Measuring the Success of E-Justice. A Validation of the DeLone and McLean Model

Rocco Agrifoglio, Luigi Lepore and Concetta Metallo

Abstract The aim of this chapter is to develop a research model to assess the success of e-justice applications in the Judicial System. Judicial System has been characterized by considerable investments in ICTs in order to improve court's efficiency and effectiveness. Despite these investments, court performances did not increase and little research has been conducted to understand the reasons. Our research model adapts the DeLone and McLean's IS success model and provides an useful contribute to understanding e-justice success.

Keywords E-justice success · IS success · Judicial System

1 Introduction

During the last two decades, there was a considerable growth of e-justice projects aimed at using information and communication technologies (ICT) to improve efficiency and effectiveness of Judicial Systems (JS).

Several computer applications are being introduced in judicial organizations to support administrative activities, evaluation of court performances and case-flows management. ICTs are considered to be important tools to implement the managerial philosophy in the JSs [1], planning and control instruments, new budgeting methods, accounting systems, performance indicators, measurement of workload,

R. Agrifoglio (✉) · L. Lepore · C. Metallo
Department of Management, Parthenope University, Naples, Italy
e-mail: agrifoglio@uniparthenope.it

L. Lepore
e-mail: lepore@uniparthenope.it

C. Metallo
e-mail: metallo@uniparthenope.it

etc. In many experiences, these investments in e-justice solutions have not given the expected results. In particular, Italy has been one of the European Countries that has spent the most in ICTs, but despite the modernization process and the considerable investments, to date the results achieved have been very few [2, 3]. In this context, evaluation of the success or effectiveness of the ICT investments could be useful for court administrators and presiding judges, in order to monitor the court activities, the achievement of goals and, thus, to improve court efficiency and effectiveness.

The overall goal of this study is to develop a research model to assess the success or effectiveness of Information System (IS) in JS. Among different e-justice applications used by court employers, we focus on ISs mainly used to automate the administrative tasks, such as Case Management Systems (CMS) and Case-tracking System (CtS). We analyze these applications mainly for two reasons. First, because these tools represent the field in which there has been the greatest development of e-justice. Second, because administrative activities often generate critical problems for the efficiency of JS and the use of ICTs for conducting out these activities could contribute to improve the overall performance of the JS.

This research adapts the DeLone and McLean's IS success model to assess the effectiveness of e-justice applications. Despite the increased research interest on e-justice, the field currently is poor of theoretical frameworks that can be useful for addressing important issues concerning the implementation success of e-justice solutions, such as the factors influencing the usage behavior of e-justice applications. It would seem very important to understand what factors influence the usage behavior of e-justice solutions, so that policy makers may improve the likelihood of success when introducing or refining the use of these tools in JS.

In this phase, we propose a model to assess the success of e-justice applications. In the next phase, we will test the research model and hypotheses. To date, data collection phase was finished but the data analysis is yet not complete.

The structure of this chapter is as follows. First, we deepen e-justice applications and then we introduce the theoretical background. Second, we present research model and hypotheses. Finally, we describe the research methodology and future perspectives.

2 E-Justice Applications

The introduction of ICTs in the JS is part of the wider modernization process that has involved at first the executive branch of the government all over the world. In Europe, only recently this process has also affected in a systematic way the judicial institutions. In fact, at beginning, use of ICTs in JSs has represented an isolated response to specific problems. Referring to this, the term "e-justice" was coined specifically to indicate these projects aimed at enhancing the use of computer applications in the field of justice, in order to improve the quality of judicial services, making them more accessible, faster and less expensive [4, 5].

We can categorize e-justice applications into two categories: Justice-to-Justice (J2J) and Justice-to-Citizen (J2C). The first category includes all those applications that automate the internal activities of the JS and that digitalize the communication and interaction between different actors of JS (e.g., courts, courts and ministry of justice, courts and superior council of magistracy, judge and lawyer, etc.). The second, instead, includes all the applications used to electronically deliver services to citizens (e.g., web sites/portals, on-line services, etc.). In other words, the first category includes the back office applications, while the second includes applications that support the front office activities.

