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LEGAL TECHNOLOGY: A COMPREHENSIVE ANALYSIS OF THEIR IMPACT ON LEGAL INDUSTRY AND ENHANCING ENTREPRENEURIAL OPPORTUNITIES

TECNOLOGÍA LEGAL: UN ANÁLISIS INTEGRAL DE SU IMPACTO EN LA INDUSTRIA LEGAL Y LA MEJORA DE LAS OPORTUNIDADES EMPRESARIALES

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ABSTRACT

The continuous development of technology, showed an ongoing discussion about the impact of robots, artificial intelligence, and digitalization on our daily lives and professions. This article aims to analyze the advantages, disadvantages, and regulatory issues related to legal technologies in business. Specifically, it focuses on the use of technological tools in legal work and how lawyers can adapt and acquire the necessary skills. A thorough literature review was conducted to examine the influence of legal technology on commercial legal science. The findings reveal that legal technology plays a vital role in automating tedious tasks, improving efficiency, and reducing human errors within the field. Legal technology is intended to enhance lawyers' work rather than replace them entirely. Overcoming obstacles requires investing in adequate training programs while gradually adopting new behaviors within the industry.

KEYWORDS

Legal tech, artificial intelligence, automation, legal training, curriculum adaptation, ethical challenges, regulation, corporate law.

RESUMEN

El continuo desarrollo de la tecnología mostró un debate continuo sobre el impacto de los robots, la inteligencia artificial y la digitalización en nuestra vida diaria y profesiones. Este artículo tiene como objetivo analizar las ventajas, desventajas y cuestiones regulatorias relacionadas con las tecnologías legales en los negocios. En concreto, se centra en el uso de herramientas tecnológicas en el trabajo jurídico y cómo los abogados pueden adaptarse y adquirir las habilidades necesarias. Se llevó a cabo una revisión exhaustiva de la literatura para examinar la influencia de la tecnología jurídica en la ciencia jurídica comercial. Los hallazgos revelan que la tecnología legal juega un papel vital en la automatización de tareas tediosas, mejorando la eficiencia y reduciendo los errores humanos dentro del campo. La tecnología jurídica pretende mejorar el trabajo de los abogados en lugar de reemplazarlos por completo. Superar los obstáculos requiere invertir en programas de capacitación adecuados y al mismo tiempo adoptar gradualmente nuevos comportamientos dentro de la industria.

PALABRAS CLAVE

Tecnología legal, inteligencia artificial, automatización, formación jurídica, adaptación curricular, desafíos *éticos*, regulación, derecho corporativo.

Summary: I. Introduction. II. Methodology. III. Empirical findings. 1. Automation 2. Robotics. 3. Artificial intelligence. 4. Legal technology. IV. Impact of legal technology on the legal industry. V. Finding business opportunities in the legal industry: A strategic perspective. VI. Fostering the future: Shaping the next generation of attorneys. VII. Conclusions. Bibliography.

I. INTRODUCTION

Automation, digitalization, and robotics are widely discussed topics in the modern age, with significant impacts on both our personal and professional lives. Different perspectives emerge when these subjects arise. Some individuals express concerns about job losses resulting from automation, while others see artificial intelligence as an opportunity to enhance the quality of life and create new employment prospects. As a consequence, the employment landscape is continuously evolving. Instead of solely focusing on the potential negative aspects, it is crucial to consider how robots and digitization can revolutionize business practices. Furthermore, we should recognize the value of human skills such as emotional intelligence and adaptability in conjunction with automation and artificial intelligence for routine tasks.

Artificial intelligence is projected to generate more jobs than it will displace. The COVID-19 pandemic has further expedited the worldwide shift towards digitization and emphasized the significance of technological advancement for long-term competitiveness. The fact that developed nations are leading global digitalization underscores the importance of keeping pace with technological advancements to sustain a nation's position within the global economy.

The implementation of artificial intelligence in the legal field has the potential to bring about a revolutionary shift. By automating repetitive tasks like document review and preparation, AI can greatly enhance accuracy and efficiency. While AI may not possess the same level of legal expertise as human professionals, it can serve as a valuable tool for lawyers, allowing them to devote their attention to more intricate issues. The integration of legal technologies undoubtedly boosts productivity within traditional professions.

