

Chapter 8

E-Government in the Judiciary System: Assessing the Correlation between IT Investment and the Efficiency of Courts of Justice in Brazil

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ABSTRACT

This chapter presents an analysis of e-government being enabled by Information Technology (IT) investment in the Brazilian Judiciary System. The methodology adopted was the case study, with a mix of qualitative and quantitative data to deal with the complexity of the phenomenon. The latest data on e-government use in Brazil, the organizational structure and IT development of the Brazilian Judiciary System, and the legal framework for electronic lawsuits form the basis for understanding the context. A qualitative analysis of the influence of the National Council of Justice (NCJ) on IT investment and e-government initiatives indicates that the NCJ's coordination is leading the Brazilian Judiciary System towards common goals. Furthermore, a quantitative analysis of the correlation between IT investment and the efficiency of the courts shows a potential positive influence on reducing the duration and cost of lawsuits.

INTRODUCTION

As the computerization of the Brazilian Judiciary System in Brazil evolves, e-government becomes an important tool to promote the access by Brazilian citizens to justice. In the meantime, units of the Brazilian Judiciary System are investing in Information Technology (IT) to build the infrastructure necessary to provide e-government services (Andrade, Mallet, & Fleury, 2008). The adoption of the New Public Management paradigm in Brazil has identified e-government as a path to be followed by the Judiciary System. The continuing development of e-government increases the need for a restructuring of the state to provide these services in terms of routines and processes that need to be eliminated or modified through the use of Information and Communication Technology (ICT) tools (Ruediger, 2003).

Strategic planning of the Brazilian Judiciary System, coordinated by the National Council of Justice (NCJ), focuses on IT as a tool for solving the efficiency problems of the Brazilian Judiciary System (Andrade, 2009). IT investment of the Brazilian Judiciary System might be evaluated by several indicators from political goal-based ones, such as governance, to technical-based ones, such as software performance. Transparency, info-inclusion, equity, quality, efficiency, capability, accountability, maturity, infrastructure, standardization, interoperability, availability, and usability are just some of these performance indicators (Pinho, Iglesias, & Souza, 2005; Soares, Junior, & Santos, 2007; Joia, 2007; Magoutas & Mentzas, 2009; Solar, Astudillo, Valdes, Iribarren, & Concha, 2009). However, in Brazil there has been the option of solely assessing efficiency in the courts of justice, which duly tallies with the goals adopted by the NCJ as the administrator of the strategic planning of the Brazilian Judiciary System.

As Brazil is implementing its latest judicial reform, led by the NCJ, empirical research becomes very important to guide these initiatives

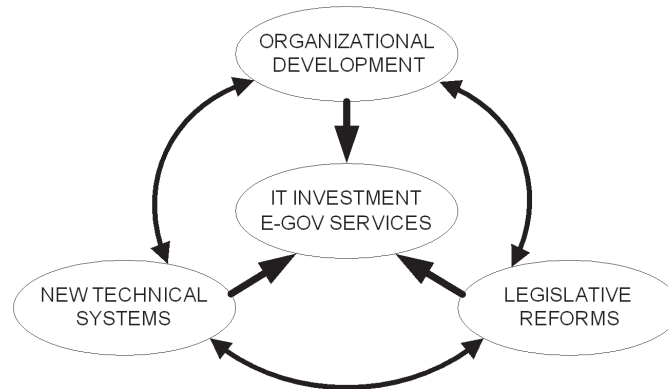
(Hammergren, 2009a, 2009b; Staats, