

Chapter 14

Digitization and Sustainable Performance in Brazil: Policies, Actions and the Role of Legal Framework

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Although environmental degradation has been occurring since the emergence of the Industrial Revolution, the environmental movement originated only in the 1960s. Since then, the discussion on the subject in international forums has gained more space, leading to agreements and initiatives for promoting sustainable development.

In 2015, the 193 United Nations General Assembly member countries signed the UN Agenda 2030 for Sustainable Development, a non-binding international declaration that aims to guide development policies for all signatory countries and includes 17 Sustainable Development Goals (SDGs). These Sustainable

Development Goals (SDGs) have been outlined to be implemented by member states to promote sustainable economic growth, foster innovation, ensure sustainable production and consumption patterns, and take urgent action to combat climate change and its impacts (Pinto e Netto & Menengola, 2021, p. 17).

The growth of environmental problems ended up redirecting competitiveness in the last decade (Pyhalto & Vanttinen, 2009, as cited in Lunardi, Frio, & Brum, 2011, p. 160), stimulating changes in social values and the development of new technologies, which has favoured the emergence of ecologically correct products.

Because of that, several initiatives were carried out around the world to establish a less hazardous environment. Thus, innovation and technology came as great tools to achieve sustainable development, with emphasis on Information and Communication Technologies (ICTs) and the digitization of processes.

In view of this, this article seeks to verify the relationship between the digitization of services and processes by companies and sustainable development in Brazil, considering the importance of the regulatory framework. To this end, a measurement is made between the impact of digitization and sustainable development in the Brazilian case, also investigating how the regulatory framework is positioned to conceive this dynamic, highlighting relevant issues.

14.1. Impacts of the Digitalization Processes and the Use of the New Technologies on the Sustainability Development

There is a broad consensus that Digitalization and Artificial Intelligence (D&AI) could be very significant for accomplishing the UN's Sustainable Development Goals (SDGs) (Gupta, Motlagh, & Rhyner, 2020, p. 3), as well as achieving several benefits in the most diverse sectors of society. However, is there a positive relation between the use of Information and Communication Technologies (ICTs), mostly through a digitalization process, to sustainability in the broad sense (for the business itself, society and the environment)? Most studies understand that there is, indeed, a positive relation.

Even though there are a lot of discussions regarding the pros and cons of the theme, the change caused by ICTs in society is undeniable, and if well used, many benefits can be gained. In this context, it is necessary to analyse the relationship between digitization and sustainability, which, firstly, requires understanding the current state of development of the use of ICTs in companies.

Regarding that, The Economist Intelligence Unit, sponsored by Microsoft, has conducted a cross-industry survey of 800 senior business executives and senior-level government employees, spanning eight sectors and 15 economies across the Americas, Europe and Asia-Pacific. Among other key points, the survey concluded that organizations that were digitally prepared had an advantage

in navigating the upheavals and challenges, such as those presented by the pandemic (*The transformation imperative...*, 2021, p. 3), indicating the ability of ICTs to improve the efficiency of companies.

Among sectors, as indicated by the survey, financial services were the most prepared segment for various mitigation measures, particularly remote work, reflecting the industry's past efforts to optimize in a fast-paced sector (*The transformation imperative...*, 2021, p. 5). On the other hand, the process of deepening the use of ICTs can be seen in business in general. According to market intelligence firm IDC, global investments in digital technologies and services grew by 10% in 2020 to \$1.3 trillion, while a survey by global consultant KPMG revealed that companies devoted an additional \$15 billion a week to IT in the first three months of the crisis (*The transformation imperative...*, 2021, p. 6). Thus, it is clear that the process of digitalization of services is not limited to just one sector but has gained increasing use among different business segments.