This article explores how the legal industry is utilizing robotics, artificial intelligence, and automation. It discusses the advantages of these technological advancements, as well as any ethical or legal concerns that may arise. Rather than solely focusing on the business aspect of the legal field, this article takes a comprehensive approach. It begins with an introduction that provides context and introduces key technological concepts. Next, it delves into a specific Legal Tech application related to due diligence. The article also addresses the challenges associated with preparing future attorneys for these emerging technologies. Finally, it concludes with a discussion summarizing the main points presented throughout the article.

II. METHODOLOGY

In this comprehensive study, the impact of legal technology on commercial practices was thoroughly examined using a robust research methodology. In order to gather relevant studies on the incorporation and effects of legal technology in business legal practice, a literature review was conducted in reputable academic databases like PubMed, IEEE Xplore, and Google Scholar. The search involved using key terms such as “legal technology,” “artificial intelligence in law,” “automation in the legal profession,” or “the impact of technology on business lawyering.” These terms were carefully selected to encompass various aspects of the relationship between technology, law, and legal systems while ensuring an exhaustive coverage of scientific literature. Strict criteria were applied to select articles that directly addressed the application and impact of automation and artificial intelligence within the context of business law. Additionally, preference was given to articles discussing the advantages and challenges of legal technology from an ethical and regulatory standpoint, as well as those presenting strategies for adapting lawyers and legal education to a constantly evolving technological landscape. Studies that did not specifically examine the relationship between legal technology and corporate services or failed to meet relevance and focus requirements were excluded. In order to maintain quality standards during selection, articles lacking empirical support or consisting solely of unsupported opinions or broad discussions about technology and law were also disregarded. The quality assessment considered factors such as the study’s methodology, data accuracy, and strength of arguments.

Articles published in reputable peer-reviewed publications within the fields of legal technology and business law were prioritized to ensure reliability. By adopting this rigorous approach in reviewing existing research findings, this study provides valuable insights into how legal technology impacts commercial practices.

III. EMPIRICAL FINDINGS

1. Automation

The concepts of robotics, artificial intelligence, and blockchain have recently made substantial advancements. Automation, which involves carrying out tasks without human involvement, has become prevalent across various industries and consumer goods (Tyagi, 2021). While automation levels may vary, it is common for operations to need more human assistance. Automation encompasses robotization and digitalization processes.

In the 1990s, automation was primarily linked to industrial processes. However, research and development have expanded this concept to encompass all aspects of daily (Kliestik, 2023). With the advent of digitization and computers, data manipulation in various fields has become automated. The main objective of automation is to streamline processes, ensuring consistent, high-quality output, which ultimately leads to increased production while reducing labor requirements.

It is important to distinguish between low and high levels of automation. Low levels still require significant human involvement, with certain tasks being solely performed by humans. On the other hand, high levels of automation reduce the need for human intervention in the process, but human supervision and guidance remain crucial. This dynamic creates tension between the importance of human involvement and the efficiency of automated systems (Kokina & Blanchette, 2019).

The value of human involvement and efficient automation are in conflict. However, as automated systems become more advanced, the role of humans in managing and organizing them becomes even more crucial (Anayat, 2023). It is essential to determine the appropriate level of automation based on specific needs. Finding the right balance is more important than merely striving for high levels of automation,

which ensures optimal productivity while still recognizing the importance of supervision and human expertise.

2. Robotics

In everyday usage, the term “robot” encompasses a wide range of intelligent machines, such as self-driving vehicles and robotic vacuum cleaners. These robots are designed to carry out physical tasks and come in various forms with different functions (Garcia-Haro et al., 2020). Additionally, robots can also refer to computer programs or “bots,” which perform specific mechanical operations using tools like cameras, lasers, and sensors (Sayeed et al., 2022). Focus is placed on their efficiency and effectiveness rather than their resemblance to humans. However, despite their capabilities, robots still face challenges adapting to changing circumstances due to limitations in environmental understanding and interpersonal communication. Nonetheless, the implementation of robotization has shown potential for enhancing efficiency and minimizing errors across diverse applications.