E-justice applications developed to support court activities could also be classified into two main categories. The first category includes technologies for automation of administrative tasks, while the second includes the technologies to support typical activities of judges and prosecutors. However, the boundaries of the two categories are not clear, so it is possible that an application automates mainly administrative activities, but also supports some judge's activities and vice versa. The matrix of e-justice applications is showed in Fig. 1.

One of the first applications developed for the courts activities is CtS that automate court dockets and other court registers. To better support the activities of the administrative personnel, different CMSs were developed in European Countries in the last decades. These applications are principally devoted to support and automate the back-office and court staff's administrative work, the case tracking, the case planning, document management, scheduling of hearings and in this way they also support judicial activities. With the objective to improve these applications, more recently different European JSs are trying to open the CMS database to external users, such as lawyers and parties.

Some other recent applications were aimed to automate judges' activities to support document management, such as writing judgments, sentences and court orders, or overall to support decision-making process. For example, forums and

Fig. 1 E-justice applications
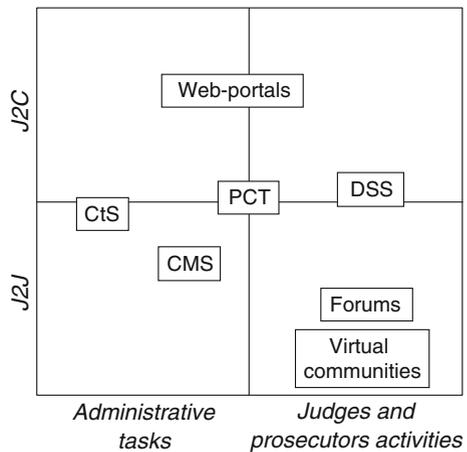
virtual communities were developed by judges in order to share knowledge and experiences [6], making the research activities faster and less expensive.

Furthermore, other applications were developed to support electronic communications and interactions in legal proceedings. For instance, the project "Processo Civile Telematico" (PCT), through use of ICTs in the courts' activities, aims to allow full on-line transaction between ministry of justice, courts, lawyers, and other actors of the JS. The implementation of these types of resources profoundly changes the ways of working and interacting of everyone involved in the JS.

As Torres and colleagues [7] highlighted in the last decade various institutions and academics have tried to evaluate the performance and characteristics of e-government initiatives. E-government initiatives have become a developing field of empirical studies. However, there are not specific studies intended to evaluate the IS success in the JSs. This consideration makes our study interesting for institutions of JSs and for academics whose studies refer to justice.

3 E-Justice Success

"IS success or effectiveness is critical to our understanding of the value and efficacy of IS management actions and IS investments" [8, p. 10]. Many scholars recognize the need to evaluate IS success (or effectiveness) and a large number of systems success measures exist [e.g., 9, 10].

DeLone and McLean [10] classified the dimensions of IS success into six categories: (1) system quality, the measurements of IS itself; (2) information quality, the measures of the IS output; (3) information use, recipient consumption of IS output; (4) user satisfaction, recipient response to the use of IS output; (5) individual impact, the effect of information on the behavior of the recipient; and (6) organizational impact, the effect of information on organizational performance. Particularly, system quality concerns the consistency of the user interface, the quality of documentation, and whether there are bugs in the system. Information quality concerns the relevance, timeliness and accuracy of information generated through the system. IS use concerns the use of the system by the user. User satisfaction, instead, is the sum of an individual's reactions to a set of factors affecting information system success [9]. Finally, individual and organizational impacts are the outcomes attributed to IS use [11] and user satisfaction [10].

DeLone and McLean's model is based on three levels: technical, the accuracy and efficiency of the communication system that produces information; semantic, the success of the information in conveying the intended meaning; effectiveness, the effect of the information on the receiver. Therefore, the systems quality dimension measures technical success; information quality dimension measures semantic success; and effectiveness success is measured from several dimensions such as use, user satisfaction, individual and organizational impacts. Since 1992, DeLone and McLean's IS success model has served as a basis for numerous studies and empirical investigations.

