IPAs were established in 2008, according to the following Chart “IP Academies – year of foundation and linkage”.

As regards institutional linkage, it can also be observed in the same Chart that 10 of them are linked to national IP offices, except for cases of regional organizations (EPO and ARIPO), and WIPO itself. Two IPAs are linked to universities, Australia IPA is linked to Melbourne University, and Sudan IPA is linked to the University of Khartoum. There are also independent IPAs that are not directly linked neither to national IP offices nor to universities. This applies to Singapore IPA as a nonprofit organization, and Ukraine IPA as an autonomous public institution linked to the Ministry of Education and Science.

Chart: IP Academies – Year of Foundation and Institutional Linkage.

COUNTRY	IP ACADEMIES	LINKAGE	FOUDATION
China	China IP Training Center (CIPTC)	Office	1993
Ukraine	National Institute of Intellectual Property (SIIP)	Ministry of Education & Science	1996
WIPO	WIPO Worldwide Academy (WWA)	WIPO - Worldwide Organization	1998
Australia	Research Institute of Australia (IPRIA)	Melbourne University	2002
Singapore	Academy (IPA)	Non profit Organization	2003
Cuba	Oficina Cubana de la Propiedad Industrial (OCPI)	Office	2003
EPO	European Patent Academy (EPA)	EPO - Regional Organization	2004
Japan	National Center for Industrial Property Information and Training (INPIT)	Office	2004
Vietnam	Research and Training Institute (RTC)	Office	2004
ARIPO	ARIPO Regional Training Center (ARTC)	ARIPO - Regional Organization	2005
Brazil	Science and Innovation Academy (ACAD)	Office	2006
EUA	Global IP Academy (GIPA)	Office	2006
Sudan	Academy (IPAC)	Khartoum University	2007
Philippines	Research and Training Institute (IPRTI)	Office	2007
Croatia	Academy	Office	2008
Portugal	PI - PT	Office	2008
Mexico	IP Academy	Office	in process

The IPAs' objectives can be organized into three axes: specialized professional training; research & studies; and dissemination of a culture of Intellectual Property, as described below:

- (i) *Specialized Professional Training* – to build skills in IP through training in regular short, medium or long term courses, face-to-face or distant learning courses, including academic training through postgraduate programs (Master and PhD), with a multidisciplinary approach to the teaching of disciplines such as economics, law, science, management and marketing;
- (ii) *Research & Studies* – to stimulate the development of research and studies that can show the relationship between IP and technological, economic and social development, enabling the creation of a critical mass to discuss the theme in the academic environment, besides generating and disseminating high-level specialized knowledge on the subject, therefore contributing to the strengthening of academic production and formulation of appropriate and effective public policies;
- (iii) *Dissemination of a culture of Intellectual Property* – to promote an environment that stimulates public debate on IP issues and related matters, including the correlation with innovation policies and economic development, as well as to promote the awareness of the public and private sectors on the effects of IP protection upon the exploration and management of intangible assets.

It is interesting to observe that these three axes are similar to the basic functions of a university – “teaching, research and extension”, which correspond to the IPAs objectives - “specialized

professional training, research & studies, and dissemination of a culture of intellectual property”, respectively.

The IPAs’ target audiences can be classified into five groups: researchers & inventors, business managers, IP professionals, policy makers, officials of government bodies, students and members of the civil society. Such diversity and range of target groups indicate IPAs intention to act beyond the traditional legal-technical issues in the area, enabling reflections on the IP role in much broader and diversified social environments.

5.2. The Infrastructure of Intellectual Property Academies

The IPAs infrastructure is quite diverse. It is characterized by data collection of items such as facilities, i.e., number of classrooms, video-conferencing rooms and auditoriums, as well as libraries, library collections, and production of teaching materials. Data were also collected regarding the work teams, the number of individuals involved, and category of labor contract, with a historical series from 1998 to 2007. The last item concerns IP Academies’ budget and its evolution, in a historical series from 2002 to 2008.

The overall IPAs have computers, Internet access, classrooms and auditoriums. Nearly all of them have libraries. The academic and teaching materials produced by nine IPAs (Australia, China, Croatia, USA, Portugal, EPO, ARIPO, Vietnam and Ukraine) is a relevant fact since their dissemination can strengthen the Global Network, enabling cooperation and partnership between the IPAs in a field that requires pedagogical knowledge that is not always available. The bibliographic collection informed by the IP Academies totalizes over 150,000 books, most of which are available at WIPO library which comprises 135,000 books.

