Comparative analysis of ICT in public–private systems: The OHIM case in the European Union and the Internal Revenue System in Chile.

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Abstract

This study presents a comparative analysis of Information and Computer Technology (ICT) integration in two organizations that combine public and private roles: Office for Harmonization in the Internal Market (OHIM) in the European Union (EU) and the Internal Revenue System (IRS) in Chile. The former registers trademarks and designs in the EU, the latter audits enterprises and individuals in the State of Chile, supervising their compliance with tax-laws. Expert knowledge for both institutions is assumed as an organizational asset. Accordingly, OHIM experts and IRS auditors systematically introduce ICT tools for e-government and collaborative work, which is manifest through network and strategic alliances. This study also provides analysis concerning their functions and operations with the integration of ICT, identifying the critical aspects of the technological integration process through SWOT analysis. Then, the Corporative, Business, and Operational Levels frame the criteria for comparing both organizations taking as points of reference outcomes in productivity, effectiveness and efficiency, where the most outstanding differences and similarities are described. Among those critical factors analyzed, governance and coordination issues, budget allocation, and the decision-making process between public-private actors are prominent, as well as their Chiefs’ leadership, business models applied, processes quality, and knowledge management. Finally, the paper considers some tendencies shared by both organizations where the development of ICT goes hand in hand with business models based on human capital, transparency, collaboration among agents and relations with citizens.

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1. Introduction.

The implementation of an Information System in a service organization demands the definition of technological support that enables the sustention of a coordinating network between public and private companies. Furthermore, it is necessary to incorporate e-government policies that support information sharing between the public and the private sector, in order to transform implicit knowledge into explicit.

Making large investments in Information Technology (IT) networks, may decentralize the structure of an organization, flattening it with changes not only the mechanisms of governance, but also its culture. Knowledge exchanges are accelerated and work efficiency increases; innovation is diffused among organizations, generating comparative advantages.

By establishing IT, services can pass from standardized models to more personalized services which are tailored to fit customer needs. These models must protect confidential information, promote citizen participation and be flexible enough to regulate changes (legislation). They must achieve technological maturity as well with platforms that suit the organization and which are ready to track trends, such as resource sharing, on-line availability, establishing single points of contact with the public, and promoting interoperability in which an information exchange model exists among organizations.

The European Commission (EC) defines e-government in terms of the use of tools and systems that enable Information Technology and Telecommunications (ICT) to provide better public services to citizens and businesses.

Some authors call attention that ICTs are focused on transactional type interactions, not taking their attributes in multi-channel networks, focusing on the TI and not in customer models and have the logic of digitizing services rather than re - designing it.

2. Case: The Office for Harmonization in the Internal Market (OHIM).

2.1. Function and Operation

The Office for Harmonization in the Internal Market (OHIM) works as an agency in every country of the EC. It receives orders from each its Member States’ Trademark and Design Department. Because it receives a state budget, OHIM has little autonomy. The intellectual property (IP) rights it protects are significant for both large and small companies operating in the EU market. The national and regional trademarks, drawing, and model registers are complementary to OHIM.

The Legal Mandates of OHIM were created in 1993, based on European laws, for domestic markets with low barriers to entry and freedom of transactions in goods and services (competitive markets). They have evidence that the rights of the Intellectual Property (IP) are under constant assault through piracy and falsification.

In 1996, the Trademark and Design Registration Agency of the European Union started its operations in Alicante. The Agency’s responsibilities to the European Community were established in 2003. In 2008, the European Community was strongly affected by an economic slowdown, during which low rates of patent rights were objected to because it was believed that they increased the competitiveness of community. Intermediary companies advise and manage OHIM, helping clients in paperwork and taking care of 90% of the complexities related to business processes.

A president and vice-president, whose positions last five years with the option of renewal for an additional term, head OHIM. The Commission is the Agency legal authority, ruled by the labor laws and Trademark and Design regulations of the EU. Any changes that may occur are regulated by the Commission and The European Council. There is also a Management Board composed of the department managers for intellectual property rights policies, which provides leadership to the Agency.