E-government systems diffusion has encouraged the proliferation of research on this issue. However, Wang and Liao [12] highlighted that little research has been conducted to assess the success of e-government systems.

Our study focuses on e-justice because there are not specific studies intended to evaluate the IS success in the JSs. The traditional research in this area concerned mainly descriptive analysis of the phenomenon, investigating the evolution of software applications for JS, the amounts of money invested by public sector, experience of use of ICT, and different e-justice strategies by European Union members e.g., [3, 13–15]. These studies have showed that considerable investments have been done to project, develop and implement new ICTs in the JS, with a whole body of practical experience in the courts. However, functionality and performance of technologies to support judicial administrations vary significantly across different Countries [3]. In many experiences, these investments in e-justice solutions have not given the expected results. In particular, in Italy, the results achieved have been very few, despite the considerable investments in ICT [2, 3]. This situation highlights that to understand the conditions that lead users to adopt a new application as well as the determinants of technology implementation success represents a high-priority research issue.

4 Research Model and Hypotheses

We investigate the IS success in the J2J context from the perspective of court administrative staff who uses CtS and CMS applications for their work.

Based on original DeLone and McLean's IS success model, we consider system quality, information quality, IS use, user satisfaction, and individual impact, as key variables to assess the technical, semantic, and effectiveness J2J applications. The e-justice success model is reported in Fig. 2.

As suggested by DeLone and McLean [10], system quality and information quality are two direct antecedents of user satisfaction and IS use that, in turn, determinate the individual performance.

The literature agrees that systems perceived as reliable, precise, and timely positively affect the user's usage behavior e.g. [9, 10, 16]. Within JS, J2J applications have encouraged the digitalization of documents and the streamlining of
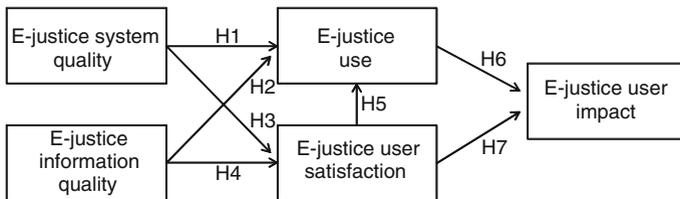

Fig. 2 E-justice success model

the organizational processes. These systems have allowed to integrate existing databases and to explore the possible uses of ICT to improve the exchange of information in JS [5]. In particular, the CtS automate court docket and other court register activities, while CMS applications have granted and integrated many courts' activities, procedures and practices, improving the work effectiveness of court administrative officers and judges [5, 15]. Thus, court personnel who perceive J2J applications as more reliable and timely will be more available to use them.

- H1. E-justice system quality will be positively related to Use in the J2J context.
- H2. E-justice information quality will be positively related to Use in the J2J context.

Furthermore, IS literature also agrees that system quality and information quality are two determinants of user satisfaction. Thus, users who perceive the system as reliable, precise, and timely will be more enjoyed and satisfied to use it. J2J applications, such as CtS and CMS, automate administrative and judges' activities. Using these applications, both administrative officers and judges could explore legal information timely and without time and spatial limits, improving the main institutional functions of judicial system such as disputes resolution and law enforcement. Moreover, the adoption of these systems has leaded to a detailed description of organization workflows, reading the codes of procedures and other relevant regulations, reinforcing the standardized application of rules by each judicial office [5]. Thus, court employers who perceive the quality of e-justice applications as well as the quality of output provided will be more satisfied with these systems.

- H3. E-justice system quality will be positively related to user satisfaction in the J2J context.
- H4. E-justice information quality will be positively related to user satisfaction in the J2J context.

DeLone and McLean [10] posited a reciprocal dependence between user satisfaction and IS use. However, to test this reciprocal dependence is very difficult because research should follow use and user satisfaction over time. Based on human behavioral approach, much research excluded the reciprocal interdependence between user satisfaction and IS use, assuming that user satisfaction is an attitude, while actual use is a behavior [8, 17]. As suggested by these studies, user satisfaction leads to system use rather than vice versa. Thus, the more satisfied users are with the system, the more they will use it. With refer to JS, we also believe that court administrative officers satisfied with e-justice applications will be more available to their usage.