Four categories of officials were established to ensure a better perspective on the size of the work teams or the personnel of IPAs and their structure:

- (i) Permanent staff – the official who is part of the permanent staff and has a labor contract with the institution;
- (ii) Outsourced or temporary staff – one that is part of the team, can play important roles, but is not permanent, his labor contract is outsourced and/or temporary;
- (iii) Fulltime professors/instructors – professionals dedicated to teaching and research, but who are not part of the team; they can be permanent or not, and they devote themselves full time to IPA’s activities, and
- (iv) Part-Time professors/instructors – professionals dedicated to teaching and research, but who are not part of the team; generally they are invited to participate or are research associates who conduct part-time activities at the IP Academies, in addition to their own.

The following Table shows that the overall 17 surveyed IPAs gather, in their teaching and research activities, 1,500 individuals. From this amount, almost 1,200 professors/instructors, permanent or casual, are experts in the field of Intellectual Property, contributing to the strengthening of education in this area. The table also shows that the team of permanent employees is generally small, and the largest team is in China IPA which comprises 35 individuals. The IPAs of Croatia,

Portugal, Japan and Ukraine do not work with outsourced personnel, whereas China IPA has 144 employees in this category.

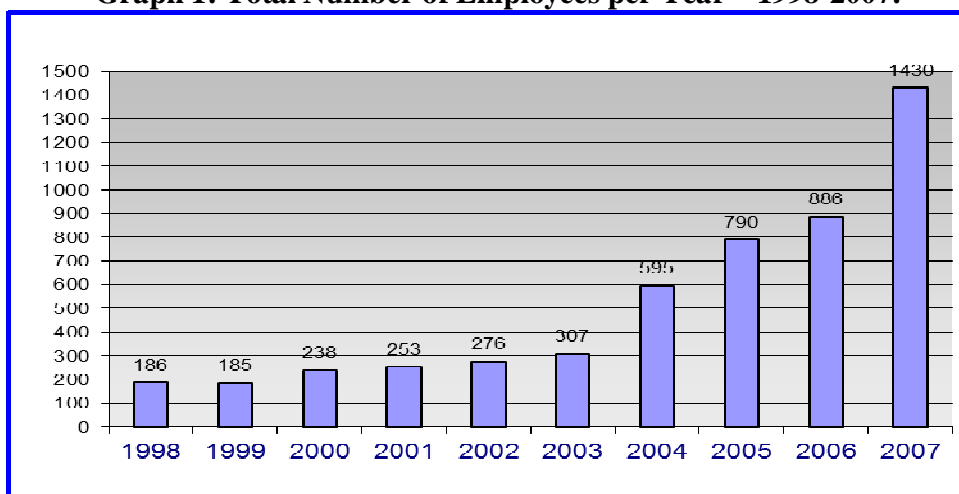
The number of fulltime professors/instructors stands out in Australia, Brazil and Ukraine IPAs. It is important to highlight that the aforementioned IPAs offer post graduation courses. As regards the number of part-time professors/instructors we observe a significant number of professionals involved in this category, especially in the IPAs with regional scope, EPO and China, which have 709 and 247 part-time professors/instructors, respectively, totaling 1,165.

Table: Number of Employees – 2007-2008.

IP Academies	Permanent staff	Outsourced staff	Fulltime professor	Total 1	Part-Time Professor	Total 2
1 Australia	5	2	10	17	30	47
2 Brazil	10	4	8	22	35	57
3 China	31	144	2	177	247	424
4 Croatia	5	0	0	5	20	25
5 Cuba	0	5	0	5	6	11
6 Mexico	NR	NR	NR	NR	NR	NR
7 United States	8	2	0	10	18	28
8 Phillipines	0	5	0	5	18	23
9 Portugal	2	0	0	2	15	17
10 EPO	20	10	0	30	709	739
11 WIPO	17	2	0	19	NA	19
12 Japan	20	0	0	20	NA	20
13 Sudan	2	10	0	12	10	22
14 Vietnam	7	10	4	21	12	33
15 ARIPO	3	25	0	28	25	53
16 Singapore	10	NA	NA	10	NA	10
17 Ukraine	25	0	10	35	20	55

In Graph 1 we observe the number of individuals in the work teams in the last 10 years. This number is growing steadily and, between the years 2006 to 2007, it shows a 60% increase. The growth can be explained by the number of part-time professors/instructors reported by the EPO.

Graph 1: Total Number of Employees per Year – 1998-2007.