In the 1950s, the first industrial robots, like George Devol’s Unimate, were developed, marking the beginning of robot history (Colombo et al., 2021). A 70-year industrial electronics society evolution through industrial revolutions: The rise and flourishing of information and communication. These robots were programmed and automated to be used in the automobile industry. Eventually, smaller collaborative robotics, known as cobots, emerged to assist with tasks such as courier services and home care. Asimov’s Laws of Robotics were created during this time to establish ethical guidelines for robot-human interaction. These laws prioritize defending humanity and preventing harm. Contrary to popular belief, robots are capable of providing simple and practical solutions for everyday needs. For example, they can automate tasks in nursing homes or industrial settings.

Robotic Process Automation (RPA), also known as software robotics, refers to the utilization of automated software for repetitive tasks (Villar & Khan, 2021; Santos et al., 2019; Timbadia et al., 2020). These software bots imitate human behavior by interpreting information displayed on screens and following predetermined guidelines. However, it is important to note that they are unable to identify subtle errors or adapt to system changes, despite their advantages, such as 24/7 operation

and increased efficiency. In addition to RPA, chatbots have also evolved over the years and are now extensively employed. These programs aim to simulate human conversation, but their classification varies based on their complexity and ability to comprehend natural speech patterns.

There are different types of chatbots with varying capabilities. Basic chatbots follow preprogrammed dialogs and rules, while intelligent chatbots can understand the context and engage in casual conversations (Huseynov, 2023; Liu et al., 2022). Advanced hybrid chatbots combine preprogrammed routes with free-text interpretation to enhance their performance. Chatbots are beneficial for efficiency and customer service but have limitations. They lack critical thinking abilities, decision-making skills, and empathy necessary for customer service interactions.

3. Artificial intelligence

Artificial intelligence (AI) is a collection of technologies that utilize programmed cognitive abilities based on mathematics, statistics, and programming to solve problems or make decisions (Yatskiv et al., 2020). However, it is important to note that AI is simply a computer program that operates within predefined rules and lacks consciousness or genuine thought. Though figures like Elon Musk, Bill Gates, and Stephen Hawking have drawn attention to the potential dangers of AI and its capacity to replace human labor, it is crucial to consider the real risks associated with it. These risks include inequality and environmental damage resulting from inadequate global regulation. The competition among countries to leverage this technology can lead to tensions, discrimination, and manipulation if not appropriately managed.

Although AI was initially developed in the 1950s, it has experienced significant advancements in recent years, largely due to increased computer memory availability and the exponential growth of data. This evolution can be categorized into three distinct technological waves: manual implementations, statistical learning, and the upcoming adaptive AI wave. Statistical training using deep neural networks and machine learning techniques currently takes center stage in AI research. Deep learning is particularly popular because it emulates brain structure by utilizing mathematical operations.

When it comes to artificial intelligence, there are generally two classifications: weak or narrow AI and strong or general AI (Chung et al., 2022). Weak AI is designed for specific tasks and performs them quickly and accurately. However, it needs to have the ability to comprehend beyond its training data and possess independent will. On the other hand, combining various branches of artificial intelligence can create intelligent solutions like chatbots that utilize robotics, machine learning, and natural language processing. We encounter AI in our daily lives through voice and facial recognition technologies as well as personalized streaming recommendations. Although general AI is making strides toward reaching human-level capabilities, its ultimate success remains to be determined due to the complexity of emulating conscious reasoning in machines.

Machine learning is a branch of artificial intelligence that uses algorithms to improve software performance and learn from experience (**Kuleto et al., 2021**). An algorithm is a set of instructions that outlines how to perform a specific task or process. Machine learning enables machines to learn without explicit programming. There are three primary approaches to machine learning: supervised, unsupervised, and reinforcement.

Supervised learning involves training a machine by providing it with numerous pairs of data and corresponding responses (van Engelen & Hoos, 2020). An algorithm analyzes these pairs to establish the connection between specific data features and their respective outcomes. With this model in place, the machine can predict outcomes for new data without pre-existing results by applying previously acquired rules. Although this process necessitates extensive manual labeling and classification of data initially, it reduces the likelihood of errors in subsequent steps.