Another research worth mentioning is the one conducted by AVEVA which surveyed more than 850 digital transformation experts from different sectors. The study brought other relevant conclusions regarding the digitization process (AVEVA, 2021, p. 4):

- 85% of businesses plan to increase their investment in digital transformation over the next three years;
- industries are committed to driving to net zero and tackling climate change;
- nine out of ten see it as a core responsibility – although many do not believe that low-carbon industries will be as profitable in the short term;
- nine out of ten businesses see combining IIoT, AI and cloud with their teams' insight as key to driving better performance;
- AI and automation are required to keep pace with competitors;
- skills requirements are changing with more focus on value-added analytical work;
- nine out of ten agree digital transformation is about bringing change through people;
- investment in the connected workforce is a strong focus at the majority of companies;
- 75% of companies feel they are on a journey to realize Performance Intelligence in their business.

As can be seen from those conclusions, most companies intend to further develop their digitalization process. Still, environmental issues, such as climate change and low-carbon policies, are among the priorities in that process. It is also worth mentioning a transformation of the desired professional by the employer, now requiring the former to have a more analytical profile and the necessary skills to use the new digital tools. Also, regarding the workforce, while past technology adoption conferred resilience on companies across a range of metrics, The Econo-

mist research has concluded the pandemic itself has substantially shifted priorities since it elevated employee engagement from a nice-to-have into an essential priority (AVEVA, 2021, p. 7).

In the view of both studies, three phenomena can be observed: the contribution of ICTs to the sustainability of a business; the greater deepening of the digitization process; and the ever-increasing inclusion of topics that were not a priority before, such as the focus on employees and the environment.

As for environmental issues, in addition to the international pressure regarding the adoption of sustainable policies, as well as consumers who increasingly value sustainable measures when choosing the products they want to purchase, companies have adopted an increasingly proactive profile in adhering to the good environmental practices, making great use of technologies. Regarding this, we have many examples, such as Henkel-AVEVA's case. The companies have built an energy monitoring system in order to identify savings, saving Henkel €37million up to 2021 (AVEVA, 2021, p. 12).

Henkel's case is not isolated, as the mindset of business increasingly considers an alignment of efficiencies and sustainability through digital technology use. Eight out of ten businesses expect the policy environment will drive sustainable innovation (AVEVA, 2021, p. 13). For that reason, 89% of the surveyed companies say they are already investing in digitally enabled sustainability, with a focus on collaboration tools, real-time data and predictive analytics (AVEVA, 2021, p. 14).

Another example is the cryptocurrency case, which is a blockchain network characterized as a secure, permanent, and tamper-proof digital transaction book maintained and distributed among the involved parties (such as the so-called 'miners') without a central validator and can be used to promote sustainability. An example is the cryptocurrency SolarCoin, which rewards solar energy generators with new coins, or GridCoin, which introduces a new algorithm based on work done in BOINC projects (Berkeley Open Infrastructure for Network Computing), encouraging miners to participate in scientific projects linked to health and space exploration, among others, to provide benefits to humanity.

A great advantage regarding that initiative is the power to eliminate potentially polluting steps and functions from the industrial and service production chain, thus making it possible to reduce the overall emissions of harmful gases. In a study conducted by the Coolclimate Network at the University of California, Berkeley, it was estimated that electronic currency has 99.8% fewer emissions than the American banking system (Pinto e Netto & Menengola, 2021, p. 25).

This process is not recent, though, as said, but has been evolving according to technological development. For example, in the last decade, given the different state of the art than the current one, different strategies were already adopted by companies. A decade ago, according to a study done by Lunardi et al. (2011, p. 166), the main initiatives adopted by companies were:

- awareness campaigns;
- server merge;
- parts, cartridges and equipment recycling;
- use of renewable energies;
- more efficient equipment;
- monitor/outsource printing and scanning documents; and
- energy management systems.