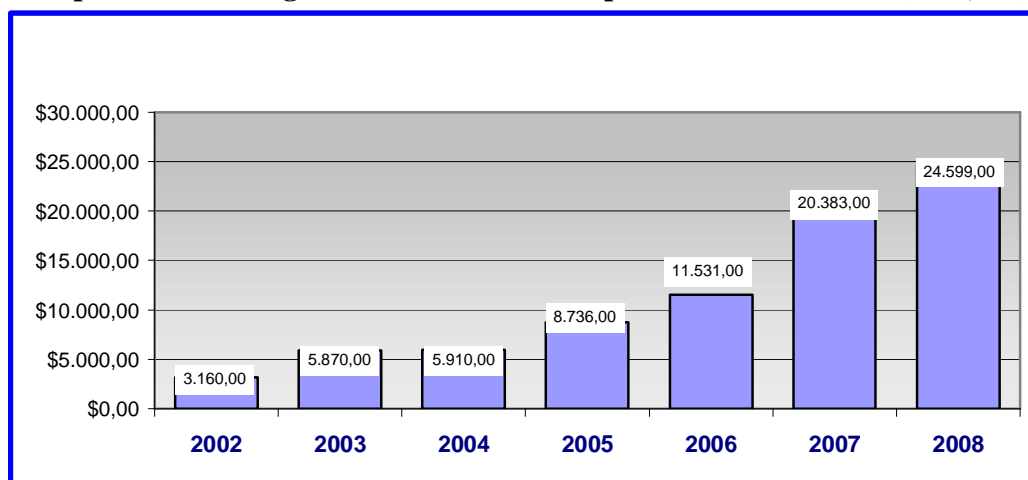


The item about budget¹⁷ features a significant diversity between small IPAs such as Cuba and Sudan, as well as large ones as WIPO, Japan, USA, EPO and China. Singapore and China IPAs have similar budgets, and the value reported by Singapore is still higher than that of China. The set of the 14 IP Academies that reported their budgets totalizes approximately US\$ 20.3 million in 2007.

It is noteworthy that 90% of the total budget for 2007 are the sum of only six IP Academies - China, USA, EPO, Japan, Singapore and WIPO, and all are above \$ 2.5 million.

In Graph 2 we can observe a continued growth of the total budgets reported by the IPAs on human resources development, and training activities, at an average annual rate of growth of around 24%, from 2004 to 2008.

Graph 2: Total Budget of the IP Academies per Year – 2002-2008 (US\$ 1,000).



A relevant aspect is the origin of the resources used by the IPAs. According to the data collected, the vast majority (12 IP Academies) has 100% of budget resources from the public sector since they are linked to the national IP offices. Some IPAs are making efforts in order to increase the participation of the private sector in their budgets, which was in the range of 5% in EPO and ARIPO IPAs, 10% of Australia and Ukraine IPAs, and 25% in Singapore IPAs. Over the years, the total budget has grown due to the establishment of new IP Academies, but their individual budgets also tend to present a growth curve.

5.3. Programs of Training, Capacity Building and Human Resources Development

We chose to divide the courses into four types in order to present the results related to the number of participations in several courses:

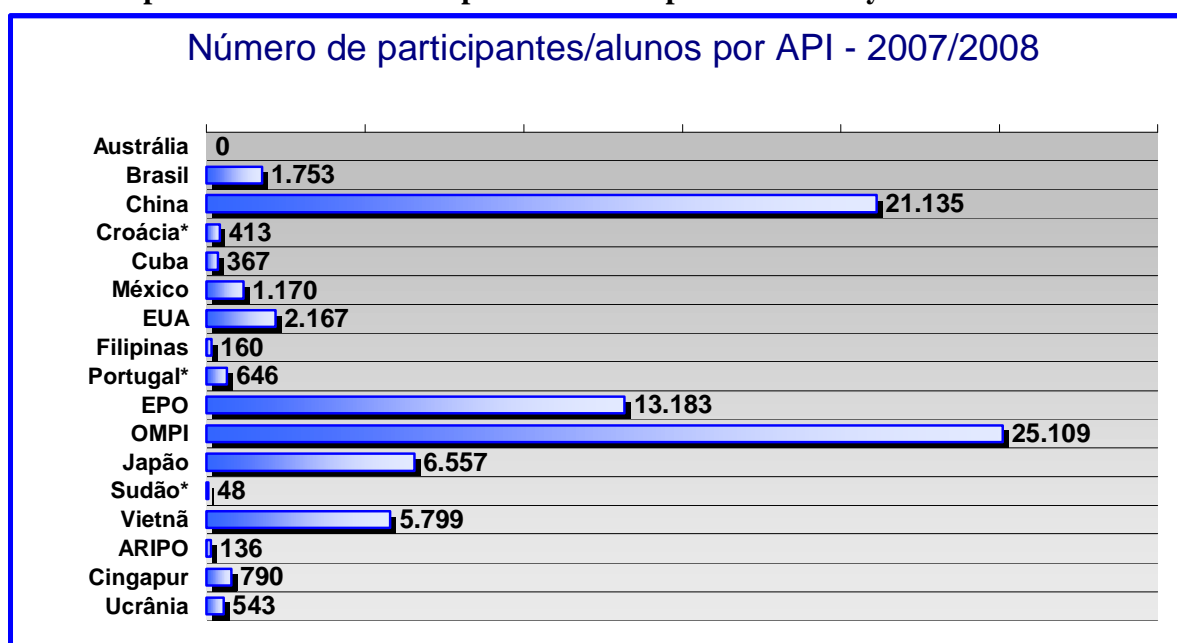
- (i) *Regular courses* –short and medium terms courses, which belong to the portfolio of courses regularly offered by the IPAs, with a well-defined target audience and a pre-established syllabus;
- (ii) *Distance learning courses* –short, medium or long terms courses, with pre-defined syllabus and target audience, offered by Internet, online or not;

