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Administration of Justice Meeting
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Descriptive e-Justice Framework to Support Studies at Administration of Justice

Outros Temas Relacionados à Administração da Justiça

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ABSTRACT

Information and Communication Technology (ICT) in Justice has a wide range of applications, often presented as e-Justice manifestations. It can enhance court processes, making them more effective and more efficient and enabling other features such as promoting transparency and broadening access to justice. This study aims to review the literature addressing e-Justice. We propose an e-Justice framework with six themes: Case Management Systems, Courtroom Technology, Legal Repository, Electronic Monitoring, Online Dispute Resolution and, the use of Artificial Intelligence. The study provides a systematisation of the e-Justice ICT most studied subjects, which can be helpful for further investigations.

Keywords: Justice; Information Technology; ICT; e-Justice; e-Court; Courtroom Technologies.

1 - Introduction

Justice administration is complex and expensive. The caseload of courts around the globe is high due to the slow steps of the lawsuits flow. Transparency and accountability are key concerns that permeate the judicial domain, and limited access to justice remains a threat to sustainable development (United Nations, 2021).

The use of Information and Communication Technologies (ICT) in the justice processes can improve the situation. First of all, considering the nature of justice processes, ICT plays an essential role in improving efficiency, reducing the execution time of judicial acts, reducing financial costs, promoting transparency and accountability, and broadening access to justice (Bakaianova et al., 2020; Cerrillo & Fabra, 2009; Fedushko, 2019; Gomes et al., 2018; Sarantis, 2017; Yulia & Sergiy, 2021).

Many technologies have been used in the justice domain since the beginning of the 1980s, with the first applications to case tracking, scheduling and management (Fabri & Contini, 2001). By the 1990s, the focus changed to the internet, including aspects such as information exchange and web portals (McKechnie, 2003b; Velicogna et al., 2006). Since the inception of e-Justice, we have watched an extensive growth of ICT in justice organisations, addressing broad and complex issues.

Interesting examples of different uses of IT in the public legal domain include remote centres aiming at assisting the administration of justice where access to vulnerable communities is performed only by boat at Amazonia (Ferreira et al., 2013) or the use of blockchain technology for preserving court evidence in China "smart" courts (Shi et al., 2021). To further illustrate, research published in 2019 reveals eighteen different forms of IT usage in family courts (Greacen, 2019).

This study aims at identifying what emerges from literature about these applied technologies, labelled as "e-Justice", and organise them to contribute to scholars and practitioners understanding their purpose, relations, and location in the justice ecosystem. Focusing on the ICT, we intend to answer the following research questions: What are the main research subjects in e-Justice? What are the applied ICTs adopted in the justice domains? How are they related one to another?

The paper is structured as follows: Section 2 addresses the methodology, Section 3 delimitates the concept of e-Justice, Section 4 presents the existing e-Justice frameworks, Section 5 describes the proposed Framework, and Section 6 provides conclusions and a research agenda.

2 - Methodology

This study is docked at a literature review. To overview the literature in e-Justice, we try not to leave behind any research related to the theme "justice" and "technology". A systematic search on Scopus and Web of Science, two world-leading databases of peer-reviewed for scholars (Zhu & Liu, 2020), was conducted in July 2021. We use a wide range of expressions, as in the first search results, querying the words e-Justice and e-Court, some important papers were not listed. The search query included 11 terms: e-Justice, e-Court, electronic justice, electronic court, digital justice, digital court, virtual justice, virtual court, e-litigation, e-law, and internet court. The words “justice” and “court” were combined with digital, technology, electronic and ICT. We seek within article title, abstract and keywords at all years of databases. After removing unavailable articles, duplicates or similar references, 202 articles remained.

Although many studies value legal, social, organisational or individual aspects of the ICT adoption in the justice domain, our focus is on the applied ICTs and their characteristics. No matter the article's focus, we ask: "What is the technology addressed in the research?". Many articles refer to more than one applied technology, and not every paper is cited, considering in some cases, the approach was not related to the research focus.