- H5. E-justice user satisfaction will be positively related to use in the J2J context.

Finally, prior studies have also investigated the relationships between semantic variables, such as IS use and user satisfaction, and effectiveness variable, such as individual impact [8, 10, 16]. In particular, some empirical research shown that IS

use is positively associated with individual impact. Of course, whether a system is not used at all, it will not have any impact on individual performance, while a system that is used more will have higher impact on users' performance. Moreover, other research shown that user satisfaction is positively related to user performance [8]. In particular, whether user satisfaction is individual's belief in the correspondence or fit between job requirements and IS functionality, a positive relationship between user satisfaction and individual impact is quite understandable. Within court, using J2J applications judges and court administrative officers can timely get information, decreasing the resolution time of legal cases and improving the individual and court performances. Moreover, their best estimate of the match between requirements and the J2J application's capabilities should be positively associated with individual performance.

- H6. E-justice use will be positively related to user performance in the J2J context.
- H7. E-justice user satisfaction will be positively related to its performance in the J2J context.

5 Research Methodology

Data that we will use to test research model were gathered from administrative users of two Italian Courts, such as the Court of Bari and the Court of Naples, during the period from the 20th of October 2009 to the 15th of January 2010. In particular, in data were gathered from court users of various J2J applications such as "sistema informativo della cognizione penale" (SICP), "sistema informativo della cognizione civile" (SICC), and "sistema informativo dell'area amministrativa" (SIAMM).

A structured questionnaire was developed to measure e-justice success model variables and to capture the user profile as well as the e-justice applications they used. In particular, we conducted a pre and pilot testing to verify and validate the measures used and obtained feedback by both court e-justice application users and some IS scholars in the first instance. Findings of the pre-test have highlighted the reliability and consistency of the scales used.

Then, we administered the questionnaire to users of two Italian Courts with permission of presiding judges. Of 620 court employers, of which 212 from Court of Bari and 408 from Court of Naples, we received a total of 321 complete questionnaires (59 from court of Bari and 262 from court of Naples). To minimize data entry errors, all the collected data were checked for consistency. As a result, 314 valid responses were collected. The variables used were adapted from existing IS literature. In particular, information quality was measured using Rai and colleagues' [16] seven-item scale. Two items were used to measure system quality by adapting Doll and Torkzadeh's [18] ease of use scale to e-justice system. IS use was measured with a single item based on Goodhue and Thompson [19]

dependence measure. Twelve items were used to measure user satisfaction based on Doll and Torkzadeh's [18] end-user computing satisfaction scale. Finally, individual impact was measured using Etezadi-Amoli and Farhoomand's [20] user performance four-item scale. Moreover, other questions were used to capture the profile of survey respondents (e.g., age, gender, educational level, IT experience) and kinds of e-justice applications.

6 Conclusion and Future Perspectives

IS plays an important role in the "modernizing" process of the JS by encouraging the adoption of mechanisms of accountability compatible with principle of independence and by satisfying the needs of court employers and stakeholders. Through considerable investment in ICT, the European legislators sought to provide an "e-government approach" to the JS, named e-justice, forcing the courts to adopt ad-hoc applications to automate internal (J2J) and external (J2C) court activities. In particular, Italy has been one of the European Countries that has spent the most in ICTs in order to improve the efficiency and effectiveness of its JS. Despite the large amount of money invested, the court performances, in term of disposition time and case turnover ratio, are not increased overtime and little research has been conducted to understanding the reasons.

The aim of this research has been to develop a research model to measure and to evaluate the success of J2J applications. Despite data collection phase was finished, the next phase of data analysis is yet not complete to date.

This research is in response to the call for continuous challenge and validation of IS success model in different contexts [8, 12, 16]. Considering the considerable investment in ICTs and the growth of e-justice projects, the JS is a very interesting context of analysis for IS research. Our research goes along this direction and contributes to understand the relationships between e-justice applications, usage behaviors and individual performance.

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