¹⁷ Croatia, Mexico and Portugal did not report the budget of their respective IP Academies. WIPO budget is of public domain and it is available at the site www.wipo.int.

- (iii) *Postgraduate courses* – academic courses addressed to training specialists in the field. They are offered in different levels - specialization, master’s or doctoral degrees; and
- (iv) *Other programs* – courses offered according to demand. They meet a specific need for a particular target audience, or they are offered to wide target audiences, such as seminars, conferences, workshops, etc.

Graphic 3 shows the number of participants/students in the various courses offered during the two-year period 2007-2008. Sudan IPA has the lowest number of participants, while WIPO IPA has the highest number, 48 and 25,109 participants, respectively. Australia did not report this topic. From the overall 80,000 participants/students, 74% come from three IPAs, China, EPO and WIPO, which are the only IPAs that offer a significant variety of distance learning courses, besides having a regional and international scope. The number of students enrolled in the distance learning courses comprised 98%, 56% and 44% of the participations in WIPO, EPO and China IPAs programs, respectively.

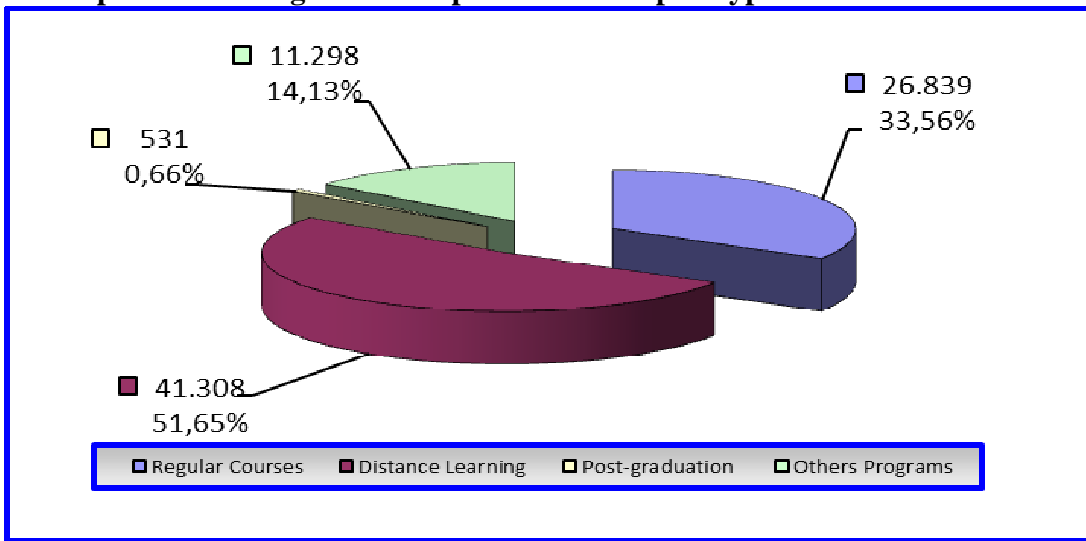
Graph 3: Number of Participants/Students per IP Academy – 2007-2008.



Graph 4 reports the participants/students percentage distribution according to the type of courses, showing a predictable distribution, i.e. the distance learning courses participated with 57% of the total amount, the regular courses with nearly 35%, other training programs with 7%, and participations in postgraduate courses with less than 1%.