In the next step, they were classified into six categories: Case Management Systems (CMS), which principal function is to manage the judicial cases; Courtroom Technologies (CT), those with the primary purpose to assist judges and litigants during trials and hearings, Legal Repository (LR), those related to legal research and legal information retrieval, Electronic Monitoring (EM) refers to the surveillance of defendants, Online Dispute Resolution (ODR) which is characterised as a way to solve disputes entirely online, and the use of Artificial Intelligence (AI). Section 5 describes them in detail.

3 - What is e-Justice

In general, e-Justice is defined as the use of ICT in the justice domain aiming for higher efficiency and effectiveness, increasing confidence in the judicial system and greater legitimacy of judicial power (Cerrillo & Fabra, 2009).

Although the term e-Justice is the most adopted in the literature, authors use many words as synonyms of e-Justice or with similar means. e-Court is also widely used, in part referring to a location where matters of law are adjudicated by judges using any ICT (Al-Naimat et al., 2021). e-litigation, e-law, digital justice, internet courts, remote courts, remote justice, virtual justice, intelligent court, online courts, e-judiciary and smart courts are terms also found in the literature. Despite its different means, they are used interchangeably many times. Some of these expressions, like internet courts in China (Guo, 2021; Sung, 2020; Yu & Xia, 2020) or e-

litigation in Jordan (Al-Naimat et al., 2021) are derived from the formal normative act enacted addressing the ICT adoption in these countries.

e-Justice emerges as a specific field under the domain of e-government (e-Gov) (Cano et al., 2015; Kovalenko & Bernaziuuk, 2018). Therefore, the authors derive the principles and concepts of e-justice from the e-Gov: more efficient government, better services to citizens, and improved democratic processes (Grönlund, 2002).

Although the e-Gov concepts may be used for the e-Justice, particular features differentiate them to warrant special attention and justify specific studies (Kitoogo & Bitwayiki, 2009; Lesjak, 2010). e-Gov and e-Justice haven't developed at the same pace as the public legal sector are conservative and have been slow to adjust to technology (Al-Naimat et al., 2021; Cerrillo & Fabra, 2009; Lederer, 1996; Schaad et al., 2005). Fabri (2021) argues that the judiciary has several peculiar features that make ICT deployment quite hard.

Yu & Xia (2020) point to three aspects that differentiate e-gov and e-justice: context, users, and type of services offered. The context indicates what kind of public organisation is offering the service. Justice is provided by the courts, while the government offers other public services. The users of justice are not all citizens, as they are for e-government, but only litigants. And finally, the type of service consumed by users of e-Justice platforms is most to obtaining general information or consulting specific cases.

A misunderstanding of e-Justice concepts includes the action required of judicial bodies to face the changes emerging from society in the digital age as e-Justice (McKechnie, 2003b). It is not unusual that professional meetings deal with both aspects of "justice" and "digital" inside and out of the justice system in the same arena. Prins (2018) stresses that justice has an inherent obligation to be sufficiently sensitive to the changes brought by digitisation and either use digitisation inside the law agencies.

Legal problems arising due to the introduction of ICT in society demands new remedies. Data protection, copyright on the internet, artificial intelligence, algorithms transparency, cybercrime, e-commerce litigation, weakening of the concept of national borders are examples of emerging issues of the digital society. The field, which can't be confused with e-Justice, is legally oriented and interdisciplinary, reaching all classical areas of law, such as civil, criminal, constitutional and administrative (Arno R. & Oskamp, 2006). This second approach cannot be confused with e-Justice, as e-Justice comprises ICT used within justice systems.

4 – Existing Frameworks

Some authors have conceptually framed the e-Justice or some of its aspects in a technological approach. Susskind (2001) describes the components of CMS underlying two groups: electronic court and judicial support. The first focuses on the courtroom and the second on the support for judge works (cited by McKechnie, 2003a).

Probably the most referenced Framework is a matrix that organises justice applications into two categories. The vertical row points to the users: J4J and J4C, justice for justice and justice for citizens. In the horizontal line, there are two categories: technologies for the automation of administrative tasks and technologies to support judges and prosecutors (Agrifoglio et al., 2013).