Unsupervised learning occurs when the machine is provided with data only, without any predetermined responses. The computer then classifies the data into categories based on patterns it identifies in the features (Alloghani et al., 2020). This method is highly adaptable, allowing for modifications to focus on specific features or exclude certain types of information. While data preparation requires less manual effort, tuning the algorithm may be a lengthier process.

In the field of reinforcement learning, machines engage with their environment, gather information, and use that data to make decisions. The algorithm is specifically designed to maximize gains and improve its execution based on feedback received about its performance in a given task. While this method requires less information, it still needs to improve in maintaining stable and consistent learning environments.

Blockchains, also known as the blockchain, are an innovative technology that utilizes distributed public records. Through the use of advanced cryptography, blockchains securely and openly store and validate transactions (Josphineleela et al., 2023). Acting as a digital ledger, they effectively track transaction history over time. The term “blockchain,” which refers to the cryptographic link connecting transactions, has become the most widely recognized name for this technology.

Blockchain technology has applications beyond the legal field. It offers a reliable and transparent method to document and verify contracts, business transactions, as well as intellectual property like trademarks and patents. This technology has the potential to eliminate the involvement of third parties or intermediaries in legal processes by securely executing records and legal actions.

4. Legal technology

Legal technology is a field that examines how changes in the legal profession impact job descriptions. It involves gaining knowledge about its applications and analyzing the use of computers for legal tasks, which dates back to the 1960s with the introduction of automatic data processing (Dwivedi et al., 2023; Gimpel et al., 2021; Đurić et al., 2023). The language used to describe legal technology has evolved over time, originally referring to software that assisted law firms with billing, client portals, and case management. Nowadays, it encompasses various legal applications that leverage modern information and communication technology. These programs aim to streamline the creation and delivery of legal services while enhancing accessibility. Legal technology extends beyond courts and lawyers; it also includes areas where law and technology intersect, such as online dispute resolution and open-source legal materials availability.

Legal technology refers to the impact of software and programs on a company's operations. These technologies can be categorized into maintenance technologies or disruptive technologies (Fenwick et al., 2019). Maintenance technologies include traditional document management software, accounting software, and electronic communication tools. They enhance existing operating procedures without fundamentally changing how tasks are performed. On the other hand, disruptive technologies are often more efficient than humans in terms of performance. They replace legal professionals' work and transform how businesses and industries function. Examples include eLearning platforms, document reviews powered by artificial intelligence, and online conflict resolution services. The trend towards automation is evident in various areas, such as customer service chatbots and automated document creation. However, this shift can create pricing challenges for law firms that rely on hourly billing models.

The legal technology field primarily focuses on disruptive technologies, as these bring about significant changes. On the other hand, maintenance technologies are already widely used, and their advancements do not lead to substantial modifications (Ryan, 2021). Although legal technology has yet to be widely adopted in Peru, there is a growing interest in this area. Startups and academic institutions play a major role in driving legal innovation.

The Peruvian market, being relatively small, incentivizes entrepreneurs to prioritize international markets. Its size enables easier identification and interaction with key players. The legal industry's technological stagnation could be attributed to a need for more communication between solution providers and legal professionals. Typically, legal service providers concentrate on serving in-house counsel or law firms.

IV. IMPACT OF LEGAL TECHNOLOGY ON THE LEGAL INDUSTRY

The legal industry follows a traditional career trajectory that starts with an assistant attorney position and potentially leads to becoming a partner. In the initial stages, individuals without a law degree work in supportive business roles. Recently graduated lawyers often handle routine tasks such as research, drafting, and verifying information. However, there is a significant change on the horizon,

driven by technology. The upcoming Generation Z, which will soon dominate the workforce, prioritizes mental health, work-life balance, and career growth over long hours of work. They appreciate technologies that streamline processes and reduce stress (Rahman, 2023). Being adept at technology allows Gen Z to adapt quickly to changes and has resulted in new career paths that incorporate cutting-edge technology. Support staff now have opportunities to undertake legal preparation and examination tasks. This shift not only impacts how the legal profession is perceived in the workplace but also presents prospects for support staff to assume attorney roles while maximizing costs and profits for firms.