However, despite the prevalence of favourable literature, it appears that digital tools are not free from environmental impacts. According to a study conducted by Gartner Consulting (2007, as cited in Lunardi et al., 2011, p. 161), computer equipment is responsible for 2% of CO₂ emissions worldwide, which corresponds to the amount emitted by all existing planes, data centres are responsible for 23% of all IT emissions, while PCs and monitors account for 40%. Also, another problem that worries both companies and society is the disposal of obsolete electrical and electronic equipment.

Thus, although much attention has been given to Green IT (technology only) in the commercial literature, it is emphasized that this exclusive focus on technology is quite restricted and should be extended to the integrated and cooperative set of people, processes, software and hardware, to support individual, organizational and society (Lunardi et al., 2011, p. 162).

Given this, it is visible that there is capacity, and even a proactive search, to promote sustainable development through the use of digital tools. However, as pointed out, these technologies are not free of negative impacts on the environment, which leads to the need for proper use and strategies to mitigate the pollution caused. On the other hand, despite these negative points, these technologies seem to have an inherent capacity for less environmental impact regarding their daily use since, for example, they use the virtual environment more than our real environment for functioning, as well as causing less waste, as could be seen in the SolarCoin example.

In this way, it can be concluded that most studies identified a positive relationship between digitalization and sustainability, highlighting growth in the adoption of digital tools in business models but also emphasizing some negative environmental impacts caused by ICTs, although lower than the benefits identified.

14.2. Policies and Actions in Brazil Towards Digitisation for Sustainable Development

As noted, the deepening of the digitization process, in general, seems to have a positive relationship with greater sustainability of companies, either in terms of greater efficiency (sustainability of the business itself and, consequently, the generation of jobs) or in order to contribute to the environment.

Thus, after an overview of the theme, it is important to verify how this phenomenon occurs in specific cases. First, it is worth mentioning Europe as an example since it is an important player in the subject due to its pioneering in its discussions, technological evolution and regulatory framework. Regarding this, it is worth mentioning the European Green Deal, which is a set of policies and strategies articulated by the European Commission to contain the threat of global warming. Within it, the European Union has undertaken some initiatives such as the creation of the European Innovation Council, which aims to support innovative companies, and the Innovation Fund, set up by the European Commission for 2019–2021 to sustain the development of low-carbon technologies in energy industries processes, carbon dioxide capture, utilization and storage, and innovative renewable energy and energy storage technologies, as well as setting a goal of achieving a rate of 80% of adults with basic digital skills by 2030 in order to manage ICTs and innovation policies (Pinto e Netto & Menengola, 2021, pp. 21, 22).

Brazil also established a policy for deepening its digitalization process, such as the 'Digital Government Strategy', as well as the development of the regulatory framework. Especially because of the need for adaptation to the pandemic, the development of public policies on the subject and the need and search for companies to develop themselves technologically and gain competitiveness, the business picture in Brazil has been changing, thus impacting the sustainability of companies and the environment.

In research prepared by market intelligence consultancy IDC (Delai & Ramos, 2018), a benchmark was created to measure the progress in Digital Transformation in Brazil and how companies are applying the resources in order to interact with their customers (sales, marketing and customer service areas), reaching the following conclusions regarding the themes.

- Mobility (Delai & Ramos, 2018, p. 18): Mobility is the fourth initiative in terms of strategic importance for companies in Brazil. However, today, the emphasis has been more on device procurement and access (data plan) than actually on the availability of business applications, which brings more value to the customer.
- Intelligence (Delai & Ramos, 2018, pp. 24, 25): Analytical tools have an increasingly intense use in the Brazilian market. However, the introduction of advanced analytical solutions, such as Artificial Intelligence, is being delayed by technology managers, being more common in the trade segment.
- Connectivity and integration (Delai & Ramos, 2018, pp. 29–32): The dimension of integration and connectivity was the one that received the worst score, having low implementation, mainly due to the fact that the coverage of communications and its availability in Brazil are not complete and costs are high. Also, other elements of integration and connectivity are not on the company's managers' radar.