Yu and Xia (2020) also elaborated a matrix considering the Chinese context and divided the users into five categories: judge, prosecutor, party (or) lawyer, public, and court administrator.

They divided the application types into three categories: information disclosure, event handling, and intelligent assistance. Bakaianova et al. (2020) grouped information technology in four categories: open e-Court technology, electronic document management system, video conferencing systems and system of audio and video recording of court proceedings.

5 – A Proposal for e-Justice Framework

Having reviewed the literature in the field under the label of e-Justice, we identify two main streams of research connected to the Judiciary: Case Management Systems (CMS) and Courtroom Technologies (CT). Another research vein in the e-Justice, available not only for the court, is the Legal Repository (LR). Related to the Police Department, Electronic Monitoring (EM) is the most applied technology cited in the literature. Online Dispute Resolution (ODR) is adopted mainly out of courts using alternative dispute resolutions. Finally, the use of Artificial Intelligence (AI) potentially pervades all justice areas. Figure 1 depicts the Framework of the overview of e-justice literature.

5.1 Case Management Systems (CMS)

CMS is considered the backbone of the e-Justice operation and managing cases (Contini & Cordella, 2015). Its origin is on the Case Tracking System (CTS), which mainly functions to locate the physical proceedings. In addition, first CMSs principally support back-office and court staff work, including scheduling hearings and document management (Agrifoglio et al., 2013; McKechnie, 2003a). By the year 2000, all European countries had CMS, although their functionalities differed. In most cases, prison departments, the police and the public prosecutor's office were not involved in their development (Fabri & Contini, 2001). In the 2000s, CMS evolved to open their data to lawyers and parties and include both administrative and judicial documents (Turner, 2002).

Nowadays, CMS can be defined as an integrated system. Its primary purpose is to handle judicial cases. Still, it is also designed to allow electronic filing, electronic payment, citation of parties, indexing and calendaring. (Domino, 1997; Saman & Haider, 2013b; Velicogna, 2007). Authors highlight the CMS importance once it may permit the extraction of all kinds of statistic data and allow the court's performance to be measured(Kitoogo & Bitwayiki, 2009; Saman & Haider, 2013b; Velicogna, 2007). CMS constitutes a significant part of e-justice studies, composed of descriptive case studies of its adoption and accounts of success and challenges. Those experiences show that CMS implantation is not only a matter of technology. It embraces organisational, institutional and legal aspects such as governance network, stakeholders engagement and motivation, strategic planning and standardisation of policy and practice (Contini & Cordella, 2016; Fairchild et al., 2006; Saman & Haider, 2012, 2013a; Velicogna, 2007).

e-Filing, e-Citation and e-Payment systems are important aspects of integrated CMS's. They open courts to the user throw information exchange and allow the advocates to do their work remotely.

- **Document Submission**

e-Filing systems enable the plaintiff to make the legal complaint digitally via the internet and include technological applications that allow procedural documents exchange by parties and courts (Contini & Cordella, 2015; Saman & Haider, 2013b)(W.S.W.M. Saman & Haider, 2013). The system requires a previous register from users and allows the documents submit any

day and time and receive a notification that their file was accepted (Gorham, 2012; Kharlie & Cholil, 2020).

Specific e-Filing experiences were studied by Velicogna et al. (2011, 2013) by exploring the French judicial system, by Klátik & Vaško (2020) describing the Slovak Republic process of e-Filing implantation, and Kharlie & Cholil (2020) detailing the e-Filing new practice in Indonesia. Gorham (2012) explores the progress on e-Filing adoption in the USA States and proposes a framework underlying reasons for the slow progress of its implantation.

- **Payment of Court Fees and Judicial Citation**

e-Payment or "e-Billing" is a feature used by the registered user to pay court fees digitally. In most cases, it is integrated with e-Filing and the whole CMS. e-Citation or "e-Summon is a module used by the courts to electronically notify the parties, summoning them to appear before the judges (Kharlie & Cholil, 2020; Saman & Haider, 2013c; Vuyst & Fairchild, 2006).

