Original article

Training in Information Technology Law: a necessity in the Law degree

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La formación en Derecho Informático: necesidad en la carrera de Derecho

A Formação em Direito Informático: necessidade no curso de Direito

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ABSTRACT

The expansion of information and communication technologies presents two clear challenges for the legal profession: the emergence of tools that can and should be used in legal practice, and the rise of new technological developments that must be regulated by law, giving rise, in the first case, to Legal Informatics and, in the second, to Information Technology Law. This article aims to disseminate the theoretical and historical foundations of Information Technology Law as an autonomous branch of law, as well as its differences from Legal Informatics and its integration into law curricula worldwide. To this end, the following methods were used: historical-logical, which demonstrates the evolution of the training process in Information Technology Law; analysis-synthesis, which allows for a deeper understanding of the theoretical foundations of training in Information Technology Law; and document analysis, which enables the analysis of law curricula within the global university context. The study of theoretical and historical references will lay the foundations for the inclusion of

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Information Technology Law in the curriculum of the Law degree in Cuba, which responds to the need to train jurists in this branch of Law who can face the challenges and obstacles imposed by an increasingly computerized society.

Keywords: law; information technology law; training in information technology law for the lawyer.

RESUMEN

La expansión de las tecnologías de la informática y las telecomunicaciones supone para el ejercicio profesional del jurista dos visibles retos: la aparición de herramientas que pueden y deben ser utilizadas en el ejercicio de lo jurídico y el surgimiento de nuevos desarrollos tecnológicos que deben ser regulados por el Derecho dando paso a la génesis en el primero de los casos a la Informática Jurídica y en el segundo, al Derecho Informático. El presente artículo tiene como objetivo socializar los referentes teóricos e históricos del Derecho Informático como rama autónoma del Derecho, así como las diferencias con la Informática Jurídica y su inserción en los planes de estudio de la carrera de Derecho en el mundo. Para ello se utilizaron los métodos: histórico-lógico, que permite demostrar la evolución del proceso de formación en Derecho Informático; el análisis-síntesis, que permite profundizar en los fundamentos teóricos de la formación en Derecho Informático; el análisis de documentos, lo que permite el análisis de los planes de estudio de la carrera de Derecho en el contexto universitario mundial. El estudio de los referentes teóricos e históricos permitirá sentar las bases para la inserción del Derecho Informático en los planes de estudio de la carrera de Derecho en Cuba, lo que responde a la necesidad de formar juristas en esta rama del Derecho que puedan enfrentar los retos y desafíos que impone una sociedad cada vez más informatizada.

Palabras clave: derecho; derecho informático; formación en derecho informático del jurista.

RESUMO

A expansão das tecnologias da informática e das telecomunicações representa para o exercício profissional do jurista dois desafios visíveis: o surgimento de ferramentas que podem e devem ser utilizadas na prática jurídica e o aparecimento de novos desenvolvimentos tecnológicos que precisam ser regulados pelo Direito, dando origem, no primeiro caso, à Informática Jurídica, e no segundo, ao Direito Informático. O presente artigo tem como objetivo socializar os referenciais teóricos e

históricos do Direito Informático como ramo autônomo do Direito, bem como evidenciar as diferenças em relação à Informática Jurídica e sua inserção nos planos de estudo dos cursos de Direito em diferentes partes do mundo. Para isso, foram utilizados os seguintes métodos: o histórico-lógico, que permite demonstrar a evolução do processo de formação em Direito Informático; o análise-síntese, que possibilita aprofundar nos fundamentos teóricos da formação em Direito Informático; e o análise documental, que permite examinar os planos de estudo do curso de Direito no contexto universitário mundial. O estudo dos referenciais teóricos e históricos possibilitará estabelecer as bases para a inserção do Direito Informático nos planos de estudo do curso de Direito em Cuba, respondendo à necessidade de formar juristas nessa área do Direito, capazes de enfrentar os desafios e exigências de uma sociedade cada vez mais informatizada.

Palavras-chave: direito; direito informático; formação em direito informático do jurista.

INTRODUCTION

Contemporary society is characterized by the rapid advancement of information technology in all areas of social relations, leading to their digitization and consequently impacting fields such as education and law. The expansion of information and communication technologies (ICTs) presents two clear challenges for the legal profession: the first is the emergence of tools that can and should be used in legal practice, and the second is the emergence of new technological developments that must be regulated by law.