- Speed and Productivity (Delai & Ramos, 2018, p. 37): Most organizations are in the early days of this transformation, and only 3% of companies classify themselves as 'digital disruptors'.

On the other hand, Brazil, mainly due to its large biodiversity and natural resources, has a long history of participation and relevance regarding international discussions about sustainable development. Also, the position of Brazilian companies regarding sustainability has been more and more assertive in the past years.

According to the research done by the NPO Uniethos, 69% of Brazilian companies recognize that the inclusion of sustainability in strategic planning is a necessity, and 65% said that innovation and repositioning in the market are among the main objectives when sustainability is included, as well as between 15 and 20% of the companies surveyed make the assessment of the impacts of sustainability policies on costs and competitiveness and 68% develops some kind of relationship with stakeholders on the subject (Magalhães & Brito, 2012, p. 6). It is also worth mentioning that 11 Brazilian companies are part of 2020's portfolios of the Dow Jones Sustainability Index (DJSI), a list that brings together the actions of global leaders in sustainability (Larghi, 2020).

As can be seen, Brazil has an awareness of the need to take more sustainable attitudes, including in the business field, which can and must be integrated with the use of ICTs. Regarding these technologies, despite advances, Brazilian companies still have a lot to develop in terms of greater technological depth and digitization of processes.

14.3. The Legal Framework Supporting Sustainability Process

As noted, the digitization process has great potential to contribute to sustainability by corroborating with a lower environmental impact. Furthermore, its social impact is undeniable, ensuring greater inclusion and accessibility, as well as its economic impacts with benefits such as more efficiency, lower costs and the ability to generate more inclusive jobs.

However, the virtual environment has its own dynamics and particularities, requiring a legal application for it. Without a proper legal framework, an environment of less security is created, reducing its effectiveness and popular use, nullifying this process of transition between physical and virtual reality. That is, there would be no legal guarantee to sustain this new environment, thus eliminating its sustainable contributions.

In this respect, there is no doubt that the Internet favours the practice of illegal acts, being some examples are crimes against property, frauds in general, crimes against honour, racism, violation of correspondence and data, violation of indu-

strial property and copyright, child pornography, dissemination of viruses, subtraction of credit card number and bank data, among other crimes. Furthermore, to make it worse, the Internet does not favour the compensation of damages caused by the illegal acts that occurred in its environment, which has caused a lot of insecurity to individuals or legal entities that use it.

Therefore, the maintenance of a business and the individual rights of those who frequent the virtual space are also factors necessary for sustainability, and that requires an appropriate legal framework that guarantees them. Thus, it is necessary to analyse this framework, taking as a case study the Brazilian scenario.

General Data Protection Law (LGPD)

The General Data Protection Law (Lei Geral de Proteção de Dados – LGPD, Lei Nº 13.709, de 14 de agosto de 2018), later amended by Law 13.853/2019 (Lei nº 13.853, de 8 de julho de 2019) entered into force on September 18, 2020, with the objective of promoting the protection of the personal data of every citizen in Brazil by changing some articles of the Civil Framework of the Internet (*Marco civil da internet* in Portuguese) and establishing new rules for companies and public agencies about the treatment of the privacy and security of the information of users and customers.

According to the LGPD, personal data is one that allows the identification, directly or indirectly, of the living person (Tribunal Regional Federal da 3ª Região [TRF3], 2021). Also, among personal data, there are those which are subject to specific treatment conditions: those about children and teenagers and the ‘sensitive’ ones, which are those that reveal racial or ethnic origin, religious or philosophical convictions, political opinions, trade union membership, genetic, biometric and about the health or sexual life of a person.

Regarding sensitive data, processing depends on the explicit consent of the person and for a defined purpose. Without the holder’s consent, the LGPD defines that the processing of that kind of data is only possible when it is indispensable, such as in cases of a legal obligation or regarding a contract or process, or to preserve a person’s life and his or her physical integrity.

