CHAPTER II

Evaluating e-Justice: The Design of an Assessment Framework for e-Justice Systems

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Introduction

The studies on e-justice, that is Information Systems (IS) developed in justice systems, scarcely focus on the topic of their evaluation. Some scholars, such as Contini and Lanzara, and Kallinikos,[1] advocate adopting a set of design principles (such as system modularization) to ensure quality performance of e-justice systems (EJS).[2] However, measuring systems' performance has thus far been overlooked. Scholars have missed measuring a dependent variable because there is no evaluative framework through which to analyze EJS. Bernoider and Koch made some attempts at evaluating e-justice.[3] They analyze two Austrian e-justice systems (the Legal Information System (LIS) and the *Elektronischer Rechtsverkehr* (ERV), an e-filing system). These scholars evaluated the two systems' performance using the DeLone and McLean model.[4] However, the model was not designed specifically for e-justice evaluation, and so it does not consider that e-justice evaluation also needs to take into account the fact that justice systems in a democratic society should support specific values, such as equal access, transparency, respect of privacy, and impartiality. Therefore, IS used in the justice sector should also support these values. E-justice evaluation should be based on a model that integrates IS evaluation methodology with variables that measure the capacity of e-justice systems to support judicial values. In

this respect, the DeLone and McLean model by itself is not entirely appropriate for grasping the complexity of e-justice assessment because its focus on efficacy as a measure of IS performance is too limited for the e-justice context.

The above arguments reflect the tenets of the Public Value School[5] and its criticism of the efficacy-oriented strategies of New Public Management[6] (NPM).[7] The Public Value School criticizes the NPM approach, stating that the evaluation of public-sector reforms should consider their effects on private economic exchanges and efficacy, as well as their support of collective preferences and values.[8] On these grounds, the evaluation paradigms of public reforms elaborated in the context of the Public Value School integrate managerial strategies of assessment, which focus on efficiency, with strategies of assessment that focus on public-values support.[9]

On this basis, this study proposes the design of an e-justice assessment framework that integrates efficacy-oriented variables with variables that focus on the judicial values that e-justice should support. In so doing, it fills a gap in the literature that, as anticipated, only focuses on efficacy-oriented variables when assessing e-justice systems.

The first part of the study introduces the main methodologies used for IS assessment that are a part of the IS and e-government approaches (see Measuring IS Performances below) and explores the DeLone and McLean model, which is the basis for the e-justice assessment framework. The second part discusses judicial values that justice systems and e-justice systems should support. Each value is analyzed based on the literature and is transposed to the e-justice context (see Justice Systems Values and e-Justice, page 57).

In the final part, the paper addresses the assessment framework, integrating the DeLone and McLean model variables with a set of variables that operationalize e-justice's capacity to support judicial values (see A New Framework for e-Justice Evaluation, page 61). Here, I introduce each variable's relative indicators and proposed operationalization. The methodology consists in both quantitative and qualitative methods of analysis.

Measuring IS Performances

With the aim of designing an e-justice assessment framework, I explored the main contributions on assessment in the IS literature.[10]

Additionally, the study also deals with the e-government school[11] and its approach to evaluation.

The literature on IS evaluation proposes different models[12] for system assessment.[13] These models focus on several aspects of IS performance. Some authors deal mainly with *system quality*, which refers to the efficient functioning of the IS, its flexibility, reliability, and ease of use.[14] Others take into account *use ratio* and *user satisfaction* as reliable measures of IS performance.[15] Moreover, other contributions focused on *information quality*, which regards the quality, accuracy, timeliness, and reliability of information that the system conveys.[16]

In 1993, DeLone and McLean proposed to integrate the different IS evaluation approaches into a unique, multidimensional model that combined the variables on which previous studies focused separately. The DeLone and McLean model of 1993, and their revised 2003 model, became one of the "most popular" tools for IS evaluation.[17]

The e-government literature also deals with IS evaluation, with a special focus on systems developed in public institutions. Several e-government assessment frameworks address different aspects of e-government evaluation. On this basis, they can be divided into hard and soft approaches.[18] The "hard" frameworks[19] usually assess tangible risks and benefits and focus on variables such as return on investment, cost/benefit, payback period, and benchmarking (the evaluation of performances against best practices). The "soft" frameworks usually assess intangible risks and benefits, with a focus on the organizational, social, political, or cultural impact of the system,[20] and comprise citizen-centric approaches (impact of digitalization on the quality of service delivered to citizens), trust in e-government systems and citizens' technological acceptance.[21] The analysis of the e-government approaches acknowledged that they mainly assess a single aspect regarding the evaluation of IS that is included as a dimension in the DeLone and McLean model: net benefits (see page 57). However, as the IS literature acknowledges, many other aspects should be taken into account when evaluating information systems. The capacity of the DeLone and McLean model to grasp several aspects of IS performance inspired me to use the same variables to assess the "efficacy-oriented" performance of an e-justice system.

The DeLone and McLean Model and Successive Amendments

DeLone and McLean developed their evaluative framework in 1992. The model's design was based on the multidimensional and

interdependent nature of IS performance. Their methodology consisted of reviewing a large number of studies that dealt with IS evaluation. The scholars classified several models and measures of IS performance by relying on the contributions of Mason's (1978) information-influence theory and on Shannon and Weaver's (1949) communication theory. Following these two approaches, DeLone and McLean (1992: 61) acknowledged that IS assessment can focus on three levels: first, the *technical level,* which refers to the quality and efficiency of the system; second, the *semantic level,* which refers to the IS capacity for delivering the right information; and third, the *effectiveness level,* which refers to the IS influence on its users. These levels represent stages of information flow: production, communication, and, finally, effects on recipients.

At each level, the DeLone and McLean model examines different aspects of IS performance. At the technical level, the focus is on *system quality* and on the *quality of the information* provided. At the semantic level, the model focuses on *usage* and *user satisfaction* in relation to the system. At the effectiveness level, the model deals with the impact of IS on *individual activity* and *organizational functioning*.[22] These variables derive from the DeLone and McLean analysis of previous IS assessment frameworks.

The result is a multidimensional model using six variables[23] that measure IS performance: (1) System Quality, (2) Information Quality, (3) System Use, (4) User Satisfaction, (5) Individual Impact, and (6) Organizational Benefits. The six dimensions of the DeLone and Mclean model will be included in the e-justice evaluation framework and therefore described later when presenting the framework's variables.

In 2003, DeLone and McLean redesigned the framework by reviewing more than a hundred articles, "including all the articles in *Information Systems Research*, *Journal of Management Information Systems*, and *MIS Quarterly"* that applied the model since 1993.[24] The objective of this update was to verify the hypothesized interdependencies between the model's dimensions (by analyzing the empirical studies that focused on the dimensions' relationships), and to reduce the possibility of replicating the same measure, thus enhancing the overall parsimony of the evaluation framework. The two authors proposed to include *individual benefit* and *organizational benefit* dimensions in a unique component, called *net benefits*, that takes into account the effects of IS introduction at both the individual and the

organizational level. *Net benefits* indicate the balance between the positive and the negative impacts of the introduction of an information system for the organization and for individuals.

Moreover, taking into account the fact that information systems are not only information providers but also usually deliver some kind of service, the authors also included *service quality* among the variables that relate to the effectiveness level of the model. Scholars have operationalized *service quality* by focusing on the reliability of the service provided, or on the courtesy of personnel (with a focus on staff that interacts with the system and provides a service to external users).[25] Given that e-justice systems cannot be considered as stand-alone technological artefacts but have to be seen as assemblages of technology, procedures, and individual and organizational functions and activities,[26] *service quality* has to be included as a dimension in my model.

The starting point for the design of an e-justice assessment framework is DeLone and McLean's 2003 redesigned model. Each dimension was investigated to evaluate its adaptation to the e-justice context. The six dimensions were translated into variables that measure the efficacy-oriented performance of an e-justice system. This consisted of selecting the most widely used indicators for each dimension/variable (therefore, those on which some consensus exists in the literature), adapting them to the e-justice context, and adding new indicators where necessary and opportune.

Justice Systems Values and e-Justice

As mentioned, in order to integrate the DeLone and McLean model and to adapt it to the e-justice context, this study considers typical values that justice systems should uphold. The analysis of the literature on the topic of fundamental justice values resulted in the identification of seven values to be taken into account for the design of an e-justice evaluation framework: (1) Independence, (2) Accountability, (3) Impartiality, (4) Equal Access, (5) Transparency, (6) Privacy, and (7) Legal Validity.

The first value mentioned is *judicial independence*. Many scholars address judicial independence and its relationship with other values, such as the accountability and impartiality of judges.[27] The concept mainly refers to the insulation of courts and judges from outside pressures, in particular from the executive and legislative branches.[28]

As a result, judges should be protected from unjustified dismissal, transfer, and non-renewal of office.[29]

The framework described here takes *independence* into account. The evaluation should assess whether an e-justice system negatively affects judicial and court independence. The independence variable relates to evaluating specific types of systems and, in particular, case-management systems and electronic legal work desk, which support judges' day-to-day activities.

One example of an EJS that may affect judicial and court independence relates to systems that automate the allocation of cases, such as personnel-and-resource management systems.[30] The mechanism of case allocation should guarantee that a case is not entrusted to judges "who have or appear to have an interest in the case, or who may appear prejudiced."[31] A potential incorrect functioning of the systems used to automate the mechanisms of case allocation may affect judicial and court independence.

A second example relates to e-justice systems that support judges' sentencing operations. Judges often decide routine cases supported by sentencing guidelines.[32] Software for sentencing guidelines[33] may affect judges' capacity to decide cases independently since only selected guidelines are stored in the database and the retrieval functionalities may malfunction.

Another issue related to this topic is the externalization of functions, activities, and software design to private companies (outsourcing). Outsourcing activities related to implementing and maintaining ICT is widespread,[34] and involving external actors may hinder the independent functioning of an e-justice system. Where exclusive relationships between private suppliers and the ministry of justice are established, the dependency on external actors should be greater. In this case, evaluating e-justice independence may focus on the types of contracts between public institutions and the private company (if they are exclusive/bilateral, or if they favour competition between companies in order to select the best service at the best price), and on the reliability of the company involved.

The second value, *accountability*, refers to the mechanism by which courts and judicial activities are assessed in terms of respecting rule-of-law values and efficiency.[35] More specifically, accountability means that judges should be responsible for their conduct before the public and before legal and political institutions that counterbalance judicial power.[36] Judges' and courts' actions have to

be accountable in terms of legal validity, equality, and impartiality.[37] The spread of NPM ideas since the 1990s, and the justice-systems reforms that they brought about, contributed to extend the concept of accountability to the monitoring of judicial institutions' efficacy (managerial accountability).[38] The mechanisms that guarantee judicial accountability may consist of formal processes, such as annual court report publication, judicial appointment scrutiny and appealable judgments. Civil society, specifically the media, can also guarantee judicial accountability by reporting on trials.[39] Due to the potential conflict between accountability and judicial independence, the relationship between the two values is broadly debated.[40]

The evaluation of e-justice systems in terms of accountability should focus on two main aspects: first, the system's capacity to improve judicial and court accountability; and second, the evaluation of the EJS's own "accountability" level. The former aspect refers to the possibility that e-justice systems can provide information on court and judicial activities. EJS can provide information on court and judicial efficiency, and on whether sentences comply with norms. EJS can monitor and store information on cases filed and on the average time to process a case, through systems such as case-management systems, electronic legal work desk, court records, and electronic data.

The evaluation framework should also consider EJS accountability and whether they should be limited by control mechanisms and procedures with which they must comply. For instance, an accountable service will likely undergo periodic checks and controls by the institution that hosts it (internal) and by external governmental bodies (such as the ministry of justice).

A third value quoted in the literature and related to independence is *impartiality*.[41] Impartiality refers to the absence of prejudice, preconceived ideas, or outside pressures on the judicial decision-making process.[42] Impartiality also refers to a specific case at hand, which narrows the scope from the more general value of independence. It means that the judge is not biased in favour of either party.[43]

Impartiality should be taken into account when evaluating particular types of EJS that support judges' adjudication of cases and that may affect their impartiality. I refer in particular to electronic work desk[44] systems that enable the retrieval of case law and give the judge access to laws that are related to the case.[45]

Equal access to the justice system is another fundamental value in liberal democratic countries, highlighted by international

organizations such as the Council of Europe and the United Nations.[46] According to this principle, justice systems should not prevent access to justice on the basis of gender, sexual orientation, geographic location, socioeconomic status, religion, right of representation, or disabilities, for example.[47] Access to courts is a right enshrined in the European Convention on Human Rights (Article 6, ECHR).[48] Moreover, Article 8 of the Universal Declaration of Human Rights states that "Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law."

Similarly, equal access is also important for e-justice systems. In this context, some users could be marginalized because of their level of technological literacy. The assessment of e-justice systems should take into consideration whether the system is accessible to those that have limited technological literacy. Another issue related to equal access is the capacity of e-justice systems to reduce the costs of the service for users in comparison with paper-based procedures.

Transparency concerns disseminating information on justice procedures, rights, and norms to the parties and the public.[49] Transparency also encompasses the accessibility of information on norms and procedure, which may be limited due to complex legal jargon.[50] Information can be disseminated through several channels, such as public hearings, the media, reports, use of information, and communication technologies.

E-justice systems are powerful tools that may affect transparency. Those systems dedicated to external users, provide information on procedures, norms, and rights. Additionally, transparency refers to access to information that users need in order to use the digital procedure. For example, digital procedures and the procedural rules that govern them should be clearly explained and known by users.

Transparency is directly linked to the next value analyzed in this section: privacy. The two values refer to divergent preferences and are sometimes in contrast.

Privacy refers to the protection of citizens' personal information when they are involved in civil or criminal cases. Privacy breaches are caused by identity theft, risk to personal safety, re-victimization, distress, and fraud. For Sherman,[51] access to judicial information should be balanced with the protection of personal rights.[52]

Privacy issues in EJS are important and may conflict with transparency. There are many opportunities for information systems to

analyze data from different databases, including sensitive personal data of a judicial nature. For instance, on the one hand, an internet-based e-justice system used for communication between users and the IS, or between different IS, improves the accessibility of the system and probably its transparency. On the other hand, it may give rise to security problems and privacy breaches (for a more in-depth analysis of this aspect, see Hanseth and Lyytinen[53]).

The last value taken into account is *legal validity*, which refers to the fact that the activities of courts, lawyers, and judges must conform to norms and procedures. All judicial operations, from the allocation of cases to civil and criminal trials, must comply with valid law.[54] Moreover, judges should adjudicate cases and apply written laws to the matters over which they have jurisdiction.[55] Adherence to laws and procedure is fundamental to the stability of a liberal democracy,[56] and it is the basis for the legal system's public legitimacy.

Regarding e-justice evaluation, the means by which procedural digitalization binds user operation and facilitates the respect of norms should be taken into account. Technology may be ingrained in users' courses of action.[57] In the case of e-justice systems, it may imbue actions such that they adhere to norms. For instance, e-filing systems that support legal validity should not allow access for users who falsify their identity (security of the accounting system). The evaluation of EJS's legal validity should also include the perceived consistency between the designed digital procedure and formal procedural rules. It should consider whether users perceive the system as legally valid. If they do not view it as valid, this may negatively affect the service, reduce its dissemination among users, or raise the possibility that the legality of judicial data exchanged through the system is not recognized.

In the next sections, I expand on the e-justice assessment framework. The framework includes values that are conceptualized and adapted to the e-justice context, and it is operationalized through qualitative and quantitative methods of analysis.

A New Framework for e-Justice Evaluation

The e-justice evaluative framework proposed here includes a set of variables that focus on efficacy and a set of variables that assess the system's capacity to support judicial values. In their paper, DeLone and McLean introduced numerous indicators for efficacy-oriented

variables utilized by scholars. In order to enable the measurability of our indicators, and to design a parsimonious model, I listed a set of indicators selected from the literature for each efficacy-oriented variable on the basis of two parameters: first, the availability of data, and second, the consensus among scholars on the use of the indicator. Additionally, my e-justice evaluative framework includes a set of variables related to justice values. In the following pages, I suggest a set of indicators that can be used to operationalize variables related to justice system values. These were designed on the basis of the literature introduced in the previous part.

My e-justice evaluative framework includes eleven components: (1) System Quality, (2) Transparency of Information, (3) Service Quality, (4) Use, (5) Organizational and Individual Benefit, (6) Independence, (7) Accountability, (8) Impartiality, (9) Equal Access, (10) Privacy, and (11) Legal Validity.

In the following pages, I deal with the operationalization of efficacy-oriented variables (see below) and "judicial values" variables (see page 78). Each section describes framework variables and proposes a set of indicators. It is worth repeating that the framework described in the following section is a generic model for e-justice evaluation. Its application needs to be adapted to the specific EJS under review. Hence, the sections that follow describe how to adapt the model to specific systems by indicating, for each type[58] of EJS, which variable and associated indicators should be included in the analysis.

The methodology for measuring variables and relative indicators is mixed. It consists of a users' survey and quantitative and qualitative analyses.

Variables, Indicators and Measures: The Efficacy-Oriented Variables

The EJS assessment framework includes six efficacy-oriented variables derived from the 2003 DeLone and McLean model: (1) System quality, (2) Transparency of information, (3) Service quality, (4) Use, (5) User satisfaction, and (6) Net benefit.

System Quality deals with effective system functionality, reliability, and accessibility. It could be operationalized with a focus on six indicators: (1) Accessibility, (2) Flexibility, (3) Reliability, (4) Response Time, (5) Usefulness, and (6) Interoperability (the operationalization of each system quality indicator are listed in Table 1). These can be used to analyze any type of system (from case-management systems to videoconferencing).

Accessibility refers to the simplicity of system use. Users' technological literacy may interfere with this variable. In order to overcome this barrier, the evaluator has to consider users' technological literacy when measuring accessibility. The indicator may be operationalized through a user survey that asks respondents to evaluate, on a scale of 0 to 7, the ease of use of the system or the ease of learning to use the system. Finally, respondents may be asked how many times they encountered technical issues when using the system (question A.1.3 in Table 1).

Flexibility refers to how the system adapts to new circumstances, conditions, and demands. This can be evaluated through a qualitative analysis (participatory observation). The qualitative analysis should assess the system's capacity to be adapted to new circumstances, conditions, and use-case domains (see the e-Barreau case in France, created for first-instance courts and then transferred to the courts of appeal[59]). The evaluator should also take into account whether the software supporting the system is open source. If so, the system should be more adaptable to new demands. Accordingly, I suggest operationalizing this indicator with three qualitative research questions (see Table 1). The evaluator should assign a 0 to 7 score for each question listed in Table 1 (indicators A.2.1, A.2.2, and A.2.3). The assessment may consist in summing up the scores and calculating the average value of flexibility on a 0 to 7 scale.

Reliability refers to its capacity to consistently perform required functions on demand and without failures.[60] Reliability can be measured with questionnaires administered to users and technicians. The questionnaire may ask about a number of technical issues that arise during operations, while the survey may ask how often the system has failed to run (see Table 1, questions A.3.1, A.3.2, and A.3.3).

Timeliness refers to the length of time a system takes to respond to instructions or to complete a task. This can be measured using a user survey question and a quantitative analysis of the system. The user survey may ask respondents to provide the average time to complete the digital procedure and to complete the paper-based procedure. The evaluator then calculates the ratio of time necessary to complete operations to the time required to do so following the paper-based procedure. Moreover, the evaluator may count the number of operations eliminated with the digitalization of the paper-based procedure.

Usefulness of the system refers to both its problem-solving capabilities and how useful it is to various actors. Usefulness may be operationalized through a user survey asking respondents how useful they consider the system to be in carrying out specific juridical operations (see question A.5.1 in Table 1). Moreover, the indicator's measurement can be integrated through a quantitative analysis that focuses on the number of operations that can be carried out through the system and on the number of its functionalities (question A.5.2). Also, the number of diverse user typologies (citizens, court staff, judges) can be used as a "usefulness" measure (question A.5.3).

Table 1: A – System Quality

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
A.1 – Accessibility	Bailey and Pearson (1983), Srinivasan (1985), Elezadi-Amoli and Earhoomand 1996, Goodhue (1995), Seddon and Kiew (1994), Teo and Wong (1998), Wixom and Watson (2001).	**A.1.1** Ease of use per operation (0–7 scale). **A.1.2** Ease of learning (0–7 scale). **A.1.3** Technical issues arising during operations.	User survey	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange Video and Audio Conferencing
A.2 – Flexibility	Bailey and Pearson (1983), Mahmood (1987), Elezadi-Amoli and Earhoomand (1996), Goodhue (1995), Seddon and Kiew (1994), Teo and Wong (1998), Wixom and Watson (2001).	**A.2.1** Capacity of the information system to change or to adjust in response to new conditions. **A.2.2** Capacity of the information system to adapt to different use case domain.	Qualitative analysis Participatory observation	

Table 1: (Continued)

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
		A.2.3 Use of open-source software. Evaluator should assign a 0 to 7 value to each question and finally calculate the average value of flexibility (0 no flexibility – 7 maximum flexibility).		
A.3 – Reliability	Belardo, Karwan, and Wallace (1982); Srinivasan (1985).	**A.3.1** Technical issues arise during operations (0–7 scale). **A.3.2** System up and running whenever user wants. **A.3.3** Number of breakdowns/ failure of the system registered in one month.	Technicians' user survey	
A.4 – Timeliness	Bailey and Pearson (1983), Belardo, Karwan, and Wallace (1982), Conklin, Gotterer, and Rickman (1982), Srinivasan (1985).	**A.4.1** Ratio of time to complete operations to time to complete operation with paper based procedure. For each single task.	User survey	
		A.4.2 Number of operations eliminated with digitalization of standard procedure.	Quantitative analysis	

Table 1: (Continued)

Indicator	Authors Who Used the Indicator	Operational-ization	Method of Measurement	EJS (to which measurement is applicable)
A.5 – Usefulness	Franz and Robey (1986), Goslar (1986), Hiltz and Turoff (1981).	**A.5.1** Usefulness in problem solving (0–7 scale).	User survey	
		A.5.2 Number of operations/ functions. **A.5.3** Number of diverse typologies of users.	Quantitative analysis	
A.6 – Interoper-ability	Sherman (2013)	**A.6.1** Non-redundancy of data inputted (dichotomous).	User survey	
		A.6.2 Functional connection with other systems (how many operations can be pursued – cumulative of entire infrastructure).	Quantitative analysis	

Note: System-quality variable operationalization, plus authors who used the relative indicators. Each question that operationalizes an indicator is marked with a reference code (e.g., A.1.1) that indicates the referring variable (A), the indicator (1), and the measurement (1).

Interoperability regards the capacity of the e-justice system to connect with other IS. Evaluating interoperability may focus on the non-redundant operations requested by the system for users (for instance if users' data are imputed only once and reused in each system's operations; user survey question, A.6.1). Moreover, the evaluation should count the number of operations that can be pursued by the entire infrastructure constituted by the system being analyzed, and by the other systems potentially connected to it.

The *transparency of information* variable refers to the information the e-justice system provides. In particular, it refers to information about system functioning, the procedural norms regulating the system, and the availability of documents that provide this information.

This variable is adapted from DeLone and McLean's variable "Information Quality," which refers to the quality of information that the system provides. Transparency may be measured by four indicators: (1) information completeness, (2) information reliability, (3) information timeliness, and (4) information accessibility (the operationalization and consequential method of measurement for each indicator of information transparency are listed in Table 2). These indicators may be used for any type of EJS.

Completeness of information may be measured by asking users whether the information provided for using the system is complete[61] or incomplete.[62] The evaluation may be integrated with a quantitative analysis that checks the number of FAQs (frequently asked questions) covered. A qualitative analysis should assess the completeness of the explanatory documents using a 0 to 7 scale (measure B.1.4 in Table 2).

Reliability of information can be measured by asking users if the information provided by the system is correct (B.2.1). Additionally, a qualitative analysis may verify if the information provided on the digital procedure corresponds to the actual functioning of the system (the evaluator may use a 0 to 2 scale: where "0" means no correspondence; "1" some mistakes are present; and "2" correspondence of information; see Table 2).

Table 2: B – Transparency of Information

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
B.1 – Completeness	Bailey and Pearson (1983), King and Epstein (1983), Miller and Doyle (1987), Etezadi-Amoli, Farhoomand (1996), Seddon and Kiev (1994), Teo and Wond, (1998).	**B.1.1** Completeness of the information provided to use the system (0–7 scale). **B.1.2** Information missing.	User survey	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange Video and Audio Conferencing

Table 2: (Continued)

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
		B.1.3 Presence of FAQs (number of FAQs covered).	Quantitative analysis	
		B.1.4 Completeness of explanatory documents. Result placed in a 0–7 scale (0: incomplete; 7 complete).	Qualitative analysis Participatory observation	
B.2 – Reliability	Bailey and Pearson (1983), King and Epstein (1983), Miller and Doyle (1987), Srinivasan (1985).	**B.2.1** Correctness of information provided (0–7 scale).	User survey	
		B.2.2 Correspondence of information with actual functioning. Evaluator uses a 0–2 scale (0, no correspondence; 1, some mistakes are present; 2, correspondent).	Qualitative analysis Participatory observation	
B.3 – Timeliness of Information	Bailey and Pearson (1983), King and Epstein (1983), Miller and Doyle (1987). Etezadi-Amoli, Farhoomand (1996), Seddon and Kiev (1994), Teo and Wond, (1998).	**B.3.1** Information rapidly updated. Evaluator uses a 0–2 scale (0, never updated; 1, rarely updated (from once per year to more than once per year); 2, constantly updated (more than once per year).	Qualitative analysis Participatory observation	

Table 2: (Continued)

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
B.4 – Accessibility of Information	Srinivasan (1985), King and Epstein (1983).	**B.4.1** Comprehensibility of information (0–7 scale). **B.4.2** Difficulties in using the system due to incomprehensible information (0–7 scale).	User Survey	
		B.4.3 Number of help desk interventions. **B.4.4** Number of norms that discipline the system.	Quantitative analysis	

Note: Transparency-of-information indicators operationalization, plus authors who used the indicators. Each question that operationalizes an indicator is marked with a reference code (e.g., B.1.1) that indicates the referring variable (B), the indicator (1), and the measurement (1).

The timeliness of the information may be assessed by verifying if the information on the system is updated regularly or if it is outdated[63] (see Table 2 for methods of measurement).

Finally, *accessibility of information* may be measured through survey questions that ask the user if the information provided is understandable and if they encountered difficulties using the system due to incomprehensible information. A quantitative analysis may focus on checking the number of help-desk interventions in a given time span. Finally, the assessment may count the procedural norms that frame the system,[64] since having a lower number of norms facilitates EJS accessibility.

Service quality refers to the quality and reliability of the service provided. Service quality may be operationalized through three indicators: (1) reliability of service, (2) competent personnel, and (3) overall service quality (see Table 3). These indicators, and their relative sub-indicators, should be taken into account in evaluating all types of EJS, with the exception of systems that are not supported by back-office operations.

Assessing *reliability of service* may consist in asking users if the service associated with the EJS has been provided in time and on demand (referring, for instance, to the involvement of a help desk; see questions C.1.1 and C.1.2 in Table 3). A qualitative analysis may integrate this information by checking the availability of online support, a telephone help desk, or front offices for user assistance. The evaluator may count the number of support services that are available.

Competent personnel may be operationalized through four user survey questions that ask if the user considers the help-desk staff (or the personnel that interacts with the IS in order to provide its services) kind, experienced, competent, and available (questions C.2.1, C.2.2, C.2.3, and C.2.4 in Table 3).

Overall service quality may be evaluated with a user survey question that asks users if they are satisfied with the service provided by the help desk/online support, positioning the answer on a 0 to 7 Likert scale.