Developing skills related to information technology at the university level equips legal professionals with the competencies necessary to enter a job market with such demands. However, there is less understanding regarding the establishment of a specialized branch within the legal system. While this branch arises from the integration of ICTs into society, it transcends them in the sense that the legal problems that can emerge from the use of ICTs require the law to adopt, both substantively and procedurally, categories, objects of regulation, and legal norms consistent with the technological revolution.

In addition, the training of lawyers, in international and national contexts, with their logical particularities, has been complex: the curricula of the Law degree have been based, fundamentally, on traditional methods, accompanied by exhaustive knowledge of the legal norm and naturalizing

transformations derived from processes such as globalization and the rise of technologies, with curricular adaptations based on the internationalization of the study plans and programs, the reception in these of regional, supranational and international legal norms, and the acceptance of digital and technological tools.

Legal studies in Cuba have been marked by the evolution of society, economic changes, the development of law as a science, and the contributions of pedagogical sciences, moving from empirical teaching to one based on research and teaching and professional practice, encouraging students to acquire practical skills not as instruments or technical tools in themselves, but linking them, in any case, with the theoretical, scientific, and doctrinal foundations on which they should be based.

The digital world has revolutionized all professional fields, and the legal profession is no exception. The expansion of ICTs brings about significant changes; perhaps the most fascinating is related to cognitive and aptitudinal implications, which in turn generates two visible situations: the first is the emergence of tools that can and should be used in the practice of law; the second is the emergence of new technological developments that must be regulated by law.

The so-called "information and knowledge society" demands the training of a university student with skills related to computer law, which, due to its unique transversality, affects distant areas that generate great social, economic and cultural implications, including copyright law, computer crimes, civil liability for consequential damages and computer procedural law.

If we add to the above that Law, in the present day, in addition to its normative and axiological essence, is conceived as a complex activity of argumentation -since an intrinsic requirement of the Rule of Law lies in its appearing in the form of reasoning in the cycle of creation-interpretation-application of the legal norm-, it is imperative to provide the Law student with professional skills that allow him not only to manage information at any stage of said cycle, but also to make responsible use, in accordance with the law and with certainty, of that accumulated culture exposed to constant variations.

The development and impact of ICTs on society has led to the emergence of a new branch of law, known as Information Technology Law. Its objective is to establish a series of actions that, from a legal perspective, need to be regulated to provide legal certainty to relationships established through the use of technology; for example, electronic documentation for contracts, current regulations on

cybercrime, the principle of legality and the legality of electronic signatures and data messages, the legal perspective on cyberterrorism, etc., all of which require a timely and effective response from legal professionals.

Studies related to Information Technology Law and the university curriculum, as a problematic issue, have been analyzed by authors such as Álvarez (1999), Pérez Luño (2004), Téllez Valdés (2009), Alfonso Aguilar (2015), Téllez (2017), and Delgado (2017), among others. These authors demonstrate that, in European and Latin American contexts, undergraduate education presents Information Technology Law as an elective course for computer science and telecommunications programs, but not for undergraduate law students, neither as a required nor an elective. Although specific topics such as cybercrime are included in elective courses, postgraduate programs in Information Technology Law include master's and doctoral programs. While undergraduate law education has limitations in the training process in this field, it gains greater acceptance at the postgraduate level.

The aforementioned authors address not only the various conceptions on which this formative process is based, but also raise the need to think about training within the university, adapted to the specific historical conditions and the link between the university and society.

This article proposes the main theoretical and historical background regarding the impact of ICTs on the training of lawyers, with emphasis on the Law degree in Cuba, and the consequent assessments regarding the need to conceive, curricularly, the training in Computer Law in said degree.

MATERIALS AND METHODS

Several methods were used in the investigation, recognizing the dialectical-materialist method as the guiding one, which allowed the authors to study the object as a process, determine its components and justify the methods used.

Historical-logical analysis was used to delve into the background and trends that underpin training in Information Technology Law within the Law degree program and its impact on the curriculum of said program. The analysis of texts of different classifications allowed for a refinement process, starting with the examination of an initial sample of 742 texts, ultimately resulting in a final selection of 18 articles. Analytical-synthetic and inductive-deductive methods were also applied; the latter, of a transversal nature, enhanced reasoning regarding training in Information Technology Law within

the Law degree program, moving from general postulates to less general ones (deduction) and guiding the reasoning toward more specific studies (induction).

Empirical methods were used, such as the analysis of documents related to training in Computer Law, the analysis of texts of different classification in the specialty of Law and the study plans of the Law degree, which made it possible to specify the background and the current situation of this training in the university curriculum, both in the national and international context.