The punishments provided by the LGPD have begun to be applied in August 2021 and may reach up to 2% of the billing of the infringing entity up to the limit of R\$50 million. Some cases have already begun to appear in the courts in Brazil. An example is the conviction of a company for leaking data on pregnancy by the Court of Justice of São Paulo (TJSP) in June 2022.

Regarding that case, it occurred that after suffering a miscarriage, a woman received WhatsApp messages from a laboratory with an offer of umbilical cord collection and storage, which led her to file a lawsuit against that lab (Viapiana, 2022). She claimed that she did not provide her personal data, or pregnancy information, to the lab. The company contested that it only had used non-sensitive

data, such as name and phone number. However, the Court decided that pregnancy is sensitive data, as provided for Article 5(II) of the LGPD, condemning the company.

Nevertheless, it seems that legal penalties have fallen mostly in cases where the steps required for compliance with the LGPD have not been taken. According to a survey carried out by Opice Blum, Bruno e Vainzof Advogados Associados (Paiva, 2022), in 2021, there were at least 465 legal decisions on the subject, of which 77% of them did not result in a conviction, those cases being extinguished or dismissed mainly due the demonstration that companies carried out the necessary due diligence, but those that were sentenced were penalized with arbitrated damages of R\$600 to R\$100 thousand, although moral damages were not automatically presumed.

Therefore, acting in the digital environment requires legal compliance. That is, sustainable management, in that case, requires not only a compliance policy focused on classic environmental issues, such as climate change and waste treatment, but also one focused on the virtual space itself, being in accordance with the LGPD. Thus, one cannot separate the ecological impact from that of the virtual space since the latter has its own environment that gradually replaces some aspects of the physical reality that we normally experience, demanding its own regulation in order to work properly and safely.

Legal liability

The dynamics found in the physical reality have equivalence in the virtual reality, which is why the legal framework also applies in this environment, as is the case of the provisions of the Brazilian Civil Code and Consumer Protection Code (CDC). As seen, whether in the face of data protection, the individual and collective rights of internet users in the digital environment or the dynamics that occur in the digital environment, it is necessary to create guarantees for its operation and to repair it when it is not functioning properly. Thus, business sustainability, as in physical reality, requires legal certainty in the face of what is agreed, thereby promoting the maintenance of business and rights, otherwise creating an unstable and insecure space that will repel the advance of the digitization of the media.

Business sustainability, as in physical reality, requires legal certainty in the face of what is agreed, thereby promoting the maintenance of business and rights, otherwise creating an unstable and insecure space that will repel the advance of the digitization of the media. Given this, civil liability is a legal institute whose purpose is to apply measures that require someone to repair the property or moral damage caused to others, either by the issue of contractual default or by the issue of the practice of an unlawful act, and may be applied, even and necessarily, in the virtual environment.

Regarding contracts, in the digital scenario, cases of liability are visible in hypotheses such as the default of the license agreement and use of software, contracts for internet access, management of e-mails, and rental of space for website hosting, among other cases, which fall within the provisions of the Brazilian Civil Code. Furthermore, cases such as unfair terms, issues involving contracts of association, and dynamics of consumption relationships, among other similar issues, are also disciplined by that legal framework.

For example, the Superior Court of Justice (Superior Tribunal de Justiça – STJ) understood the application of the CDC to the relations signed between the holder of the community (site) and the user, understanding that it is commercial exploitation of the Internet, regardless of whether there is remuneration because the supplier can have, indirectly, profits through the view of the advertisements made there, without prejudice to other sources of income (Teixeira, 2022, p. 322).

Also, it is worth mentioning that a common practice to safeguard actors is the stipulation of contractual clauses that restrict liability on the Internet, which is another polemic theme.