OHIM closed 2012 with positive results. In total, 109,000 new applications for trademarks and more than 82,000 community drawings and models were approved, which represents a growth of 3% and 5%, with respect to the year of 2011. In 2013 it is predicted that the time needed to process applications for trademarks...
will be reduced from 10 to 8 weeks and for registrations, from 25 to 23 weeks.

The design of the headquarters of OHIM stimulates dynamism and creativity, thus promoting interaction among workers.

2.2. Information Technology Setup

Before setting up Information Technology, there were administrative issues in which customer’s orders were inefficiently evaluated and the assigned staff was unable to cope with demands.

The Agency started the operation of registering its own trademarks in 1996. Between 1996 and 2009, due to an increase in productivity and the integration of both e-business tools and web-based information, the fees charged to companies for registering their trademarks and designs were lowered. Technology integration challenged the rules in public administration, changing work methods into more flexible procedures (telework), provoking opposition and lack of interest in some stakeholders. In 2009, the Member States negotiated a cooperative fund to be shared between OHIM and the State offices for the improvement and modernization of trademark and design systems. The Cooperative Fund is a support foundation that works to harmonize the construction of a European network, providing favorable work systems for trademark, drawing and model users. Figure 1 shows the model of interaction of the digital platform with the customers.

![Fig. 1. Model of interaction of the platform with the customers.](image)

2.3. Identification of Critical Aspects

In integrating technology, the following aspects were defined as critical:

- Creation of new contractual policies under the same labor conditions held in the European Union, with high work flexibility and salaries. Young people are hired and work functions are assigned to fit their motivations.
- Trademarks are registered with a word, phrase, symbol or drawing to identify goods and services protected by IP. Innovations and Research for development are also registered.
Tele-work is implemented, work functions for those affected are re-designed, and security measures are taken into account to protect files and data transmission to a central data base of the enterprise. Work performance assessment and tracking surveys are applied.

OHIM States’ website is high quality, productive, user-friendly, and profit-oriented and users obtain improvements in accessibility, punctuality and decision-making. It is framed in an Integral Quality Management System.

Productivity increases due to e-business integration, the set-up of new formats and forms, the automation of information and web-based processes, and the sharing of standards, which leads to a gain in interoperability.

Recruitment of highly experienced managers.

Interoperability, more resources invested in outsourcing projects to strengthen the trademark and design of the new European network. The network becomes a part of the Trademark Trilateral Offices, a group that includes the IP offices of the United States, Japan and Europe.

Coordination among countries, governments, public-private sector, and private companies.

European Intellectual property regulation systems are created. Regulations for data management were initially documented in paper.

In 2008, the European Community was deeply affected by an economic slowdown. In this way, when rates were reduced for the register of trade marks in the community, were questions as to whether this could make the market less competitive?

OHIM has to coordinate actions with all Member States in the European Community. Some conflicts arise related to governance, power issues, and budget allocation, as some countries face difficulties in times of economic crisis while others are better off. Attaining excellence and quality are necessary conditions for the Office to meet the objective of making its practices converge into the creation of a European network of trademarks, drawings and models.

3. Case: The Internal Revenue System of Chile (IRS).

3.1. Function and Operation

The IRS is the State Audit Institution (SII) of Chile and has been chosen as a case study because, in 2003, it was the winner of the United Nations Public Service Award (UNPSA) in category three for ‘Innovations in the Public Service’ which took place in New York. The principal task of the IRS is to:

- Provide administrative interpretation on tax provisions, settle rules, give instructions and enact orders with the aim of assuring their application and auditing.
- Supervise compliance of tax laws that have been entrusted; become familiar with and determine as a court those claims filed by taxpayers, and hold State defense in Court for lawsuits concerning the application and interpretation of tax laws.