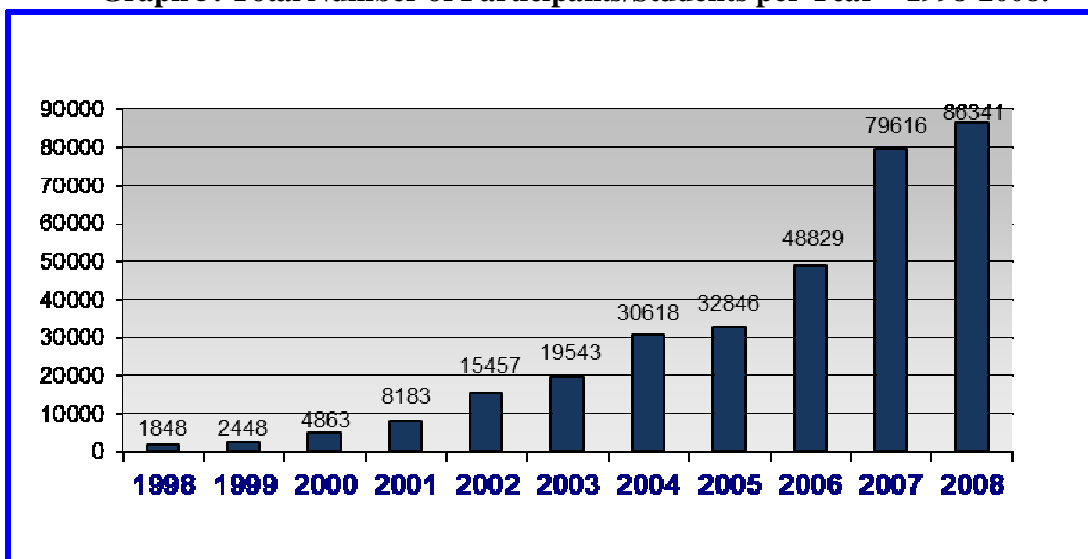
Nearly half the IPAs offered postgraduate courses. Brazil, China, Cuba, USA, Portugal, WIPO, Singapore and Ukraine totalized 531 participations in postgraduate courses. We can highlight the contribution of China, Cuba and Ukraine with the highest numbers of participation in this type of course, with 135, 105 and 110 students, respectively, in 2007.

Graph 4: Percentage of Participants/Students per Type of Course – 1998-2008.



The total number of participations over the past 10 years can be seen in Graph 5, where there is a sharp and constant growth curve. There were over 330,000 participations in the various types of courses developed by the 17 IP Academies, at an annual average growth around 50%, from 1998 to 2008.

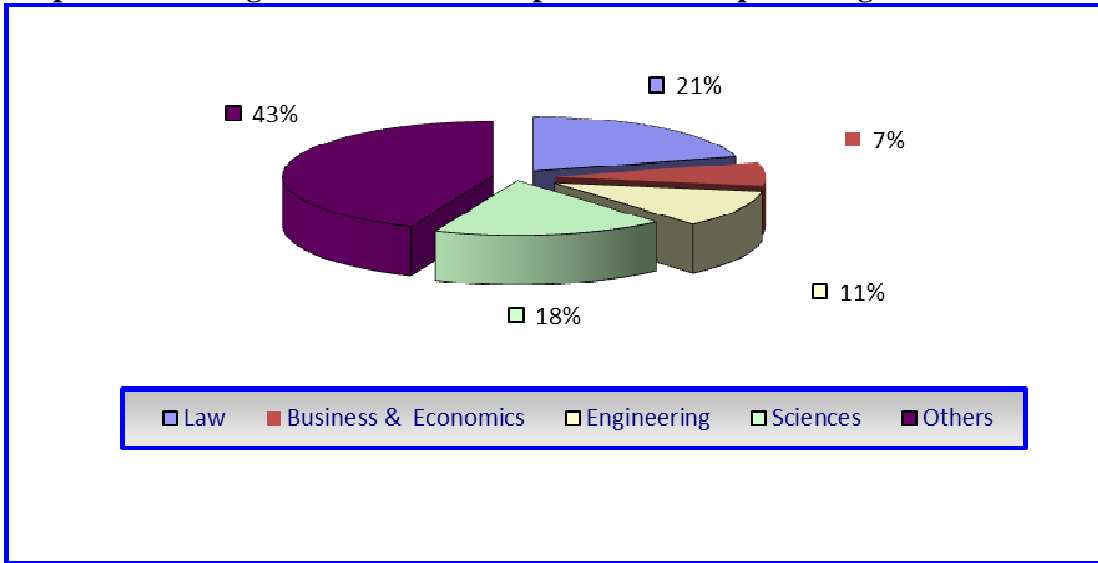
Graph 5: Total Number of Participants/Students per Year – 1998-2008.