The legal profession is undergoing a transformation due to technological advancements. Law firms that embrace technology hiring experts with diverse skills alongside traditional lawyers are replacing more traditionalist firms. It is important to note that technology is not meant to replace lawyers but rather enhance their work (Metzler et al., 2023). For example, artificial intelligence (AI) programming can serve as an extension of human thought processes. Human interpretation and judgment remain crucial in the legal field since there are rarely definitive or absolute answers. Given the complexity of cases and the impact individuals have on outcomes, the law remains centered around human involvement. Lawyers play a critical role in this context because machines cannot improvise or respond creatively to unexpected circumstances. By delegating routine and repetitive tasks to machines, legal professionals can focus their efforts on strategic and innovative work.

Implementing legal technology comes with its fair share of challenges, despite the numerous benefits it offers. One major hurdle is the resistance within the legal industry toward embracing digital transformation. Traditional thinking and entrenched beliefs often slow down the adoption of new technologies, especially among those who have yet to gain prior experience with them. Additionally, while regulations are in place to ensure legal certainty and safety, they can also impede technological innovation. Ethical challenges arise when integrating technology as well. Questions about fairness in the labor market surface due to the unequal distribution of benefits produced by algorithms and machines. Artificial intelligence also sparks discussions about manipulation tactics employed in decision-making processes, which raises ethical concerns. It is important to note that algorithms and

vulnerabilities play a role in aiding logical decision-making; however, this brings forth critical issues regarding moral principles governing robots and artificial intelligence and determining liability for their actions under the law.

V. FINDING BUSINESS OPPORTUNITIES IN THE LEGAL INDUSTRY: A STRATEGIC PERSPECTIVE

A business plan proposal includes the development of an AI application that specifically targets the due diligence process. This app aims to ensure thorough inspections across different business contexts. By incorporating innovative technologies such as artificial intelligence and machine learning, we aim to address existing challenges around speed, cost, and accuracy in traditional due diligence approaches. The goal is to revolutionize how businesses and professionals evaluate potential partners and transactions.

This AI application offers a range of advantages for due diligence processes. It leverages advanced artificial intelligence algorithms to analyze vast amounts of data in a faster and more efficient manner than traditional manual methods. Additionally, the application has access to various data sources, both public and private, enabling a thorough evaluation of key attributes when assessing potential partners. This streamlined approach to data collection is invaluable for expediting business decisions and reducing the time needed to complete due diligence procedures.

The application serves two main audiences. Firstly, it caters to businesses in various industries that seek partnerships, market expansion, or strategic investments. These businesses can utilize the app to assess potential customers and partners in a more efficient and accurate manner. Additionally, the application is designed for legal technologists and lawyers involved in business and real estate transactions. It enables these experts to analyze legal documents, contracts, and other relevant data with enhanced efficiency, reducing the risk of overlooking important details or legal risks associated with business decisions.

The proposal emphasizes distinct qualities that will draw customers to the app. By utilizing machine-learning algorithms, the app is able to uncover subtle patterns that may go unnoticed by conventional methods. It also identifies trends

and patterns within the data, continuously refining its knowledge and enhancing its ability to identify potential risks and opportunities. Moreover, the application boasts an intuitive user interface and collaborative features that facilitate effective communication and decision-making among multidisciplinary teams. This seamless integration of teamwork ensures a streamlined due diligence process.

In sum, the proposal recognizes that implementing this application can minimize human error and simplify the manual review process. By automating repetitive and error-prone tasks, professionals can dedicate their attention to more strategic and analytical aspects of due diligence. Through the utilization of machine learning algorithms, the application significantly reduces the chances of overlooking essential information. The introduction of this AI app marks a significant innovation for due diligence, providing a robust tool to facilitate informed business decisions, mitigate risks, and enhance the quality of business transactions.

VI. FOSTERING THE FUTURE: SHAPING THE NEXT GENERATION OF ATTORNEYS

Updating legal education to align with the evolving legal profession is crucial. In order to meet this challenge, it is essential for legal education to keep pace with changing trends. By integrating technology into the curriculum, legal education can adapt to market needs. This integration ensures that students gain a comprehensive understanding of both traditional legal concepts and the complexities of the digital world. For instance, incorporating classes on cyber security, privacy, and e-research will equip graduates with a strong grasp of conventional legal principles as well as the shifting dynamics of the digital era.