5.2 Courtroom Technologies (CT)

CT can be defined as the applied technology adopted mainly into the courtroom during hearings and trials to facilitate communication and enhance the quality of the court records and evidence display. Although the systems, for the most part, are integrated, making it difficult to separate, three subjects can be identified: videoconferencing, courtroom electronic records and evidence display.

- **Videoconferencing for Hearings and Trials**

Videoconferencing is a technological environment that allows hearings and trials with participants, not in the same place and not depends on a physical courtroom and involves interactive data and voice and visual transmission. (Wallace & Laster, 2021). It is pointed as having the potential to change the nature of litigation, court architecture and administration of justice (Donoghue, 2017; Lederer, 1999). One of the explanations for this disruptive potential is that "functional requirements, easily met in the oral face to face hearings, are difficult to replicate in videoconference-mediated hearings" (Contini & Cordella, 2015, p. 7).

Initially, the use of videoconferencing was an exception. It was mainly adopted for physical or sexual abuse children as witnesses of violent acts as it allows children to testify without facing the criminal (Ali & Al-Junaid, 2019; Williams, 1998). Videoconferencing was also initially used to witnesses living in remote areas (Beyene et al., 2015), expert witnesses and people in custody for security reasons (Rattan & Rattan, 2021; Rossner et al., 2021), and across an international border (Gray et al., 2013). By the beginning of the century, the use of video-link technology within criminal court processes was advanced in several jurisdictions and in various ways (Fabri and Contini, 2001, cited in Ward, 2015).

Gradually courts worldwide started to adopt videoconferencing mainly due to the cost reduction related to transportation of prisoners and witnesses (Wallace & Rowden, 2009; Young, 2011). Besides the technology already available, videoconferencing deals with great resistance, mainly due to the fear that it will undermine the legitimacy of State authority since formality and court architectures are highly symbolic (Mcintyre et al., 2020; Young, 2011). The misunderstanding of its impact upon justice systems was another concern (Donoghue, 2017). Meanwhile, the actual pandemic of COVID19 brings the videoconferencing technology to great importance in courtrooms functions. All worries, resistances and caution had to be postponed. Courts have

moved fast forward to online hearings and online trials (Fabri, 2021; Mcintyre et al., 2020; Rattan & Rattan, 2021; Sourdin & Zeleznikow, 2020). Fabri (2021, p. 5) highlighted videoconferencing, the most demanded technology during COVID19 has both "potential but also the weakness of such systems that need to be addressed".

- **Courtroom Records (CR)**

First mentions of CT in literature are related to replacing the stenographic records for the videotaped or audiotaped ones (Lederer, 1996; Strand, 1991; Terry & Surette, 1986). It refers to computer-assisted transcription systems that transform oral content into text in real-time, registering the judges, prosecutors, lawyers and witness speech. It records the whole hearing and trials process in audio and video format and allows their storage for preservation and retrieving (McKechnie, 2003b; Saman & Haider, 2013c).

CR provides evidence and other legal information for the court to make decisions which are its principal task. They also improve the case management, permit the party access information, allow experts to review the facial expression of the witnesses or the accused while they are giving their testimony, promote more accuracy to court data and avoid corruption once improves transparency. All misunderstandings during the trial can be solved by recovering the records (Mosweu & Kenosi, 2018; Saman et al., 2010). CR also provides to Legal Repository (LR) primary data produced by the courts, which has a central role in the judicial system.

- **Evidence and Information Display**

The third component of CT is the evidence and information display. Electronic evidence display is a means of draw attention to particular aspects of the facts, emphasising certain parts of the evidence adduced and "make visible specific facts that which otherwise might only exist as a mental picture formed when an advocate or witness speaks the word (Hamin et al., 2012, p. 286). It may allow, for example, computer-animated crimes scenes. The theme is a matter of evidence admissibility at courts once it can bias veridiction depending on the way it's presented (Feigenson & Dunn, 2003).