In relation to taxpayers, the IRS has to create tax awareness among users, providing them with information about the destinations of taxes and the penalties they face for not fulfilling their duties.

In the organizational structure of the IRS, the Director is the highest authority appointed by the President of the Republic. The Director centralizes decisions to a level that affects the organizational development. However, in spite of this, management is decentralized. The Director has the authority to hire and assign functions to staff.

Nine National Sub-Agencies depend on the Director and are responsible for regulating, auditing and assessing land tax, jurisprudence analysis in tax matters, administration, fostering the development of Information Systems, conducting research on new economics-taxing studies, proposing policies to Human
Resources, and serving as an Internal Audit. Regional and Large Tax Paying Agencies also depend on the Director.

With regards to Human Resources, employees have two kinds of contracts: Plant employees hold a permanent position, whereas employees under a temporary contract hold an unsteady position, but may be hired for a long time.

The Human Resources management model includes:\cite{13,14}:

- Auditing actions that require State Intelligence for detecting potential risk of fraud.
- Service delivery to help taxpayers comply with their tax duties.
- Fostering support lines inside the Service by developing human and technological resources.

3.2. Information Technology Setup

By the end of 1995 and during 1996, the IRS started to include, in its Strategic Plan for updating the State, the use of Information Technologies. In 1996, it provided general information to users, helping them with the documents necessary to complete their income statements. In 1997, IT integration was very important as the IRS was determined to lower the high rate of tax evasion, which had reached 39.2% for income tax and 19.7% for value-added tax at that time. The government also intended to meet the international transparency and social inclusion standards. Between 1998 and 2000, as website use became more widespread, and it was enabled to do an increasing number of transactions, the website was re-designed \cite{13,14}.

Since 2001, website security for the IRS has been integrated into e-government policies, in such a way that users have a sense of security when entering their password and identity registration number. Applications of e-government, driven since 2001, aim to deliver an information system to citizens, carry out efficient and effective transactional services, track their taxing position, and offer enquiry services to third parties (e-government file Chile) \cite{14,15,16}.

Since 2002, public-private alliances have emerged to develop e-tools. The IRS devises strategic projects to consistently decrease income tax evasion. Among those projects, there is a strong focus on taxpayer segmentation, continuous updates of the current rules, and improvements in the human resources management policies \cite{13,14}. Figure 2 shows the model of interaction of the digital platform with the taxpayer.

Fig. 2. Model of interaction of the digital platform with the taxpayer.
3.3. Identification of Critical Aspects

Before implementing Information Technologies in the IRS, knowledge remained implicit and there were no policies regulating it. It was considered a personal asset which each person and enterprise was responsible for acquiring through learning processes usually related to training. Knowledge was not shared and it was not included in the activities and tasks proper to the positions they held. The principal change is the concept of user which becomes ‘customer’ and who deserves the highest quality service.

In integrating technology, the following critical aspects were distinguished:

- With the aim of identifying and segmenting taxpayers according to the type of tax they pay, intelligent codes were integrated into the data base of the IRS. Users were distributed by Region.
- The Government decentralized its tax collections.
- Work groups were structured and assigned in the auditing process.
- Expert support and collaborative work (legal, network experts).
- Identification of knowledge in the formal and informal mechanics, procedures used, experience-technical knowledge relationship, and a diagnosis of best practices were carried out.
- Implementation of best-practices in the auditing processes: improve taxpayer service, reduce bureaucracy, reassign labor functions, implement notifying practices, and define strategies to endorse settlements, coordinate involved areas, and create specialization of auditing groups. This resulted in evidence of better productivity, effectiveness and efficiency.
- Improvements in documentation: clear information, flexibility when transferring information when a taxpayer moves to another district or region, format with standard calculations, and separate documentation.
- Improvements in processes: optimize resources to notify taxpayers, evaluate the objectives of results-based programs, establish indicators to evaluate both progress states and audit results, and support decision-making.
- Structuring e-mail discussion groups to enrich tax topics and detect experts.
- Establishment of plenary sessions for case analysis.
- The IRS is an institution under the centralized power of the Director. As it depends on the Government, no other public organization can expect adequate coordination.
- Planning of long-term objectives is needed.