5.4. Profile of Participants and Professors of IP Academies

We adopted the following background areas: Law, Economics/Business, Engineering, Science/Technology and Others. Eleven IPAs - China, Cuba, USA, Philippines, Portugal, EPO, WIPO, Vietnam, Sudan, ARIPO and Singapore reported the estimate of participants/students per background area. Graph 6 shows the estimate that out of the overall data, 21% of participants/students are in the field of Law, 18% of Science, 11% in Engineering, and 43% are from other unspecified areas.

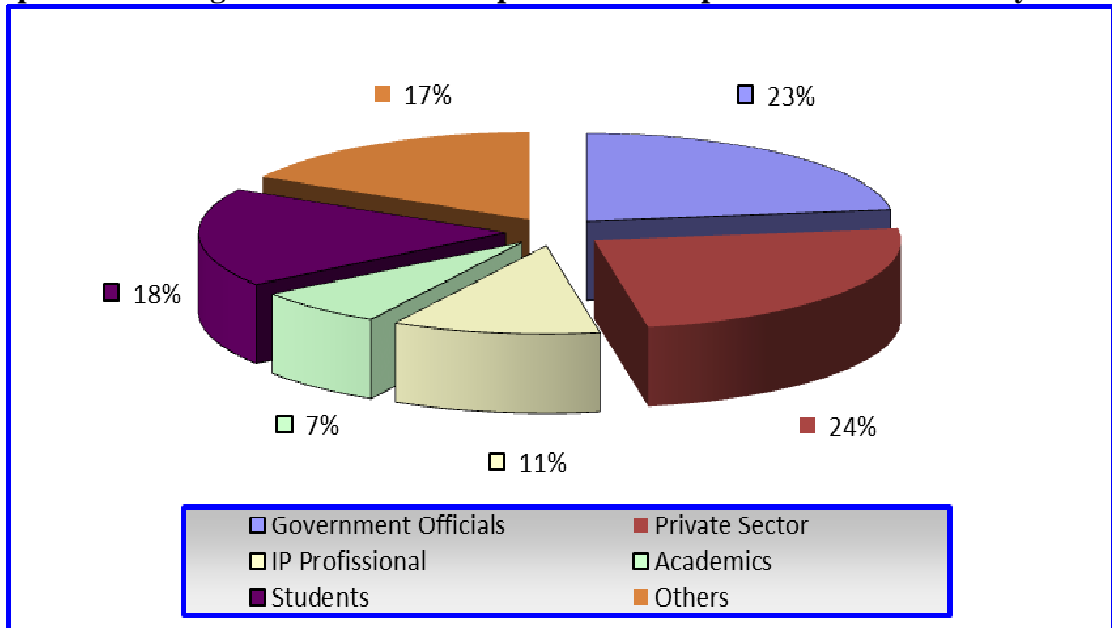
Graph 6: Percentage Estimate of Participants/Students per Background Area – 2007.



As regards the participants/students professional activities, we adopted a classification into six types – government officials, private sector employees, IP professionals, academics, students and other activities. The same IPAs that reported the background area also reported the professional activities.

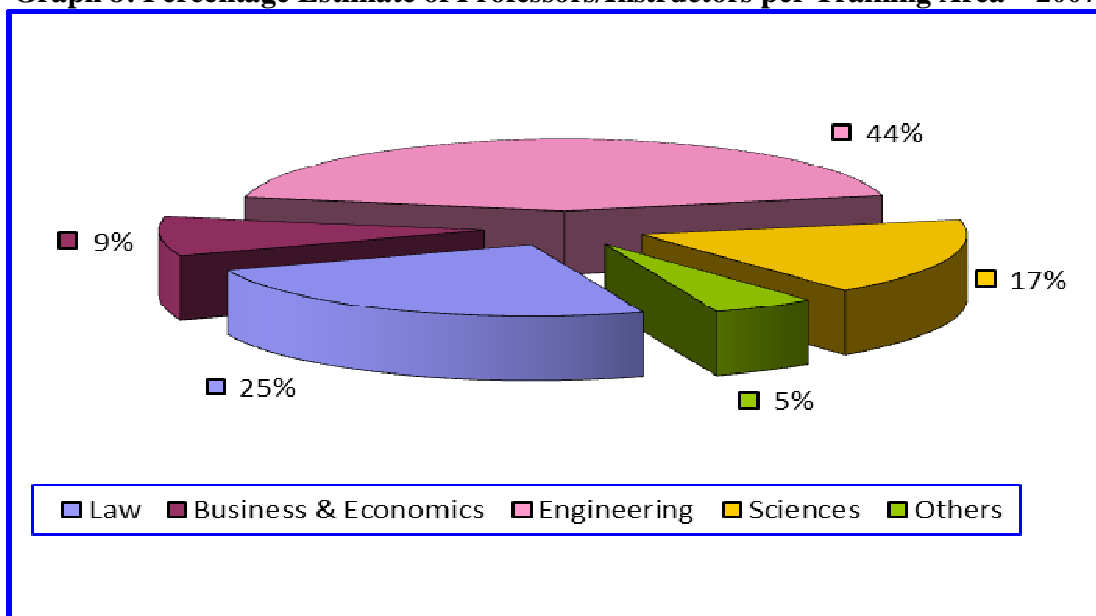
Graph 7 shows the estimated percentage of participants/students per professional activity. It points out that half of them are either employed in the private sector - 24%, or are government officials - 23%. Students, IP professionals and academics are 18%, 11% and 7% of the participants/students, respectively.