In turn, there is the non-contractual liability as well, which is configured in the case of violation of a legal rule, leaving to its infringer the duty to repair the damage. As an example, we have cases of slander, injury, defamation, unfair competition, misleading or abusive advertising, violation of privacy and other situations in which, proven its illegality, it is appropriate to redress the damage. Regarding the Superior Court of Justice (STJ) jurisprudence, the Court has consolidated the understanding that the content provider should not be assigned objective responsibility (the one that arises from the practice of some unlawful act or the violation of the right of third parties), but a rather subjective liability, which depends on the verification of guilt, as can be seen in the cases of the Special Resources no. 1.193.764-SP, no. 1,186,616-MG and no. 1,308,830-RS.

As observed, the discussion about legal liability on the Internet is a topic that not only bumps into traditional dynamics applied to physical reality but also encompasses the particularities of the digital environment, such as data processing and issues involving providers.

E-commerce and companies

As seen in the previous subtopic, legal responsibility is a relevant topic in the virtual scenario, being commonly applied to commercial relations. The growth of e-commerce over the past few lately, especially during the pandemic, has shown that this form of trading has replaced those more traditional ones. In this sense, the Internet can be considered a tool of approximation between individuals, companies and other entities.

As noted, virtual reality has its own peculiarities. Thus, some contracts are proper to the Internet, such as those for connection services, storage or maintenance of websites. Moreover, regarding the digitization of companies, what was previously limited to a short physical space now takes international reach, given the cross-border nature of the Internet.

Also, it is worth mentioning that domain name and brand end up being determining factors for the sustainability of an internet business, more than in physical reality, since companies and professionals are located and recognized, as well as establishing their dynamics based on them. This is the case, for example, of the consumer who finds a service through a website or of a buyer who purchases products based on the reputation of a brand, believing that it assures him/her the quality of a product.

In view of this, there is a risk of piracy and counterfeiting. According to the Organization for Economic Cooperation and Development (OECD), trade in counterfeit goods makes up 3.3% of global trade, and is growing (OECD, 2019). In Brazil, for example, according to the Internal Revenue Service (Receita Federal Brasileira), there was a 10% increase in the number of counterfeit and irregular products seized in the first quarter of 2020 compared to the previous year (Época Negócios, 2020). Common practices include counterfeiting famous brands and illegal streaming of television and internet shows, which denigrates businesses and brings negative impacts such as lower financial incomes and fewer jobs. In addition, those illicit activities contribute to the strengthening of other illegal operations since several criminal practices are interconnected.

As can be noted, with the Internet, there is a need to rethink concepts such as merchandise, establishment, and place of service provision. This includes tax and accounting issues, independently if related to formal business or not. Also, the Internet brings new situations, such as the figure of the access provider and the use of cryptocurrencies such as bitcoin. Regarding this, Brazilian Law, as in several other countries, has had difficulty in including it taxingly; today, understanding it as a capital gain.

Finally, it should be noted that the digitization of accounting procedures and regularization of registration and operations of companies brought great contributions due to its centralization of services in one place only, which brings greater practicality and reach, as well as lower costs. Still, it is undeniable that replacing physical materials with digital ones means not only greater ease of management issues but also less environmental impact.

Brazil has a single portal which concentrates the services made available to citizens in companies, the gov.br. Also, for specific services, there are digital means to carry them out, such as opening companies on Commercial Boards' websites, controlling foreign trade operations through the Siscomex portal and conducting accountability practices in the SPED system.

Labour issues

The digitization of companies also reached the performance of their employees. With digital tools, activities could be carried out directly from the employee's home or other locations outside the establishment of the company, the so-called home office. In addition to greater practicality, said dynamics contributed to greater inclusion in the market since the physical distance is no longer a problem, as well as contributing to lower environmental impacts caused by people's traffic.