RESULTS

As a result of document analysis, the first stage successfully systematized the main theoretical and historical references of Information Technology Law as an autonomous branch of the legal system and its integration into law school curricula worldwide. It was concluded that training in Information Technology Law has become a priority in the education of legal professionals, given the significant impact of information technology, the science that studies methods, techniques, and processes for storing, processing, and transmitting data in digital format using computerized systems. Although information technology is a relatively young scientific discipline, it has experienced remarkable development in the 21st century, driven by the advancement of the internet and mobile telephony, which have enabled broader access to computer tools through digital inclusion, with a consequent impact on sectors such as the economy, politics, and education, among others. Information technology is now present in almost every field of modern life, and all branches of human knowledge, including those of a social nature, are benefiting from technological progress.

The methods used allowed the authors to conclude that the process of training a lawyer in Computer Law is conceived as a set of stages that, from an educational approach, contributes to the appropriation of knowledge, skills and values by the lawyer in relation to the principles, categories, institutions and normative provisions of a mandatory and systematic nature that guide and regulate the social relations arising from the use of computer science and telecommunications.

The historical-logical method facilitated the understanding of training in Information Technology Law within the Law degree, recognizing that, in the educational field in general and in the teaching of Law in particular, consequences derived from the process of computerization of society are evident: the redefinition of the education-technology binomial (modernization and integration of technologies in classrooms, development of creative materials, implementation of virtual environments), the

development of digital skills and the configuration of a new branch of Law: Information Technology Law, understood as that branch of Law comprised of principles, categories, institutions and normative provisions of a mandatory and systematic nature, which guide and regulate the social relations that arise from the use of information technology.

In this context, legal education has also been impacted by information technology. First, it facilitates the learning process, allowing students to access legal databases, official websites of legal institutions, and current legislation. Furthermore, it enables teaching in virtual environments through educational software, ensuring legal certainty and access to scholarly articles and digital libraries. Second, it requires students to develop problem-solving skills inherent to the practice of law.

ICTs have revolutionized the practice of law: the automation of processes in the legal sector is undeniable, facilitating appointment scheduling and the drafting of electronic contracts, among other things. Legal research and proceedings are now computerized. Likewise, the storage of personal data, records, statistics, and regulations is digital. However, the use of ICTs transcends the aforementioned and establishes legal responsibility for both individuals and legal entities. Hence, there is a consensus on the need to develop skills related to the mastery of information technologies at the university level, to equip legal professionals with the necessary competencies to enter a job market with such demands. Nevertheless, there is less understanding regarding the establishment of a special branch within the legal system that, while arising from the entrenchment of ICTs in society, extends beyond them, since the legal problems derived from the use of information and communication technologies require substantive and procedural legal considerations, with categories, objects of regulation, and norms consistent with the technological revolution.

Since the 1990s, coinciding with the impact of information technology on society, training in Information Technology Law for legal professionals in Europe has become a priority in Higher Education. Information Technology Law is now a standard subject in university curricula: future lawyers, in their professional practice, must respond to the demands of an increasingly digital society and resolve disputes arising in the digital realm.

In countries like Italy, Information Technology Law is incorporated into the core law degree curriculum, making Italy a pioneer in undergraduate legal training in this area. In France, Information Technology Law was included as a core subject in the law degree curriculum in 2000. However, at the postgraduate level, it is offered at several universities through specialized postgraduate courses.

In Latin America, the inclusion of Information Technology Law in law school curricula began in 2005. In Argentina, starting in 2007, a surge in this area of undergraduate education was observed: higher education institutions incorporated Information Technology Law as a core subject in their curricula, aiming to provide a comprehensive overview of general legal principles applied to information technology and the problems it generates, offering solutions from a legal perspective. Similarly, postgraduate academic programs in Information Technology Law were established in Argentina for legal professionals and those in related fields.

Mexico and Chile are other countries in the region that contribute to training in Information Technology Law. Between 2010 and 2012, several universities in these countries recognized the need to include Information Technology Law in their law curricula, some as part of the core curriculum and others as an elective. In various Mexican universities, the subject of *Jurismatics,* which addresses Information Technology Law content, is included, although limitations in its teaching still exist. In other Mexican institutions, *Legal Informatics* is taught in the Postgraduate Studies Division, within professional development programs and specializations, including Information Technology Law content, although it does not constitute a dedicated course in the field.