Table 3: C – Service Quality

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
C.1 – Reliability of Service	Leyland, Watson and Kavan (1995), Kettinger and Lee (1995), DeLone and McLean (2003).	**C.1.1** Service provided in time (0–7 scale). **C.1.2** Service provided on demand (0–7 scale).	User survey	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange Video and Audio Conferencing
		C.1.3 Presence of online support, help desk, front office. Calculate number of supports.	Quantitative analysis Participatory observation	
C.2 – Competent Personnel	Leyland, Watson and Kavan (1995), Kettinger and Lee (1995), DeLone and McLean (2003).	**C.2.1** Help desk staff kind (0–7 scale). **C.2.2** Help desk available (0–7 scale).	Users survey	

Table 3: (Continued)

Indicator	Authors Who Used the Indicator	Operational-ization	Method of Measurement	EJS (to which measurement is applicable)
		C.2.3 Help desk capable (0–7 scale). **C.2.4** Help desk experienced (0–7 scale).		
C.3 – Overall Service Quality	Leyland, Watson and Kavan (1995), Kettinger and Lee (1995), DeLone and McLean (2003).	**C.3.1** General rate of the service provided by help desk/ online support (0–7 scale).	Users survey	

Note: Service-quality indicators operationalization, plus authors who used the indicators. Each question that operationalizes an indicator is marked with a reference code (e.g., C.1.1) that indicates the referring variable (C), the indicator (1), and the measurement (1).

Use and *User satisfaction* (see Table 4) are two of the most widely used indicators of IS performance. For this reason, they are also used as proxies of performance in several studies.[65] As we will see, the indicator of use cannot be applied to all types of systems.

Use can be measured through quantitative analysis focusing on the number of accesses to the IS or by calculating the ratio of the percentage of system use to the use of the traditional procedure. This can only be included in the system assessment if system use is optional. Therefore, the indicator should be omitted when analyzing court-to-court systems such as case-management systems, the use of which is compulsory. *User satisfaction* can be evaluated by asking users to rate their satisfaction with the EJS. User satisfaction level may also be assessed in comparison to the paper-based procedure. In both cases, respondents may position their answer on a 0 to 7 scale (where "0" indicates no satisfaction and "7" maximum satisfaction; see Table 4).

Organizational and individual benefits refers to the impact IS has when it is introduced into individual and organizational performances.

Table 4: D – Use and User Satisfaction

Indicator	Authors Who Used the Indicator	Operational-ization	Method of Measurement	EJS (to which measurement is applicable)
D.1 – Use	Authors quoted in DeLone and McLean (1992, p. 70) and DeLone and McLean (2002, p. 16).	**D.1.1** Number of access to the IS. **D.1.2** Ratio of percentage of use to the use of the paper-based procedure.	Quantitative analysis	Electronic Legal Work Desk Court Record Electronic Data Interchange *(only when use is facultative)*
D.3 – User Satisfaction	Authors quoted in DeLone and McLean (1992, p. 70) and DeLone and McLean (2002, p. 16).	**D.3.1** Satisfaction for IS (0–7 scale). **D.3.2** Satisfaction in comparison with paper-based procedure (0–7 scale).	User survey	Case Management Systems. Electronic Legal Work Desk Court Record Electronic Data Interchange Video and Audio Conferencing.

Note: Use and user-satisfaction indicators operationalization, plus authors who used the indicators. Each question that operationalizes an indicator is marked with a reference code (e.g., D.1.1) that indicates the referring variable (D), the indicator (1), and the measurement (1).

Individual benefits may refer to a change in individual productivity or in the way new IS impact operations performance. In order to evaluate individual benefit, I suggest focusing on three indicators: (1) time to complete the procedure, (2) efficiency of information flow, and (3) cost savings (for the user). As Table 5 shows, some of these indicators can be used only for the evaluation of specific typologies of EJS. In particular, "cost savings for users" refers only to those systems dedicated to external users that have to pay a fee to receive a service, as is the case for the electronic data interchange (and in particular for e-filing systems).[66]

Time to complete the procedure refers to time-saving benefits that the digitalization of procedure may entail. A user survey can measure this indicator by evaluating how much time it takes for the user to complete the digital procedure and how much to complete the relative

paper-based procedure. Then the evaluator should calculate the ratio of time needed to complete the digital procedure to the time needed to complete the paper-based procedure (question E.1.1 in Table 5). Videoconferencing systems may be excluded from this measurement as they and the paper-based procedure are not comparable.

For court-to-court systems, such as case-management systems, this indicator can be measured through quantitative analysis. The analysis can, for example, calculate the ratio of the number of procedures completed in one week to the number of comparable paper-based procedures completed in one week, by one clerk.

An operationalization of the *time to complete the procedure* indicator may be applied to videoconferencing systems. A quantitative analysis may calculate the average amount of time saved by avoiding witness travel thanks to the use of the system (question E.1.3 in Table 5).

Efficiency of information flow refers to improving user capacity to retrieve information (on the procedure, on users' rights, and on the information stored into the database) by digitalizing the paper-based procedure. A user survey can assess whether respondents think the EJS has improved their capacity to retrieve information. Respondents can use a 0 to 7 scale, where "0" represents no improvement and "7" indicates maximum improvement (question E.2.1 in Table 5). Videoconferencing systems may be excluded from measurement because it is not possible to compare them with a paper-based procedure.

Table 5: E – Individual Benefit

Indicator	Authors Who Used the Indicator	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
E.1 – Time to Complete the Procedure	Bembasat and Dexter (1985), DeBrabander and Thiers (1984), Luzi and Mackenzie (1982), Etezadi-Amoli and Farhoomand (1996), Seddon and Kiew (1994), Teo and Wong (1998), Wixon and Watson (2001).	**E.1.1** Ratio of time to complete the entire procedure to time to complete the paper-based procedure.	User survey	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange

Table 5: (Continued)

Indicator	Authors Who Used the Indicator	Operational-ization	Method of Measurement	EJS (to which measurement is applicable)
		E.1.2 (Only for court-to-court systems) Ratio number of procedures completed in one week/ number of paper-based procedure completed in one week by one clerk.	Quantitative analysis	Case Management Systems Electronic Legal Work Desk Court Record
		E.1.3 Average amount of time saved by avoiding the transportation of a witness thanks to the use of the system.	Quantitative analysis	Video and Audio Conferencing
E.2 – Efficiency of Information Flow	Watson and Driver (1983)	**E.2.1** Improvement of users' capacity to retrieve information (on the procedure, on users' rights, and on the information stored into the database), (0–7 scale).	User survey	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange
E.3 – Cost Savings (for the user)	Etezadi-Amoli and Farhoomand (1996), Seddon and Kiew (1994), Teo and Wong (1998), Wixon and Watson (2001).	**E.3.1** Costs saved in comparison to standard procedure (reduced court fees).	Quantitative analysis	Electronic Legal Work Desk

Note: Individual-benefits indicators operationalization plus authors who used the indicators. Each question that operationalizes an indicator is marked with a reference code (e.g., E.1.1) that indicates the referring variable (E), the indicator (1), and the measurement (1).

Quantitative analysis can assess *cost savings* by checking users' cost savings in comparison to standard procedure (for instance through reduced court fees). This indicator applies to EJS used by external users, such as citizens or lawyers (e.g., court-to-user systems such as the electronic data interchange). In a court-to-court system analysis this indicator can be omitted, because users are court staff and do not pay for using the system. In this case, cost savings may be calculated only at the organizational level and in the cluster of organizational benefits.

As far as *organizational benefits* are concerned, four indicators may be considered: (1) cost-benefit ratio, (2) time reduction, (3) organizational efficiency, and (4) trust (these indicators' operationalizations and relative methods of measurement are listed in Table 6).

The objective of the *cost-benefit ratio* is to calculate cost savings for the organization when an IS is introduced. A quantitative analysis can measure system cost savings by calculating the ratio of the costs associated with the development of the system to the cost reduction due to the introduction of the system. For videoconferencing systems, the indicator can be measured by focusing on cost reduction for the justice institution (in terms of personnel and fuel; question F.1.2 in Table 6) because witnesses no longer need to travel.

The operationalization of *operation reduction* may consist in focusing, through a quantitative analysis, on the reduction of the operations needed to complete a procedure with the introduction of the IS compared to the paper-based procedure.

Organizational efficiency refers to the benefits for the organization in terms of efficiency derived from the introduction of the IS. This indicator may be calculated for evaluating court-to-court systems or court-to-users systems, with a focus on their back-office operations. For instance, when analyzing an e-filing system, the evaluator should focus on the improvement of the efficiency of the court staff associated with the introduction of the system. This indicator can be evaluated by calculating the office's improved capacity to manage routine operations with the introduction of the IS, in a specific time period and in comparison with the paper-based procedure. Specifically, the evaluator may calculate the ratio of the number of routine operations that can be performed by the office in a given time span with the help of IS to the number of operations completed in the same time span before the introduction of the application.

Trust refers to citizens' confidence in the justice system, and the legitimacy that the system can consequently claim. For instance, the use of an e-justice system that improves the efficacy of the judiciary and contributes to improving citizens' trust in the courts and their activities has to be considered as an organizational benefit. On the basis of the above argument, this indicator should be included in the analysis only when evaluating court-to-users systems such as electronic data interchange systems (in this case, users may be citizens or lawyers, depending on the access that the EJS provides). A user survey can assess trust by asking respondents whether they trust the court in which the digital procedure has been implemented, and whether they trust the digital procedure itself.