5. 3 Legal Repository (LR.)

We aggregated under LR the researchers addressing subjects like digital law library, legal digital research and legal information retrieval. Much of judges and prosecutors time is spent by researching legal content to settle de disputes. The LR is increasing significantly as Justice systems produce a large amount of legal documentation every day. Cases law, legislations, doctrines integrate the LR and other sources stored in several databases and accessed by judges, lawyers, investigators, students, civil servants, researchers, and citizens in general (Arno R. & Oskamp, 2006). It can be divided into general and specific. The general information aggregates common court issues, and specific information encompasses individual court information (Velicogna et al., 2006). All contents are sources for judge activities that depend on accurate and up to date legal data that are affected mainly by LR (Velicogna, 2007).

Related to LR is the essential need for information retrieval. There is no point in having the recordings and not being able to locate and extract them. Information retrieval is still a problem in the justice field, considering semantic issues and lack of integration into CMS (Fersini et al., 2013). Though advances have been made by using AI, e.g., tracking reference relevance, managing impacts of changing laws, managing data update priorities, associating law keywords to related verses (Darawaty et al., 2010; Ferrand & Pesquie-Geday, 2013).

Some studies depicted the applications aiming at the citizen's access to legal information. The application of the Constitutional Court of Spain provides a database of judgments and orders, with precisely the same information used by lawyers and judges (Cano et al., 2015). In the United States, the first large scale, free, public criminal database relates the defendant to their federal crimes and sentencing judge (Ciocanelid et al., 2020).

5. 4 Electronic Monitoring of Defendants (EM)

The EM is one of the first applied technologies used by police. The primary purpose is the monitoring of individuals. The location monitoring formerly was based on a radio frequency proximity detection system that operated over limited ranges (Murphy, 1995). Nowadays, they are GPS based systems, mostly ankle monitors. EM has been adopted for juveniles as a part of rehabilitation policy (Arnett, 2018; Weisburd, 2015). In the criminal process, it is used in three stages: before the adjudication, as an alternative to prevent or avoid pre-trial detention, as part of the sentence of the defender, and after being released from prison as a part of probation supervision. Practical examples of their use are cases of house arrest, domestic violence, to verify if the accused approached the victim a particular person, to check the convicted work hours, small theft, and others(Klátik & Vaško, 2020). Application to monitor the breath of alcoholic drives at regular intervals is already developed (Voas & Marques, 2004).

An emerging use for EM is mass monitoring. Recently many cities have adopted visual surveillance technologies (Ferguson, 2020).

5. 5 Online Dispute Resolution (ODR)

Even though ODR has being treated as a form of alternative dispute resolution conducted online, it refers not only to alternative disputes but also to the traditional judicial dispute resolution process. What characterises an ODR is that the entire trial process is managed digitally (Carneiro et al., 2014; Lu & Xu, 2016).

Though the fact is that in literature, ODR is mainly referred to as an out-of-court dispute resolution, which applies ICT in the processes such as conciliation, mediation and arbitration, often with self-represented litigants, with no judges or prosecutors (Hassan et al., 2016; Katsh & Rabinovich-Einy, 2017; Reiling, 2017). It's mainly adopted in e-commerce and small claims disputes and has the advantage of low costs, faster resolution of disputes, fewer formalities and flexibility, (Carneiro et al., 2014). Private e-commerce companies provide a higher number of ODR services. For example, the eBay system of ODR handle a large number of cases, and it's considered a very successful case (Palanissamy & Kesavamoorthy, 2019).

ODR is the most well-developed stream of research in e-Justice, and it is considered "a field of its own" (Arno R. & Oskamp, 2006, p. 14). Scholars have been studying ODR since the 1990s (Susskind, 2017), and exclusively ODR conferences have occurred since 2000.