4. Comparative analysis on ICT implementation.

4.1. Cases: OHIM and the IRS

One difference between OHIM and the IRS is that the former focuses on coordination, governance, and best practices dealing with not only productive aspects but also working conditions, while the IRS follows an improvement-based productive process model, but does not focus on the same critical factors as OHIM. Also, the IRS is not especially involved in knowledge management.

Table 1 provides examples of similarities and differences between the two cases, classified according to objectives, competitive strategies and action plans where the corporative level includes institutional strategic decisions, the business level analyses the pair’s products and/or services, the operational level outlines the daily functions of the organization. The table also compares the two cases’ cultural, social, environmental, and security settings. It also includes primary and support activities, which add value to inquiry services, and give support to decision-making, expert work, and committee decisions.
Table 1. Similarities and differences between OHIM and the IRS.

<table>
<thead>
<tr>
<th>Level</th>
<th>OHIM</th>
<th>IRS</th>
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<tbody>
<tr>
<td>Corporative Level</td>
<td>Establishment of new contractual policies recruiting experts and staff of EU officials under specific contracts Recruitment of highly experienced EU executive officers Investing resources with partners in outsourcing projects, strengthening the European network of trademarks and designs Coordination among countries, governments, public-private sector, and private enterprises Profits are re-invested, not shared among the different countries Organizational Management strongly depends on its executive officers’ leadership Systematic planning and biannual monitoring</td>
<td>Contractual policies present no changes Power is centralized in the Director, who depends on the President of the Republic Suitable coordination with other public institutions is needed Tax Collections are decentralized from the State The Director exerts leadership and has the power to do so Planning of long-term objectives is needed</td>
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<tr>
<td>Business Level</td>
<td>IP registry for trademarks, patents and drawings in the European Community Website state services are performed to improve quality, productivity, user-friendly aspects and profits Establishes an Integral Quality Management System Implementation of e-business Database (data of every single trademark, patent, and drawing with Spacenet external database support) Makes knowledge explicit by automating information retrieving systems and processes with expert collaboration for the user Systematizes work procedures to identify product features to be automated Cost reduction through the rational use of experts and direct access to database Fee charged for the use of</td>
<td>Taxpayers are identified and segmented according to tax category Free use of platform and services Integrated services count on a Quality Management System Implements the electronic invoice/bill Database of statements from enterprises and people Automated knowledge from processes is made explicit with auditors’ expert collaboration Procedures automation is developing Cost reduction by having free access to database Use of platform and services</td>
</tr>
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Operational Level

- Tele-work is set up
- Automated and standardized web- and information-based processes
- Innovation and research for development
- Experts' collaborative work at operational level
- Diagnosis and best practices implementation
- Establishment of the Academy's intellectual property and knowledge reservoir
- The concept of the Electronic Office, involving online operations and the use of Internet tools (OHIM site, e-Search Plus) and the use of opposition and electronic register instruments (e-opposition, e-register).
- Tele-work is a concept absent in Chilean legislation
- Implementation of intelligent codes and improvements in documentation and processes
- Creation of case narratives from auditors' experience
- Assign and structure work groups in the auditing process
- Establishment of on-line discussion groups
- Integration of plenary sessions for case analysis

Cultural, social, environmental, and security setting

- English becomes the official language in use
- Some experts resist having to commute from one country to another
- Launch of the European Observatory on Counterfeiting and Piracy which will consist of database and Counterfeiting Support Tool
- Spanish language is used
- Commute inside regions throughout the country
- On-line document verification
- Implementation of intelligent codes

4.2. Trends

In the future, electronic government will not only incorporate information technologies, but also new models with redesigns of sustainable services oriented towards implementing processes of public innovation. In these models, human capital, transparency, collaboration, and participation will be relevant. The form in which State relates to citizens will also be of utmost importance.