Table 6: F – Organizational Benefit

Indicator	Authors Who Used the Indicator	Operational-ization	Method of Measurement	EJS (to which measurement is applicable)
F.1 – Cost-Benefit Ratio	Lincoln (1986), Miller and Doyle (1987), Millman and Hartwick (1987), DeLone and McLean (2003).	**F.1.1** Cost-benefit Ratio: ratio of the development costs to the cost reduction due to the introduction of the system.	Quantitative analysis	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange
		F.1.2 (Only for videoconferencing systems) Ratio of system's development costs to reduction of costs due to the avoidance of witnesses transportation (costs in terms of personnel and fuel).	Quantitative analysis	Video and Audio Conferencing

Table 6: (Continued)

Indicator	Authors Who Used the Indicator	Operational-ization	Method of Measurement	EJS (to which measurement is applicable)
F.2 – Operation Reduction	Lincoln (1986), Millman and Hartwick (1987), DeLone and McLean (2003).	**F.2.1** Reduction of operations to complete a procedure.	Quantitative analysis	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange
F.3 – Organiza-tional Efficiency	Lincoln (1986), Millman and Hartwick (1987), DeLone and McLean (2003).	**F.3.1** Ratio of the number of routine operations that can be finalized by the office in a time span with the help of the IS to the average number of operations finalized in the same time span before the introduction of the application.	Quantitative analysis	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange
F.4 – Trust *– Legitimacy*	Contini and Mohr (2011), Sherman, (2013).	**F.4.1** Trust in the court in which the service is provided. **F.4.2** Trust in the EJS.	User survey	Electronic Data Interchange

Note: Organizational-benefits indicators operationalization, plus authors who used the indicators. Each question that operationalizes an indicator is marked with a reference code (e.g., F.1.1) that indicates the referring variable (F), the indicator (1), and the measurement (1).

Variables, Indicators and Measures: The Variables Related to e-Justice Values

Aside from efficacy-oriented indicators adapted to the e-justice context, our evaluative framework focuses on a set of variables that

assess EJS capacity to support judicial values. The framework focuses on the "e-justice values" that I introduced in Justice Systems Values and e-Justice, above: (1) Independence, (2) Accountability, (3) Impartiality, (4) Equal Access, (5) Transparency, (6) Privacy, and (7) Legal Validity.[67] The operationalization of each of these variables is based on the judicial values' conceptualization described in the second part (see page 82). The methodology suggested is mixed and consists of both qualitative and quantitative analysis of user surveys (see Table 7). Following the method I used for the efficacy-oriented variables, I will specify how indicators may be operationalized on the basis of the type of system that is being analyzed. This allows the assessment framework to be adapted to evaluating specific types of EJS.

Independence refers to the influence of the EJS on both judicial and court independence and on the independent functioning of the e-justice system, free from external influences of private actors. Qualitative and quantitative indicators and surveys administered to judges and court staff can be used to assess independence.

When assessing systems that support judicial activities, such as EJS that automate the allocation of cases and the storing and retrieving of sentencing guidelines, or personnel-and-resource management systems, the evaluator may address the following survey questions to a representative sample of judges. The evaluator may ask the judges whether they think that the EJS has affected their independence (question G.1 in Table 7). Moreover, the assessment may include the judges' involvement in the design and implementation of the system on a numbered scale.[68]

For systems that automate the allocation of cases, it may be important to check the number of accepted requests for disqualifying a judge (where provided for by law; see Fabri and Langbroed, 2007) during a specific time span.

A number of indicators should be taken into account regarding how outsourced, external actors affect the independence of courts. First, the type of contract must be evaluated in order to determine whether it was exclusive or whether it encouraged competition among several companies, thus fostering independence from a single company. The evaluator may use a dichotomous score, assigning a value of "0" for exclusive contracts and "1" where a periodical competitive tender guarantees competition among several companies for the management of the system. Second, the duration of the outsourcing

contract can be evaluated. A long time span reduces the opportunities for other companies to compete for involvement in the project. The evaluator may use a 0 to 5 scale where longer contract durations are associated with lower numbers, given that longer time spans mean greater dependence of the system on a single private actor.[69]

In order to evaluate independence, a survey should be administered to the staff who interact with the system and who provide back-office support. The survey may ask, first, whether the staff trusts the company selected for designing/managing the e-justice system (0–7 scale); second, how many issues arose in a specific time span due to the outsourcing to an external company (0–7); and third, how many times during a specific time span the system was unavailable due to maintenance and due to the company that manages the system (see Table 7, measure G.8).

As mentioned in the third and final part, *accountability* refers to two concepts: the influence EJS has on judicial and court accountability on the one hand, and the mechanisms and channels available to ensure that e-justice complies with procedural norms on the other.

A qualitative investigation can assess the influence EJS has on judicial and court accountability. It can look at how EJS stores and provides information on the number of cases filed, on the average time to process a case, on the number of hours in session, or on the number of sentences annulled by an appellate court. The evaluator may check if systems such as case-management systems, electronic legal work desk, court record, and electronic data interchange provide the possibility to store and retrieve the above-mentioned information (question H.1 in Table 7). Moreover, the analysis may check if information is used for statistical purposes, if it is published, and if the information is used as a basis for resource management (see question H.2 in Table 7).

A qualitative analysis may focus on three additional aspects: whether the system is monitored by internal staff; whether it is monitored by external governmental actors (e.g., a ministry of justice); and lastly, a survey assessment of the number of channels users can access to deal with issues, such as a help desk or online support that receive users' complaints, as well as the "quality" of these services (question H.6 in Table 7).

Impartiality refers to the absence of prejudice, preconceived ideas, or outside pressures on judges that may influence their decision-making (see page 84).[70] EJS that support adjudication may affect

judicial impartiality. Some electronic work desk[71] systems enable the retrieval of case law and access to laws that are related to the case analyzed by the judge. A survey addressed to judges using EJS may assess impartiality (see Table 7). It can ask judges to compare the system with more traditional and paper-based methods of case-law consultation, in particular in regards to how complete the database is compared to paper records.[72] Secondly, it may ask judges whether the case-law retrieval system is reliable.[73] A third question may request judges' opinions on whether the use of the system may affect their impartiality (0–7 scale).

A quantitative analysis can assess impartiality by comparing the number of cases stored in the digital database and in paper records (see Table 7). It may also look at the number of appeals that reverse rulings applying case law in one year.

Equal access refers to access to justice, without any kind of discrimination, including based on technological literacy. This value refers to external access, for instance of citizens and lawyers, and therefore the evaluation focuses on e-justice systems that have "court-to-users" functionalities. I refer in particular to e-filing systems. A qualitative analysis may assess whether the system allows for reverting to the traditional paper-based procedure at any stage of the process, so that parties with limited technological literacy are not disadvantaged (question J.1 in Table 7). Moreover, the evaluation may verify whether the system includes different kinds of supports for users with limited technological knowledge (such as courses, online support, or face-to-face support). In this case, the evaluation may ask users who found the system difficult to use, or users with poor technological skills, whether they obtained online or face-to-face support, and how satisfied they were with the support they received (question J.2 in Table 7).

Finally, a qualitative analysis (participatory observation) may assess *equal access* by focusing on socio-economic discrimination. This will demonstrate whether the system is accessible to lay users[74] and assign a dichotomous score of "0" when only lawyers use the system or when the percentage of lawyers that use the system is greater than the percentage of lay users, or "1" when the percentage of lay users exceeds the percentage of lawyers.[75]

Privacy refers to the protection of personal information filed or stored in an e-justice system. Qualitative/quantitative research questions and a technicians' survey can measure "privacy." The evaluation

may assess the presence of infrastructure firewalls that limit unwanted access from external users (the evaluator may count the number of firewalls that protect the system). The assessment may also cover the presence of encryption methods (question K.2 in Table 7). The third required assessment item is whether unnecessary personal data are requested by the system (question K.3 in Table 7). Finally, a survey administered to the staff that run the system should ask how many privacy breaches the system experienced in a particular time span.

Legal validity refers to EJS's capacity to improve compliance with norms by both actors (citizens, lawyers, and judges) and the digital procedure. Digital procedure that binds user operations and facilitates compliance should be accounted for (see page 84) in an assessment of EJS's legal validity. A qualitative analysis may assess this by checking how many filed claims are rejected by the court for procedural errors within a given time frame. Perceived consistency between the designed digital procedure and formal procedural rules is another aspect of legal-validity assessment. A qualitative indicator and user surveys can assess this aspect. The analysis here refers primarily to court-to-users systems and involves external users such as citizens and lawyers. The qualitative analysis should assess whether digital procedure is regulated by formal norms. In particular, it may check the number of procedural issues presented by parties that question the legal validity of the digital procedure in a particular time span (question L.2 in Table 7). In addition, the evaluation may focus on a user survey question that asks interviewees to indicate if they deem digital procedure valid from a legal point of view (question L.3).

Conclusion: Final Remarks and Future Developments

The new evaluative framework presented distinguishes between efficacy-oriented variables and variables related to e-justice values. Even though this distinction is useful for facilitating the description of each variable and its relative indicators, I support the application of the entire framework for the assessment of e-justice. The entire set of variables helps provide a complete picture of e-justice systems performance, in regards to both efficacy and other judicial values.

The framework design can serve as the basis for future research stemming from this study. In particular, the framework should be

applied to the assessment of a set of e-justice systems. Empirical analysis is important in order to test whether the model is applicable to different contexts and whether results gathered through the framework are comparable. Moreover, empirical analysis may make it possible to investigate the relationship between the model's variables. In a future study, I will recommend the application of the framework to the assessment of national and transnational cases.