In Brazil, this modality of work, although present for some time in the world, gained greater contours after the validity of Law No. 12,551/2011 (Lei nº 12.551, de 15 de dezembro de 2011) and, more recently, Law No. 13,467/2017 (Lei nº 13.467, de 13 de julho de 2017). For its adoption, the individual employment contract must expressly provide for the modality of telework, specifying the activities to be done by the employee. There may be a change in work regimes if it is signed by means of a contractual additive. Thus, if there is an agreement between the parties, there may be a change from the face-to-face regime to teleworking and *vice versa*. However, if the change is determined by the employer and the change is from the telework regime to the face-to-face, the employee will be guaranteed at least fifteen days for adaptation and transition, according to the Consolidation of Labor Laws (Decreto-Lei Nº 5.452, de 1º de maio de 1943, Art. 75-C).

Moreover, about the contract, the responsibilities for the acquisition, maintenance and/or supply of the necessary infrastructure and technological equipment for the exercise of telework will be available to whom the reimbursements of the expenses made by the employee will be made.

Regarding the operationalization of the work, an important aspect is the control of the movement of information by employees. In view of this, companies have launched strategies that have the function of minimizing the transit of electronic messages of inappropriate content and the misuse of internet access. That is, to drive the internal dynamics of the company.

Despite the broad theme, two issues stand out in the labour scenario when it comes to the digitization of services: the adoption of the model, either by contractual forecasting, by the definition of the tools that are going to be used and all technical support to the employee; and the execution of activities, especially under the organization, control and discipline of the employer that clashes with individual rights, especially security regarding data and privacy of employees. For a model of digital services and processes, it is necessary to look at these themes when managing personnel.

Contributions of the legal framework to the digitization of sustainable development dynamics

As noted in the previous points, having Brazil as a case study, a strong legal framework is necessary to create a secure and efficient virtual environment capable of replicating transactions performed routinely in physical reality. Among its main contributions are the following.

- Protection of data processing creates a secure environment for the large flow and storage of data. Also, as noted above, a large part of the sustainable contribution of a digitalization process comes from the ability to replace information formerly contained on paper and other physical media in a virtual environment, thus requiring its protection in an environment of difficult supervision.
- Regarding virtual relationships (mainly from the business type), the virtual environment needs a framework that guarantees what is contractually available, as well as what is provided for by law. Furthermore, the virtual environment has different dynamics, such as the role of the website domain and the taxation of operations, thus giving rise to proper regulation on the subject for its operation and maintenance.
- Finally, labour regulation is also necessary, whether in terms of making digital instruments available, such as ICTs, or controlling new types of relationships, allowing for their implementation. Furthermore, it should be noted that, like the home office, the environmental impacts caused by vehicle traffic are reduced, demonstrating more than one type of contribution to greater sustainability regarding the matter.

14.4. Conclusions

As demonstrated, most studies indicate a positive relationship between digitization and sustainability, which is something beneficial, given the growing development of ICTs. Also, the market and companies have increasingly become aware of the need to become more sustainable.

As observed in the Brazilian case, the digitalization process has advanced a lot, but it still encounters technical and implementation bottlenecks for its deepening. In addition, in the legal area, mainly due to the difficulty of regulating new types of relationships, several challenges emerge to create an environment conducive to virtual operations. However, the analysis of the country also indicated progress, especially with the entry into force of the LGPD and the deepening of discussions regarding the legal framework in the virtual environment between legal experts and courts.

Thus, it can be concluded that the digitization process is a positive contribution to greater sustainability, especially for its ability to replace traditional relationships

that produce a greater volume of waste and pollutants than the virtual environment. However, for its operation and maintenance, and given the specificities of the virtual environment, an efficient legal framework is necessary, which seems to be being implemented, even though more recent issues require more time for its regulation.

Furthermore, it is worth noting that the digitization process, as it is intense in technology and innovation, maintains a strong relationship with Intellectual Property rights. Thus, there is great synergy between this chapter and the subsequent one (chapter 15), as the latter deals with ways to boost sustainability through Intellectual Property. Regarding this, a deeper study of the relationship of these two segments is very beneficial for future research, as well as the analysis of special programs in Brazil for boosting sustainable processes, such as the Green Patents program.

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