However, legal education should encompass more than just technology. It is equally important for law schools to prioritize soft skills. These abilities, including effective communication, critical thinking, and problem-solving, are essential for attorneys as they navigate the intricacies of a constantly evolving technological landscape while maintaining meaningful relationships with clients and colleagues. By incorporating soft skills into the curriculum alongside technology-focused coursework, law schools can produce lawyers who are not only technically proficient but also possess the interpersonal skills necessary for a successful legal practice.

In order to keep up with the ever-changing legal landscape, it is important for legal education to be proactive. Lawyers must stay updated on the latest developments in legal technology. To achieve this, law schools should offer continuing education programs that cover various relevant topics such as cyber security, cloud computing, and artificial intelligence. These programs would provide practicing attorneys with opportunities to stay knowledgeable and skilled, ultimately enhancing the quality of legal services in our technologically-driven world.

In order to offer a holistic and forward-looking legal education, it is crucial for academia to collaborate with the business world. Law schools should establish partnerships with law firms and legal technology companies to ensure that their curricula remain relevant and up-to-date. These collaborations enable the development of curricula that align with the demands of the legal profession. Additionally, students can receive practical training in utilizing legal technologies and implementing strategies through these business partnerships. This helps bridge the gap between academic theory and real-world application.

VII. CONCLUSIONS

It is no secret that many people recognize the advantages of legal technology, particularly in regard to repetitive and unfulfilling tasks that can easily be automated. However, the changes in the workplace brought about by technological advancements and individual adaptation occur gradually. Integrating new software into existing systems requires thorough preparation, involving the breakdown of tasks for automation and gathering relevant information for machine learning. Even with simpler software solutions, adoption can still be hindered by limited time availability and resistance to change.

Implementing legal technologies in the current environment is challenging due to limited time for training and proper implementation. This time constraint can affect how technology is perceived and utilized. To overcome this obstacle, it is crucial to prioritize training and gradual implementation.

The true value of new technologies in the legal industry becomes apparent when they prove effective in routine tasks. Internal feedback from users who have

positive experiences is vital for shaping perceptions of value and encouraging swift adoption. Sharing these experiences plays a significant role in fostering a cultural shift towards accepting and effectively utilizing legal technology within the workplace, ultimately building confidence in its capabilities.

Many lawyers express concerns about job security as technology continues to advance. This is particularly true for those who have received traditional training and honed their skills in an environment with limited reliance on technological advancements. The uncertainty surrounding these changes can result in resistance to adopting new technologies and doubts regarding their reliability and effectiveness within the legal field. The introduction of technology can make professionals, who have invested significant time and effort into learning and mastering traditional methods, feel threatened. They may worry that their expertise and experience will be replaced by automated solutions.

Given the evolving nature of the legal profession, it is evident that law schools must adapt their curriculum to meet the challenges of today and tomorrow. To adequately prepare law students, a flexible and comprehensive approach is necessary. Integrating technology into the curriculum is a crucial step toward ensuring graduates possess a strong grasp of both traditional legal principles and the intricacies of an ever-changing digital landscape. This evolution in teaching can also prioritize soft skills essential for effective interaction in a technology-driven legal world, fostering lasting relationships with colleagues and clients.

Legal technology offers the potential to enhance work quality by reducing human error, giving a significant advantage. However, the effectiveness of technological solutions depends on proper implementation and operation. Mistakes during the early stages can hinder the benefits of technology. It is important to note that legal professionals' specialized knowledge and judgment cannot be replaced by technology. Therefore, humans still bear responsibility for ensuring legality and accuracy in legal matters.

Integrating technological tools into the legal industry is a long-term commitment, as the advantages often become apparent only after a few years. These tools also require regular maintenance to ensure their continued effectiveness. Neglecting

proper maintenance can lead to user dissatisfaction and undermine the perceived usefulness of AI-driven solutions. Given the inherent complexity of legal matters, it is crucial to carefully consider the system's intricacy when implementing solutions, particularly in cases involving legal interpretation.

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