Table 7: Variables Related to E-Justice Values

Variable	Operationalization	Method of Measurement	EJS (to which measurement is applicable)
G. – Independence	**G.1** Independence affected with the introduction of the system (0–3 scale).	Judge survey	Systems for the allocation of cases Management and personnel systems Automation of sentencing guidelines
	G.2 Involvement of judges in the design and implementation of the system (0–2 scale).	Qualitative analysis Participatory observation	
	G.3 Number of requests of judges' rejection accepted in one year.	Quantitative analysis	Systems for the allocation of cases
	G.4 Typology of contract for outsourcing: exclusive, not exclusive (dichotomous). G.5 Duration of contract (0–5 scale).	Qualitative analysis Participatory observation	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange Video and Audio Conferencing
	G.6 Trust in the company selected for designing/managing the e-justice system, in one year. G.7 Issues that arise due to the outsourcing to external company (0–7 scale). G.8 System unavailable for maintenance, due to the company that manages the system, in one year.	Staff survey	

Table 7: (Continued)

Variable	Operationalization	Method of measurement	EJS (to which measurement is applicable)
H. – Accountability	**H.1** Information provided by the system. Count the scores, "0" no information, "1" information are provided for each item: H.1.1 Information on the number of case filed. H.1.2 Average time to process a case. H.1.3 Number of hours in session. H.1.4 Number of sentences annulled by an appellate court. **H.2** Information use. Count the scores, "0" no - "1" yes for each item: H.2.1 Information for statistical purposes. H.2.2 Information on court efficiency published. H.2.3 Information as basis for resource management.	Qualitative analysis Participatory observation	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange
	H.3 System periodically checked by internal staff (0–2 scale). **H.4** System periodically checked by external governmental actors (e.g., ministry of justice; 0-2 scale). **H.5** Number of channels through which users may express issues.	Qualitative analysis Participatory observation	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange Video and Audio Conferencing.
	H.6 Satisfaction for the service for receiving users' complaints and issues (help desk online or face-to-face; 0–7 scale).	User survey	

Table 7: (Continued)

Variable	Operationalization	Method of measurement	EJS (to which measurement is applicable)
I. – Impartiality	**I.1** Completeness of the database in comparison with the paper records (0–3 scale). **I.2** Reliability of the system for case-law retrieval (0–2 scale). **I.3** System affect impartiality (0–7 scale).	Judge survey	Case-law database and retrieval
	I.4 Ratio of case-law recorded on the digital database to case-law in paper records. **I.5** Number of appeals that reject the reference to case-law in one year.	Quantitative analysis	
J. – Equality of Access	**J.1** Possibility to switch to paper based procedure at any stage of the procedure (score 0–3).	Qualitative analysis Participatory observation	Electronic Data Interchange
	J.2 Satisfaction for support to users with scarce technological literacy (0–7 scale).	User survey	
	J.3 No necessity to involve and pay a lawyer (higher percentage of lay users comparatively to lawyers) (score 0–1). Or alternatively, possibility to have access to legal aid (score 0–1).	Qualitative analysis Participatory observation	
K. – Privacy	**K.1** Use of firewalls (Count). **K.2** Use of updated encryption methods (Dichotomous). **K.3** System that asks only personal data necessary for the procedure (0–2 scale).	Qualitative/ Quantitative analysis Participatory observation	Case Management Systems Electronic Legal Work Desk Court Record Electronic Data Interchange
	K.4 Number of privacy breaches in one year.	Technician survey	
L. – Legal Validity	**L.1** Claims filed rejected by the court for procedural errors in one year. **L.2** Number of procedural exceptions presented by parts in one year.	Qualitative analysis	Electronic Data Interchange

Table 7: (Continued)

Variable	Operationalization	Method of measurement	EJS (to which measurement is applicable)
	L.3 Legal validity of the digital procedure. Score: "0" completely invalid, "1" partially valid, "2" completely valid.	User survey	

Note: Operationalization of variables related to e-justice values. Each indicator is marked with a reference code (e.g., G.1) that indicates the referring variable (G) and the indicator (1).

Notes

1 Francesco Contini and Giovan Francesco Lanzara, eds., *The Circulation of Agency in e-Justice: Interoperability and Infrastructures for Europe Trans-Border Judicial Proceedings* (Dordrecht: Springer, 2013); Jannis Kallinikos, "Institutional Complexities and Functional Simplification: The Case of Money Claims Online: ICT and Innovation in the Public Sector," in *European Studies in the Making of e-Government*, ed. Francesco Contini and Giovan Francesco Lanzara, (Basingstoke, UK: Palgrave Macmillan, 2009).

2 In this paper, I will refer to e-justice systems instead of e-justice services or applications. The term "e-justice system" derives from the adaptation of Information System to the justice context. Therefore, I prefer to focus on "systems" instead of "applications" because of their assemblage nature, and their characterization by the interaction of applications, offices, organizations, and people. By the same token, the paper will refer principally to Information Systems (IS), instead of Information and Communication Technology (ICT). While IS refers to the combination of human and technological agency, ICT refers to the integration of computers, software, hardware, telecommunications (telephone lines and wireless signals), storage, and audio-visual systems that allow for accessing, storing, transmitting, and manipulating information (Silverstone, 1991).

3 Edward Bernoider and S. Koch, "Aligning ICT and Legal Framework in Austria's e-Bureaucracy, from Mainframe to the Internet," in *ICT and Innovation in the Public Sector: European Studies in the Making of e-Government*, ed. Francesco Contini and Giovan Francesco Lanzara, (New York: Palgrave Macmillan, 2009).

4 William H DeLone and Ephraim R McLean, "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research* 3:1 (1992) at 60 [DeLone and McLean, "Information Systems

Success"]; William H DeLone and Ephraim R McLean, "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information System* 19:4 (2003) at 9 [DeLone and McLean, "Ten-Year Update"].

5 John Alford and Janine O'Flynn, "Making Sense of Public Value: Concepts, Critics and Emergent Meanings," *International Journal of Public Administration* 32 (2009) at 171; John Benington, "From Private Choice to Public Value?," in *Public Value: Theory and Practice*, ed. John Benington and Mark H Moore (Basingstoke: Palgrave Macmillan, 2011) at 31; Antonio Cordella and Carla M Bonina, "A Public Value Perspective for ICT Enabled Public Sector Reforms: A Theoretical Reflection," *Government Information Quarterly* 29 (2012) at 512; Mark H Moore, *Creating Public Value: Strategic Management in Government* (Cambridge, MA: Harvard University Press, 1995); Gerry Stoker, "Public Value Management: A New Narrative for Networked Governance?," *American Review of Public Administration* 36:1 (2006) at 41.

6 Richard Batley and George Larbi, *The Changing Role of Government: The Reform of Public Services in Developing Countries* (Basingstoke, New York: Palgrave Macmillan, 2004); Wendy L Currie and Matthew Guah, "Conflicting Institutional Logics: A National Program for IT in the Organizational Field of Healthcare," *Journal of Information Technology* 22:3 (2007) at 235; Gernod Gruening, "Origins and Theoretical Basis of New Public Management," *International Public Management Journal* 4:1 (2001) at 1; Lawrence E Lynn, Jr, "The NPM as an International Phenomenon: A Skeptical View," in *Advances in International Comparative Public Management*, ed. Lawrence R Jones, Kuno Schedler and Stephen W Wade, (Greenwich, CT: Jai Press, 1997); David Osborne and Ted Gaebler, *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector* (Reading, MA: Addison-Wesley, 1992).

7 The NPM approach influenced the justice sector as well, and brought about reforms in some justice systems regarding the evaluation of courts and judges with a focus on performances and on reached objectives. See Francesco Contini and Richard Mohr, "Reassembling the Legal: The Wonders of Modern Science in Court-Related Proceedings" Griffith Law Review 20:4 (2011) at 994 [Contini and Mohr, "Reassembling the Legal"]; Hellmut Wollmann, *Evaluation in Public Sector Reforms: Concepts and Practices in International Perspective* (Cheltenham: Edward Elgar, 2003).

8 Moore, *supra* note 5; Cordella and Bonina, *supra* note 5.

9 Anthony M Cresswell, G Brian Burke and Theresa A Pardo, *Advancing Return on Investment Analysis for Government IT: A Public Value Framework* (Albany, NY: Center for Technology in Government, 2006); Richard Heeks, "Benchmarking eGovernment: Improving the National and International Measurement," iGovernment Working Paper No 18 (2006);

Iain Kearns, *Public Value and e-Government* (London: Institute for Public Policy Research, 2004).

10 James E Bailey and Sammy W Pearson, "Development of a Tool for Measuring and Analyzing Computer User Satisfaction," *Management Science* 29:5 (1983) at 530; Paul H Cheney, Robert I Mann and Donald L Amoroso, "Organizational Factors Affecting the Success of End User Computing," *Journal of Management Information Systems* 3 (1986) at 65; DeLone and McLean, "Information Systems Success," *supra* note 4; DeLone and McLean, "Ten-Year Update," *supra* note 4; Peter Seddon and Min-Yen Kiew, "A Partial Test and Development of the DeLone and McLean model of IS Success," in *Proceedings of the International Conference on Information Systems,* ed. Janice I DeGross, Sid L Huff and Malcom C Munro, (Atlanta, GA: Association for Information Systems, 1994) at 99; Dale Young and John Benamati, "Differences in Public Web Sites: The Current State of Large U.S. Firms," *Journal of Electronic Commerce Research* 1:3 (2000) at 94.