The Autonomous University of Sinaloa has several law schools that offer courses in Information Technology Law. At the Mazatlán Law School, this subject is offered during the tenth semester, covering topics such as *cyberbullying,* intellectual property in the digital sphere, cybercrime, and e-commerce. At the State University of Nuevo León, *Legal Informatics is taught* at the Faculty of Law and Social Sciences, as well as at the College of Criminology. These institutions modified their curricula to include Information Technology Law in their core programs.

Taking into account all of the above, the authors assume that Information Technology Law is that branch of Law made up of principles, categories, institutions and normative provisions, with a mandatory and systematic character, that guide and regulate the social relations arising from the use of information technology and telecommunications.

Within the Cuban law curriculum, the Main Integrative Discipline is conceived as a framework for articulating theoretical, practical, and research components, considering the skills defined in the professional model, with fundamental support from the empirical component. Legal exercises and the final thesis are key components of this discipline. Furthermore, computer skills are expected to

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be standard working tools for students, combined with research methodology skills and the use of a foreign language, although a reductionist view of the impact of ICTs on the legal profession persists.

As part of a lawyer's training, instruction in Information Technology Law must be included. This branch of law and cross-cutting science extends beyond information literacy or content limited to cybercrime or copyright law. It encompasses the knowledge, skills, and values that enable graduates to act upon the country's political and legal system as the object of their profession.

Professionalizing the legal education process involves redefining the dialectical relationship between science and profession: the logic of the sciences that students must learn is integrated into the logic of the profession. A productive level of assimilation must be achieved, enabling students to solve new problems based on their existing knowledge and skills.

The authors believe that training in Information Technology Law is vital for the practice of the legal profession, recognizing the need for an updated curriculum that includes the subject of Information Technology Law, allowing lawyers to acquire knowledge, skills and values to face the legal challenges imposed by an increasingly computerized society.

Currently, the implementation of Study Plan "E" is underway, a result of the joint work of the Ministry of Higher Education (MES) and the Center for Studies for the Improvement of Higher Education (CEPES) at the University of Havana. Continuous, comprehensive, and high-quality training are fundamental principles of Cuban higher education. Plan "E" is structured around principles such as the inseparable unity between education and instruction, and the link between study and work. It also promotes English language learning, the correct use of the mother tongue, and the extensive use of ICT in the teaching and learning process.

The process of computerization of society has had significant impacts on the training of lawyers: those related to the redefinition of the education-technology binomial (modernization and integration of technologies in classrooms, development of creative materials, implementation of virtual environments) and those linked to the training of digital skills and the configuration of a new branch of Law: Computer Law.

Information Technology Law is an autonomous branch -a position supported by the authors of this work- by establishing norms, principles and categories that regulate social relations derived from the use of information technology, based on a specific legal framework.

The inclusion of Information Technology Law in a Law degree program, as a pedagogical process, presupposes the development of interdisciplinarity as a principle of the teaching-learning process. Law students, regardless of their curriculum, must have an interdisciplinary perspective; the legal system cannot be presented to them from a reductionist standpoint, given that the normative field has expanded to include new subjects. Therefore, students require contact with other specialties that will help them address legal issues with better cognitive tools.

DISCUSSION

The literature reviewed presents divergent views regarding the development of computer science; however, this article agrees with the idea that computer science is a young science, as it began to develop in the 1940s, a period in which its status as a science was consolidated, thanks to the significant contributions of Shannon (1940). This author established the foundations of *Information Theory,* which contributed decisively to the development of computing and digital communications.

At the end of the 20th century, the need to generate, process, and exchange information became increasingly important. From the 1950s onward, there was a surge in the use of communication tools, particularly telematics, through which professionals maintain the exchange of information, requiring the development of specific skills related to information management.

Téllez Valdés (2003) recognizes that the remarkable development achieved by computer science and its impact on society have transformed the latter, which cannot be conceived without the intensive use of Information and Communication Technologies (ICT), essential for the dissemination of knowledge and social interaction.

According to Leiner (2009), the democratization of technology use began to take hold around 1980 with the arrival of personal computers and the development of networks, including the Internet. This allowed people easier access to computing, a phenomenon that gave rise to the so-called *digital age,* characterized by its profound social, political, economic, and educational impact.

The impact and use of ICTs in legal education have led to transformations in university teaching and learning methods. These include changes in the roles of faculty and students, as well as in virtual learning environments (VLEs), where teaching materials have become essential. Furthermore, periodic and systematic assessment is being rethought, with an emphasis on consolidating cooperative learning (Cobas, 2014).

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According to Altamark and Olina (2012), the relationship between law and society has evolved to create a highly computerized society. The 21st century has seen a transition from an industrial era to an information age, in which the central objective has shifted from material production to the large-scale management and circulation of electronic information.