5.6 Artificial Intelligence (AI)

AI can be used in various contexts in the justice domain. Unlike the other five categories listed, when ICT predominantly support a specific judicial process, AI can permeate all of them. The most discussed application for AI is the Judicial Decision Prediction that intends to formulate judicial decisions and evolves law article prediction, charge prediction and penalty prediction, that is a technology to automatically generate judgments (Muhlenbach & Sayn, 2019; Schmitzj, 2019; Shi et al., 2021; Spitsin IN & Tarasov IN, 2020; Ugwudike, 2020; Yao et al., 2021).

Studies also report AI uses for legal repositories information retrieval to support judge and staff work, facial recognition technology to confirm litigant identity, recognising human deception, assisting judges when writing judgment documents, help parties determine case value and bail determinations. In ODR, AI supports the disputants in finding court decisions that could potentially be related to their case description or give a default decision in arbitration proceedings (Fersini et al., 2013; Metsker et al., 2020; Schmitzj, 2019; Shi et al., 2021; Yu & Xia, 2020; Zheng, 2021).

Maybe, the already widely used AI application for the criminal justice (Correctional Offender Management Profiling for Alternative Sanctions - COMPAS) evaluate the potential of recidivism of criminal defendants and help judge decisions making in the USA (Rubim & Fortes, 2021b).

Figure 1 depicts the mains ICTs used in the e-Justice domain, points to the agencies in which they are mostly bound and describes some relations between them.

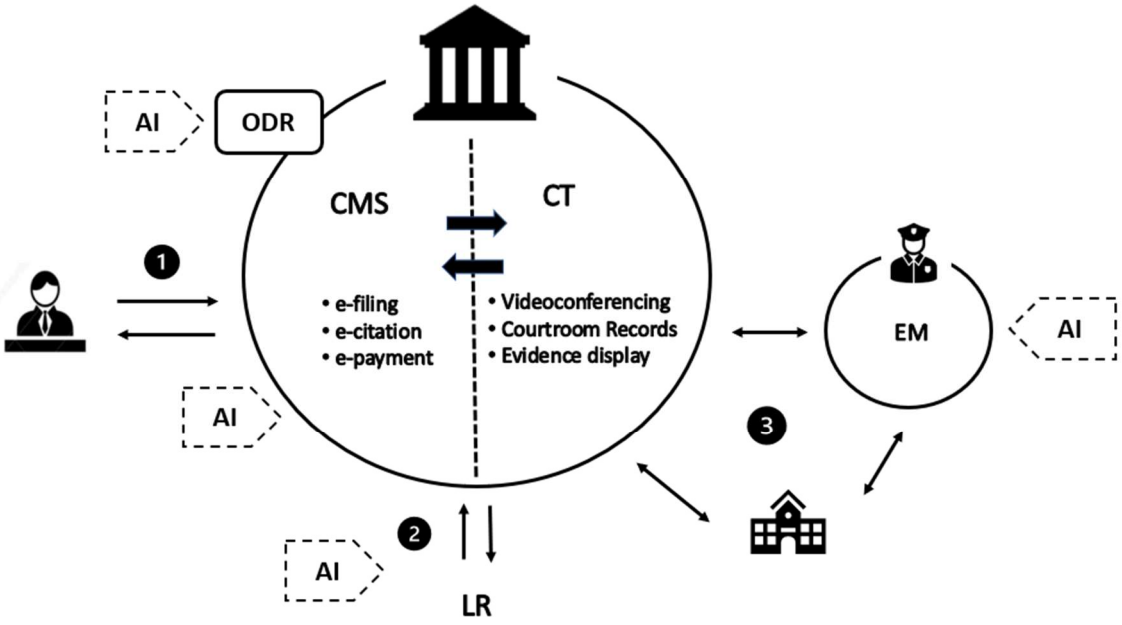

Figure 1: Framework for technology used in e-justice
Source: Elaborated by the authors.

CMS and CT are the central technology for the judiciary. Both are intrinsically connected. While CMS is the base of court activities as it contains all court dockets, CT, in turn, provides key documents that integrate CMS. Relation (1) indicates that the communication or documents are virtually exchanged between lawyers, public defenders or parties, and the court. The e-Filing system allows advocates to initiate the lawsuit request or send appeals or other judicial papers to courts, and e-Citation enables the judiciary to request parties to appear in court formally.