11 Sarmad Alshawi, Ali Alahmary and Hamid Alalwany, "E-Government Evaluation Factors: Citizen's Perspective," in *Proceedings of European and Mediterranean Conference on Information Systems 2007 (EMCIS2007)* (Valencia, Spain: Polytechnic University of Valencia, 2007); Amihai Glazer, Vesa Kanniainen and Esko Niskanen, "Bequests, Control Rights, and Cost-Benefit Analysis," *European Journal of Political Economy* 19 (2002) at 71; Charles Kaylor, Randy Deshazo and David Van Eck, "Gauging e-Government: A Report on Implementing Services among American Cities," *Government Information Quarterly* 18 (2001) at 293.

12 Bailey and Pearson, *supra* note 10; Cheney, Mann and Amoroso, *supra* note 10; DeLone and McLean, "Information Systems Success," *supra* note 4)

13 Among the IS assessment frameworks, one worth mentioning is derived from the User Requirements Notation (URN). The URN is a modelling language whose objective is supporting the "elicitation, analysis, specification, and validation of requirements" (Daniel Amyot and Gunter Mussbacher, "User Requirements Notation: The First Ten Years, the Next Ten Years," *Journal of Software* 6:5 (2011):747 at 747). The modelling exposes, in a graphical way, requirement scenarios and goals and how these satisfy stakeholders' needs (Gao, 2010). Therefore, it can be used for performance evaluation by comparing architecture goals and results of the implementation for stakeholders. See Gunter Mussbacher, Daniel Amyot, João Araújo and Ana Moreira, "Modeling Software Product Lines with AoURN," in *Proceedings of the 2008 AOSD Workshop on Early Aspects* (New York: ACM, 2008). In this study, I did not take the modelling into consideration for e-justice evaluation, for two reasons. First, because it is a very technical tool for the assessment of only a specific aspect of IS: the architecture requirements. Second, because the

focus on the comparison between goals and results is already covered by one dimension of the DeLone and McLean model (the net benefits) which appears to be more complete and more easily applied to the e-justice context.

14 Charles H Kriebel and Artur Raviv, "An Economics Approach to Modeling the Productivity of Computer Systems," *Management Science* 26:3 (1980) at 297; Scott Hamilton and Norman L Chervany, "Evaluating Information System Effectiveness. Part I. Comparing Evaluation Approaches," *MIS Quarterly* 5:3 (1981) at 55; Seddon and Kiew, *supra* note 10.

15 Michael J Ginzberg, "Finding an Adequate Measure of OR/MS Effectiveness," *Interfaces* 8:4 (1978) at 59; Henry C Lucas, Jr, "A Descriptive Model of Information Systems in the Context of the Organization," in *Proceedings of the Wharton Conference on Research on Computers in Organizations,* ed. Howard Lee Morgan, (New York: Association for Computing Machinery, 1973) at 27; Ashraf Shirani, Milam Aiken and Brian Reithel, "A Model of User Information Satisfaction," *Data Base* 25 (1994) at 17; Young and Benamati, *supra* note 10.

16 Niv Ahituv, "A Systematic Approach Toward Assessing the Value of an Information System," *MIS Quarterly* 4:4 (1980) at 61; Charles A Gallagher, "Perceptions of the Value of a Management Information System," *Academy of Management Journal* 17:1 (1974) at 46; Malcolm C Munro and Gordon B Davis, "Determining Management Information Needs: A Comparison of Methods," *MIS Quarterly* 1:2 (1977) at 55.

17 DeLone and McLean, "Ten-Year Update," *supra* note 4; Alemayehu Molla and Paul S Licker, "E-commerce Systems Success: An Attempt to Extend and Respecify the DeLone and McLean Model of IS success," *Journal of Electronic Commerce* 2:4 (2001) at 131; Bernoider and Koch, *supra* note 3.

18 Alshawi, Alahmary and Alalwany, *supra* note 11.

19 Glazer, Kanniainen and Niskanen, *supra* note 11; Kaylor, Deshazo and Van Eck, *supra* note 11; Neil Seitz, *Capital Budgeting and Long Term Financing Decision* (Hindsdale, IL: Dyden Press, 1989); Koji Shinjo and Xingyuan Zhang, "Productivity Analysis of IT Capital Stock: The U.S.A.–Japan Comparison," *Journal of Japanese International Economies* 17:1 (2003) at 81.

20 Kristin R Eschenfelder and Clark A Miller, "The Openness of Government Websites: Toward a Socio-Technical Government Website Evaluation Toolkit" (Paper delivered at the MacArthur Foundation/ALA Office of Information Technology Policy Internet Credibility and the User Symposium, Seattle, WA, 11 April 2005) [unpublished]; Efraim Turban, Ephraim McLean and James Wetherbe, *Information Technology for Management: Making Connections for Strategic Advantage* (New York: John Wiley & Sons Inc, 2001); Lili Wang, Stuart Bretschneider and Jon Gant,

"Evaluating Web-Based E-Government Services with a Citizen-Centric Approach," in *Proceedings of 38th Annual Hawaii International Conference on Systems Sciences* (Washington, DC: IEEE Computer Society, 2005).

21 Lemuria Carter and France Bélanger, "Citizen Adoption of Electronic Government Initiatives," *Info Systems J* 15 (2005) at 5; Paul Legris, John Ingham and Pierre Collerette, "Why Do People Use Information Technology? A Critical Review of the Technology Acceptance Model," *Association for Information Systems* 40:3 (2003) at 191.

22 DeLone and McLean, "Information Systems Success", *supra* note 4.

23 DeLone and McLean utilized the term "dimension" when referring to the variables of their framework. However, when dimensions are operationalized, it is better to refer to them as variables. They in fact are operationalized attributes of an IS and their value varies across the variable domain (Babbie, 2009). For the sake of the argument and in order to introduce the DeLone and McLean model, only in this section the terms "dimension" and "variable" will be used as synonyms, both referring to model's variables. In the successive sections, I will utilize the word "variables."

24 DeLone and McLean, "Ten-Year Update," *supra* note 4 at 10.

25 DeLone and McLean, "Ten-Year Update," *supra* note 4; Leyland F Pitt, Richard T and C Bruce Kavan, "Service Quality: A Measure of Information Systems Effectiveness," *MIS Quarterly* 19:2 (1995) at 173; William J Kettinger, and Choong C Lee, "Perceived Service Quality and User Satisfaction with the Information Services Function," *Decision Sciences* 25:5–6 (1995) at 737.

26 Giovan Francesco Lanzara, "Building Digital Institutions: ICT and the Rise of Assemblages in Government," in *ICT and Innovation in the Public Sector: European Studies in the Making of e-Government*, ed. Francesco Contini and Giovan Francesco Lanzara, (New York: Palgrave Macmillan, 2009) at 9.

27 See above; Francesco Contini and Richard Mohr, "Reconciling Independence and Accountability in Judicial Systems," *Utrecht Law Review* 3:2 (2007) at 26; James W Douglas and Roger Hartley, "The Politics of Court Budgeting in the States: Is Judicial Independence Threatened by the Budgetary Process?," *Public Administration Review* 63:4 (2003) at 441; Giuseppe Di Federico, "Judicial Independence in Italy," in *Judicial Independence in Transition*, ed. Anja Seibert-Fohr (Berlin: Springer, 2012) at 357; Martin L Friedland, "A Place Apart: Judicial Independence and Accountability in Canada: A Report Prepared for the Canada Judicial Council" (Ottawa, Canadian Judicial Council, 1995); Carlo Guarnieri and Patrizia Pederzoli, *The Power of Judges* (New York: Oxford University Press, 2002); Peter H Russell and David M O'Brien, eds., *Judicial*

Independence in the Age of Democracy, Critical Perspectives from Around the World (Charlottesville, VA: University of Virginia Press, 2001); Andrew Le Sueur, "Developing Mechanisms for Judicial Accountability in the UK," *Legal Studies* 24:1–2 (2004) at 73.

28 Jo Sherman, "Court Information Management Policy Framework to Accommodate the Digital Environment" (Discussion paper prepared for the Canadian Judicial Council, 2013), online: <www.cjc-ccm.gc.ca/cmslib/general/AJC/Policy%20Framework%20to%20Accommodate%20the%20Digital%20Environment%202013-03.pdf>; European Network of Councils for the Judiciary, "ENCJ Working Group: Judicial Ethics Report 2009-2010,", online: <www.encj.eu> [ENCJ].

29 Le Sueur, *supra* note 27.

30 Marco Fabri and Francesco Contini, eds., *Justice and Technology in Europe: How ICT Is Changing the Judicial Business* (Alphen aan Den Rijn: Kluwer Law International, 2001).

31 Marco Fabri and Philip M Langbroek, "Is there a Right Judge for each Case? A Caomparative Study of Case Assignment in Six European Countries," *European Journal of Legal Studies* 1:2 (2007):292 at 292.

32 Andrew Ashworth and Julian V Roberts, eds., *Sentencing Guidelines: Exploring the English Model* (New York: Oxford University Press, 2013).

33 See for instance the Nostra, IVS, and Bos project developed in the Netherlands (Aernout Schmidt, "Re-Engineering Independence and Control: ICT in the Dutch Judicial System," in *Justice and Technology in Europe: How ICT Is Changing the Judicial Business,* ed. Marco Fabri and Francesco Contini [Alphen aan Den Rijn: Kluwer Law International, 2001]).