Several authors analyzed address the study of Information Technology Law, its potential autonomy as a branch of law, and its differentiation from other disciplines, such as Legal Informatics. Martino (1990) highlights the interdisciplinary nature of information technology applied to law, as it constitutes a tool that contributes to the optimization and modernization of public officials and social actors oriented towards the common good and citizen service. The author distinguishes three main areas: legal informatics for documentation, legal informatics for management, and legal informatics for decision-making.

Téllez Valdés (2009), legal information technology has an instrumental character, since it takes advantage of computer knowledge applied to the retrieval of legal information, as well as the analysis and processing of this information through interdisciplinary techniques.

Information Technology Law, for its part, has evolved in step with the rapid advancement of computing and its growing social influence, achieving a significant role in digital society. Unlike other branches of law -such as Civil, Criminal, or Constitutional Law- its development is still in its early stages. Téllez Valdés (2009) points out that its origins can be traced back to 1949, when Norbert Wiener established the relationship between law and communications, arguing that legal problems are also communicative and cybernetic problems; that is, problems of orderly and reproducible regulation of critical situations.

Some legal scholars deny that Information Technology Law is an autonomous branch of law, arguing that problems arising from the use of information technology can be resolved within other legal fields. However, another group of authors -a position shared by the authors of this work- maintains its autonomy, arguing that it establishes its own rules, principles, and categories that regulate social relations related to the use of information technology within a specific legal framework.

In 1970, Professor Wilhelm Steinmüller, from the University of Regensburg (Germany), coined the term *Computer Law* (Rechts *Informatik)*, explicitly referring to this discipline as a new branch of law.

According to Téllez Valdés (2009), Information Technology Law constitutes a branch of legal science that considers information technology both as an instrument (Legal *Informatics)* and as an object of study (Information *Technology Law)*. The author defines it as "a set of principles and rules that regulate the legal effects arising from the interrelation between Law and information technology."

Along similar lines, Aznit (2010) defines Information Technology Law as the set of principles and rules that regulate the legal effects generated by the interaction between subjects in the field of information technology and its derivatives, particularly in the area of information technologies. Aguilar (2015) complements this idea by stating that it is the set of legal rules that regulate the phenomena resulting from the use of information technology resources by individuals.

From a philosophical perspective, Álvarez (1999) points out that a process is the succession of states of a given object, which when isolated allows showing the characteristics accumulated during its evolution, although its understanding requires a holistic view.

In Europe, undergraduate and postgraduate university studies are being reconfigured based on the European Credit Transfer and Accumulation System (ECTS)and the competency-based approach established by the Bologna Declaration (1999). This transformation has shifted the paradigm from one focused on content to one oriented towards learning and professional performance.

Susskind (2013) argues that computer science and technology are essential for the evolution of the legal sector and underlines the need for legal professionals to integrate these tools from their initial training.

In the Cuban context, university curriculum development is governed by the Curriculum Model, based on management theory, the regularities of the assimilation process, and the identification of the professional model as the starting point for planning the educational process. According to Añorga (1995), this model is articulated around three fundamental guiding ideas:

1. The unity between instruction and education, expressed in the appropriation of knowledge and the development of skills that promote scientific-technical and values training.
2. The link between study and work, manifested in the work component of the study plans and in the comprehensive training of the professional.
3. Systematicity, understood as the systemic conception of the career, structured vertically in teaching disciplines and horizontally in academic years.

Álvarez (1997) is reaffirmed, who maintains that the curriculum cannot be detached from the historical-social context nor from the needs that science and society impose on the student.

Information literacy has become a key focus of higher education objectives due to the rapid evolution of scientific knowledge and the advancement of new information technologies. In this regard, UNESCO emphasizes the need for university students to be informed, motivated, and continuously learning citizens, capable of analyzing social problems, proposing solutions, and assuming responsibility (Pinto et al., 2011).

Legal training in Information Technology Law, as a pedagogical process, presupposes the development of interdisciplinarity as a guiding principle. Regardless of the curriculum, legal professionals must possess a comprehensive understanding of the legal system, avoiding reductionist approaches, given that the normative field has expanded into new areas such as the environment, information technology, e-commerce, and the human genome. In this context, the comprehensive training of legal professionals in Cuba aims to develop cognitive skills that enable them to contribute to the improvement of the country's political and legal system, beyond their integration into the labor market.

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Conflict of interest

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Authors' contribution

The authors participated in the design and writing of the article, in the search and analysis of the information contained in the consulted bibliography.

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