Graph 7: Percentage Estimate of Participants/Students per Professional Activity– 2007.



Graph 8 presents the percentage estimates of professors/instructors background area. The majority of the professors/instructors come from the Engineering area - 43%, followed by Law - 25%, Science - 17% and Economics/Business Administration - 9%. It is interesting to note that, while 43% of professors/instructors are from the Engineering area, in the case of participants/students this percentage reaches 11% only. Meanwhile, the percentage of professors/instructors and participants/students in the area of Law practically are the same, 25% for professors/instructors and 21% for participants/students, respectively.

Graph 8: Percentage Estimate of Professors/Instructors per Training Area – 2007.



5.5. Motivations, Challenges and Perspectives

The responses from the IPAs indicate that their foundation was due to three main reasons: (i) the new global context of a knowledge-based economy; (ii) the lack of a multidisciplinary expertise in the IP area; and (iii) an increasing demand for a qualified technical staff in the field.

(i) *The new global context of the knowledge-based economy.* The first reason concerns the new economic situation that has arisen due to an increase in the global trade flow, by an increase in foreign direct investment (FDI), and by an increase in the number of patent applications. The new knowledge-based economy implies a larger amount of intangible assets that begin to have their trading relationships ruled by the IP system. Besides, the rapid development of new technologies leads to an increase in the complexity of the patent technical analysis, and creates the demand of a growing number of examiners with expertise in a wider range of knowledge.

(ii) *The lack of a multidisciplinary expertise in IP area.* The second reason for the creation of IPAs is the narrow understanding of the theme of IP among the innovation actors such as governments, private sector, and universities. For Brazil IPA “*there is a lack of critical mass in the understanding of intellectual property and also of the need for disseminating a culture of intellectual property*”, or, according to WIPO “*The demystification of intellectual property and the promotion of*

greater awareness of Ip is very relevant. Such awareness would enable people in all countries to gain greater appreciation of the importance of intellectual property as a tool for wealth creation; also, it would help to engender respect for the intellectual property rights of the creators". Four IPAs - Australia, ARIPO, the Philippines, and Portugal indicate that the emergence of IPAs took place in response to Governments policies and strategies.

(iii) *An increasing demand for a qualified technical staff in the field.* The third motivation concerns the growing demand for qualified and specialized professionals. The lack of educational institutions in IP with a strategic vision and multidisciplinary approach is a very important point perceived by the national IP offices and governments. According to their report:

"(...) to develop practical IP training and educational courses for IP professionals, business managers/leaders, inventors and creators and; 2) develop various IP thought leadership programmes including conducting cutting edge multi-disciplinary research into IP and related areas, and organising high level conferences and roundtables". (SINGAPORE IPA);

"(...) USPTO brings foreign government officials to the United States to learn, discuss and strategize on global IPR protection and enforcement. Our program goals include: fostering a better understanding of international intellectual property obligations and norms; exposing participants to the US model of protecting and enforcing intellectual property rights, and promoting discussion of intellectual property issues in a friendly and supportive environment". (EUA IPA);

"(...) to foster the development and harmonisation of education and training in the field of European and international patent-related intellectual property law and practice in the present and future member states of the European Patent Organisation for the benefit of the European patent system; to facilitate the process of accession to the European Patent Convention and to support the integration of new member states; to promote equal access to training opportunities related to international and European patent law and practice in all current and future EPC contracting states; to contribute to Europe's innovation capacity by improving the expertise and skills of the users of the European patent system". (EPO IPA)

In the analysis of the IPAs major challenges, translated into weaknesses and strengths we observed a convergence in the responses. On the one hand, the reduced amount of qualified instructors and researchers is seen as weakness by the IPAs, on the other, the availability of internal skills in the national IP offices of individuals with expertise is considered a strength. The skills in IP offices are used in the IPAs through their technical bodies at functions like instructors, researchers, counselors, tutors, and through the development of teaching materials and syllabuses. Moreover, the support offered by the IP offices, WIPO and other partners and clients of the IP system is considered a strength for most IPAs.