34 Bill Vassiliadis et al., "From Application Service Provision to Service-Oriented Computing: A Study of the IT Outsourcing Evolution," *Telematics and Informatics* 23:4 (2006) at 271.

35 Contini and Mohr, "Reassembling the Legal," *supra* note 7.

36 Bruno Latour, *La fabrique du droit. Une ethnographie du Conseil d'État* (Paris: La Découverte, 2002); Herbert A Simon, Donald W Smithburg and Victor A Thomson, *Public Administration* (New York: Knopf, 1961).

37 Richard Mohr, "Identity Crisis: Judgment and the Hollow Legal Subject," *Law Text Culture* 11 (2007) at 106.

38 Contini and Mohr, "Reassembling the Legal," *supra* note 7.

39 Le Sueur, *supra* note 27.

40 For some scholars, accountability and independence cannot coexist (Cooke, 1992), while other authors support the compatibility between the two values. The latter group believes that accountability is a means to the end of guaranteeing judges' impartiality and independence (Contini and Mohr, "Reassembling the Legal," *supra* note 7; Di Federico, *supra* note 27; Guarnieri and Pederzoli, *supra* note 27; Le Sueur, *supra* note 27). For a detailed bibliography on the relationship between

independence and accountability, see Amy B Atchinson, Lawrence Tobe Liebert and Denise K Russell, "Judicial Independence and Judicial Accountability: a Selected Bibliography," *Southern California Law Review* 72:3 (1999) at 723.

41 Atchinson, Liebert and Russell, *supra* note 40; Stephen B Burbank and Barry Friedman, eds., *Judicial Independence at the Crossroads: An Interdisciplinary Approach* (New York: Sage Publishers, 2002); Ronald Dworkin, *Taking Rights Seriously* (Oxford: Oxford University Press, 1978); Le Sueur, *supra* note 27; Stefan Trechsel, *Human Rights in Criminal Proceedings* (New York: Oxford University Press, 2006); David Weissbrodt, *The Right to a Fair Trial: Article 8, 10, and 11 of the Universal Declaration of Human Rights* (Alphen aan Den Rijn: Kluwer Law International, 2001); ENCJ, *supra* note 28.

42 ENCJ, *supra* note 28.

43 Trechsel, *supra* note 41.

44 Fabri and Contini, *supra* note 30.

45 In some software, such as the Italian SICC (Sistema Informatico del Contenzioso Civile, or Information System for Civil Cases), judges can search previous sentences in a database, using keywords. Other legal information systems, such as the Austrian LIS (Legal Information System), allow judges to retrieve national and international laws from a database. In both cases, the functioning of such support systems affects the decision of a judge, and therefore his or her impartiality.

46 Mauro Cappelletti, *Access to Justice* (Milan: Giuffrè, 1978); Rebecca Sandefur, "Access to Justice: Classical Approaches and New Directions," in *Access to Justice*: *Sociology of Crime, Law, and Deviance,* ed. Rebecca L Sandefur, Volume 12 (Bingley, UK: Emerald/JAI Press, 2009); Sherman, *supra* note 28; ENCJ, *supra* note 28.

47 Deborah L Rhode, *Access to Justice* (New York: Oxford University Press, 2004); Joseph L Staats, Shaun Bowler and Johnathan Hiskey, "Measuring Judicial Performance in Latin America," *Latin American Politics & Society* 47:4 (2005) at 77; William C Prillaman, *The Judiciary and Democratic Decay in Latin America: Declining Confidence in the Rule of Law* (Westport: Praege, 2000).

48 In the determination of an individual's civil rights and obligations or of any criminal charge against that person, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law (Article 6, ECHR).

49 Andrew Sanders, "Core Values, the Magistracy, and the Auld Report," *Journal of Law and Society* 29:2 (2002) at 324; A Wallace, "Overview of Public Access and Privacy Issues" (Paper delivered at Queensland University of Technology Conference, 6 November 2003) [unpublished].

50 Sherman, *supra* note 28.

51 Ibid.
52 Some liberal democracies include privacy as a constitutional right. The US Supreme Court has conferred constitutional status on some aspects of privacy (William M Beaney, "The Constitutional Right to Privacy in the Supreme Court," *Supreme Court Review* [1962] at 212).
53 Ole Hanseth and Kalle Lyytinen, "Design Theory for Dynamic Complexity in Information Infrastructures: The Case of Building Internet," *Journal of Information Technology* 25:1 (2010) at 1.
54 Hans Kelsen, *Pure Theory of Law: Reine Rechtslehre* (Berkeley: University of California Press, 1967).
55 Contini and Mohr, "Reassembling the Legal," *supra* note 7 at 12.
56 Staats, Bowler and Hiskey, *supra* note 47.
57 Kallinikos, *supra* note 1 at 175.
58 As anticipated, in this study, I relied on the list of different typologies of e-justice systems made by Fabri and Contini (*supra* note 30 at 21–23). The authors distinguish between 1. Case Management Systems, 2. Electronic Legal Work Desk, 3. Court Record, 4. Electronic Data Interchange, and 5. Video and Audio Conferencing.
59 Marco Velicogna, Antoine Errera and Stéphane Derlange, "E-Justice in France: The e-Barreau Experience," *Utrecht Law Review* 7:1 (2011) at 163.
60 Salvatore Belardo, Kirk R Karwan and William Alan Wallace, "DSS Component Design Through Field Experimentation: An Application to Emergency Management," in *Proceedings of the Third International Conference on Information Systems*, December 1982 (Chicago: Society for Management Information Systems, 1982) at 93; Ananth Srinivasan, "Alternative Measures of System Effectiveness: Associations and Implications," *MIS* Quarterly 9:3 (1985) at 243.
61 The question may ask to place the answer on a 0 to 7 scale where "0" is incomplete and "7" complete.
62 Number of information missing.
63 Recent studies demonstrate that the information on national justice systems and procedural norms provided by the European e-justice portal has not been updated (Marco Mellone, "Legal Interoperability in Europe: An Assessment of the European Payment Order and the European Small Claims Procedure," in *The Circulation of Agency in e-Justice: Interoperability and Infrastructures for Europe Trans-Border Judicial Proceedings*, ed. Francesco Contini and Giovan Francesco Lanzara [Dordrecht: Springer, 2013] at 245; Contini and Lanzara, *supra* note 1). The European e-Justice portal provides information on EU justice systems and it allows to access to a set of European e-justice services.
64 The over regulation, the slow change in legislation, and the rules that hinder the smooth functioning of e-justice are examples of the low

accessibility of information that characterized the development of the Italian TOL (Trial On Line, the Italian e-filing system) and hindered its diffusion in the Italian civil justice. See Marco Fabri, "E-justice in Finland and in Italy: Enabling versus Constraining Models," in *ICT and Innovation in the Public Sector: European Studies in the Making of e-Government*, ed. Francesco Contini and Giovan Francesco Lanzara (New York: Palgrave Macmillan, 2009) at 115; Davide Carnevali and Andrea Resca, "Pushing at the Edge of Maximum Manageable Complexity: The Case of 'Trial Online' in Italy," in *The Circulation of Agency in e-Justice: Interoperability and Infrastructures for Europe Trans-Border Judicial Proceedings*, ed. Francesco Contini and Giovan Francesco Lanzara, (Dordrecht: Springer, 2013); Giampiero Lupo, "Design Principles for e-Justice: a Comparative Assessment of Four European e-Justice Services" (Paper delivered at the Law and Society Conference, Boston, June 2013) [unpublished].

65 For a review, see DeLone and McLean, "Ten-Year Update," *supra* note 4 at 16–17.

66 E-filing systems such as Money Claim Online (MCOL; Kallinikos, *supra* note 1) and the Italian Trial Online (TOL; Carnevali and Resca, *supra* note 64) allow citizens and lawyers to file documents and claims to a court through a computer-based interface.

67 The transparency value, described as an e-justice value in the section on Justice Systems Values and e-Justice, has been included between the efficacy-oriented variables as an integration of the DeLone and McLean model and in substitution of the information-quality variable.

68 With "0" meaning the system has been imposed upon the judges without their involvement; "1" meaning judges have been partially involved into the design stage; and "2" meaning judges have been involved both in the design and the implementation stage.

69 For instance the scores assigned may be "0": more than five-year contract; "1": five-year contract; "2": from three- to four-year contract; "3": from two- to three-year contract; "4": from one- to two-year contract; and "5": less than a one-year contract.

70 Atchinson, Liebert and Russell, *supra* note 40; Burbank and Friedman, *supra* note 41; Dworkin, *supra* note 41; Le Sueur, *supra* note 27; Trechsel, *supra* note 41; Weissbrodt, *supra* note 41; ENCJ, *supra* note 28.

71 Fabri and Contini, *supra* note 30.

72 Utilizing a 0-3 scale, where "0" is for very incomplete; "1" partially complete; "2" more than partially complete; "3" very complete.

73 Utilizing a 0–3 scale, "0" the system is completely unreliable; "1" I experienced some mistakes in retrieving information; "2" the system is reliable.

74 An e-justice service that allows the access to users that cannot afford a lawyer (as it happens in Money Claim Online, MCOL, in England and Wales), scores better in terms of equal access.

75 In addition to this measure, and in the cases of EJS that only allow lawyers to use them (and that therefore scored "0" in the previous measure), the evaluation may check if the digital procedure foresees forms of legal aid that allow the less wealthy to access the system through a lawyer (score "0" where this opportunity is missing and "1" where legal aid is available).