The IRS will have to handling the processes and data upon which a model similar to OHIM should be centered.

In the case of OHIM, the office is waiting for the unveiling of an IP tool that incorporates international registers and applications in the available platform for the registry of trademarks, along with the functionality of repeal. Other important activity is the upcoming redesigned website featuring a new set of tools, including the new e-filling or electronic presentation function for the taxonomy and harmonization of products and services in the database. It is expected that the process of mutual understanding and interest-sharing will result in a comprehensive set of services of comparable quality levels through the convergence of tools, procedures and practices to meet users’ needs.
In the case of the IRS, the Electronic Tax Document (ETD) is an administrative and cultural challenge, since people are used to a physical document with the IRS stamp on it to trust in the transaction procedure. Furthermore, not all enterprises have the resources to freely invest in the features demanded by the new system, nor do they trust in the security system intended for on-line transactions via the Internet. Consequently, gradual acceptance is expected; first by large companies, and then by their suppliers, thereby avoiding, the conventional monthly stamping of over 34 million printed documents. This will allow both the IRS and taxpayers to lower operational costs, to improve transactions among companies, to speed up accounting and taxation procedures entailed in their automated processes, and to promote service outsourcing (invoicing, online accounting, and remote printing) in order to boost e-business development, among other things. An educational commitment is expected from the government and those enterprises that first start issuing invoices through the system so that the public and the business community may become familiar with these new documents. Financial institutions should develop appropriate payment methods to suit the e-business transaction cycle performed on the Internet network. The IRS will have to stop handling data and processes upon which a model similar to the one of OHIM should focus.

5. Conclusions

The study of the function and operation of OHIM and the IRS and the implementation of the ICTs has established that both institutions use expert knowledge as an active part of the organization; at OHIM through experts and at the IRS through auditors, and that they continue to incorporate in a systematic manner the ICT tools of e-government and collaborative work which are visible through their networks and strategic alliances. OHIM has taken the first step in the creation of common information tools in the EU with help from the Cooperation Fund and the Commission is realizing an individual effort to continue harmonizing the legislative trademark. It has promoted operational excellence with the introduction of advanced ICT tools and institutional cooperation of national and regional offices, contributing to the creation of a European network of trademarks, drawings and models. The IRS also has taken measures to harness ICT in order to streamline its operations and lower costs for the government and citizens of Chile, alike.

As technologies improve and knowledge deepens, ICT will continue to develop and evolve, leading to a more universal approach to e-tools and collaboration between all participating bodies, from government organizations to private companies to individuals. Organizations and individuals alike will become more familiar with the available technologies and therefore integration of these tools will be easier to integrate into daily operations, such as filing taxes or applying for a trademark. Also, innovative technologies will be developed, which will allow for application of ICT to areas before unconsidered.

Also, innovative study of the function and operation of both organizations and the implementation of the ICTs has established that both institutions use expert knowledge as an active part of the organization, at OHIM through experts and at the IRS through auditors, and that they continue to incorporate in a systematic manner the ICT tools of e-government and collaborative work which are expressed through networks and strategic alliances. OHIM has taken the first step in the creation of common information tools in the European Union with help from the Fund for Cooperation and the Commission is realizing an individual effort to continue harmonizing the legislative trademark. It has promoted operational excellence with the introduction of advanced ICT tools and institutional cooperation of national and regional offices, contributing to the creation of a European network of trademarks, drawings and models. It has promoted the convergence of practices, reinforcing quality and optimizing operations.

Public-private partnerships that have emerged in Chile helped to develop e-tools that have favoured to IRS.
The main critical factors for both organizations are the governance and coordination problems, the budget assignment, the decision making process between public and private sector and the leadership of its directives, the business models used, the quality of the processes and the knowledge management.

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