Examples of weaknesses and strengths show IPAS different stages of development. While Mexico IPA reveals a lack of infrastructure in education and new technologies as a weakness, EPO IPA points out that one of their strength is precisely the existence of a great infrastructure and expertise in those areas, as they reported:

"IMPI does not have trained personnel on Education nor on new educative technologies; does not have an Electronic infrastructure to develop, organize and maintain distance learning courses; does not have facilities that could meet the needs of an Academy; does not have personnel engaged in research activities on IP matters". (MEXICO IPA);

“ (...) it's profound experience and know-how in the following areas: organising courses, conferences, seminars, workshops and symposia, issuing publications and providing a platform for the exchange of expertise and a forum for discussion; developing education and training courses based on e-learning technologies, dedicated training tools, material and publications; running and further developing a European web-based platform for online patent-related intellectual property training, information and documentation, including an international intellectual property training database; co-operating with the national patent offices and organisations or associations of the present and future member states, thereby setting up a European network of offices, institutions, organisations, associations and experts acting in the patent-related intellectual property field; co-operating with international organisations and education institutes in the field of intellectual property”. (EPO)

The last item analyzed refers to the main goals of the IPAs for the coming years. The responses express a need to continue the work that has been developed. The consolidation of existing education and research programs, in addition to supporting new projects to expand their performance is one of their goals. Another one is to offer training programs with quality and relevance to users. They wish to structure and consolidate IP graduate programs, as well as establishing partnerships with universities to include IP in their curriculum. Other issues reported by most of the IPAs are the need for expanding and strengthening a network of partners, the importance of creating mechanisms to evaluate the impact of short term courses offered regularly, and the desire to become self sustainable organizations in the coming years.

The IPAs are established with a broader and multidisciplinary vision. Hitherto IP rights were seen as a technical legal issue of property protection. Nowadays this subject acquires a strategic business perspective within the field of innovation management and knowledge. The focus is on understanding what IP is and the potential uses of its mechanisms to generate wealth and social/economic welfare in countries and regions.

6. Final Remarks and Conclusion

The information below summarizes the key findings of this survey that aimed to map the characteristics of the IPAs comprised by the Global Network:

- IPAs are a recent phenomenon. Seventy percent of them were founded after 2002;
- Despite the differences in structure and diversity of models, the goals are similar: specialized professional training; research & studies; and dissemination of a culture of Intellectual Property;
- There is also a convergence in the target audience that comprises researchers & inventors, business managers, IP professionals, policy makers, officials of government bodies, students and members of the civil society;
- Over 1,500 individuals are part of the work teams and are involved in IP teaching and research – 1,200 of them exert the function of permanent or temporary professors or instructors;
- The IPAs budgets have been growing at significant rates since 2004: average annual rate of 24%;
- Over 330,000 individuals have been trained at an average annual rate of growth of 48% in the last 10 years;

- There are postgraduate courses in half of the 17 Academies;
- Estimates indicate that the highest percentages of participants come from Science and Technology (19%), and Law (20%);
- The professional activities of the participants indicate that 24% of them are from the private sector and 22% from the public sector;
- The majority of professors, that is, 43%, are from Engineering and 25% from Law.

A systematic monitoring of the IPAs' functioning can generate more conclusive information and its analysis can provide a base for better management of these institutions. Moreover, we expect that the data collected in this survey may help to elaborate further issues. In this sense, we could present as future tasks, among others:

- A database development on training experience with the establishment of relevant indicators should improve the IPAs management ;
- Teaching material analysis in order to ensure the diversity of the content offered and, therefore, investigate whether such contents respond to concerns and priorities in public policies or to the needs of the private sector to achieve gains in competitiveness;
- Partnership evaluation, with the various actors, such as teaching and research institutions, technical schools, professional associations, Government, etc. helps to identify the pros and cons of those relationships.

Collecting, organizing and examining data enabled the identification of institutionalization trends of IP teaching activities. We noted, however, that such trends are uneven as regards their integration to the innovation policies. Besides, a convergence shall be established between the missions defined for each IPA, based on government strategies, and the market needs. Hence, it would be possible to ensure conditions of IPAs sustainability and institutional relevance.

Many are the possibilities of exploring issues around the IPAs role, its scope of operation and the expectations they have generated from the increasing number of significant programs they offer. Indeed, further work on IP teaching and research should find answers to many questions since the formation of professionals capable of acting in a knowledge-intensive environment is presented as an important factor for the economic and social development of countries.

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