Relation 2 demonstrates that the court feeds the LR with all sorts of court records, and at the same time, judges and their staff search LR that will be crucial to legal reasoning and document writing. LR are the

source of legal research for lawyers, public defenders, police, researchers and citizens. Laws and regulations are part of the LR too.

Relation 3 demonstrate an essential issue for ICT adoption in e-Justice: interoperability. Interoperability between all existing systems at judicial institutions, police, and other agencies, like the prison department, guarantees data exchange and enables information sharing. The Technological aspect is important for interoperability in the justice field, but political, management, institutional, legal and strategic aspects are more significant in the deployment process (Gascó & Jiménez, 2011).

ODR is illustrated as both a judicial proceeding inside courts and an alternative to conventional justice as a significant part.

Finally, AI doesn't support any specific judicial process but can address (and already do it) a wide range of issues in the justice domain, going through the applied technology described in this research.

7 - Conclusions

This study aimed to provide an overview of the e-Justice field study focus on ICT use and propose a framework to contribute to studies in the administration of justice. Six main ICT subjects were identified: CMS, CT, LR, EM, ODR and AI. e-Filing systems, e-Citation and e-Payment are described as modules of CMS, although sometimes they are independent systems. Videoconferencing, courtroom electronic records and information display are the leading ICT used during hearings and trials. The Framework also locates the technology considering the public agency in which it is mainly adopted. Naturally, the judiciary has a central role, but technologies adopted by other agencies such as EM in the police were also addressed. The relation between ICTs is described.

Other authors refer to the main ICT themes of e-Justice that has some similarities to the proposed framework, although they do not make it the central focus of their studies as we do. For example, Fabri (2021, p. 3) affirms that the judiciary has been leading with "deployment of case management systems, electronic filing, data and document exchange, online dispute resolution, law online, performance data for policy development, court records, and court hearings technologies". Francesco Contini & Cordella (2016) set up four systems used in courts: Legal Information Systems, CMS, video technology, and e-filing systems.

Other themes were found in the literature review and were not included in the Framework once they did not deal with the technology itself but with other aspects related to it. One of these subjects is the legal reform required to adapt the normative framework to allow and regulate the functioning of ICT in judicial agencies and judicial procedures (Francesco Contini & Cordella, 2016), (Velicogna et al., 2011). A wide range of e-Justice subjects is a matter of legislative or rule change, e.g. legal application standards (Papagianneas, 2021), documents and signature authenticity, dockets integrity (Contini, 2010) and, the legal concept of AI (Spitsin IN & Tarasov IN, 2020). Concerns about the privacy in court records arguing versus the right of public access to court records are another theme in e-Justice (Abedi et al., 2019; Ardia, 2017; Sudbeck, 2006).

Once the study encompasses an extensive range of the subject, it was not possible to further discuss each one and deepen the knowledge of the interactions among described e-Justice ICTs. The boundaries of categories are not clear, so technologies overlap and interconnect more than the representation can demonstrate. ODR was put in the same layer of other applied technologies, but it refers to a whole process of online litigation that is better characterised as a

subdomain of the e-Justice field. It was emphasised due to its significance in the study domain and the number of literature review references.

Finally, the wide range of expressions used to refer to e-Justice initiatives points to the need to delimitate the concepts in the e-Justice field that could provide a common ground for new studies in the area. For example, digital justice is frequently adopted as synonymous with e-Justice. It seems inappropriate as most studies refer to digital justice as the citizens' fair access to the digital world, including the availability of web communicating, access to ICT devices like mobile phones and computers, and the literacy to use ICT means. Establishing the main differences between e-Justice and e-Gov is another issue that deserves future profound research. The focus on citizens electronic services is a central issue in e-Gov; meanwhile, citizens are most time represented by defenders before justice. As a result, the approach of e-Gov maybe not be appropriate to e-Justice. The other differences may be addressed to develop the specific field study better.

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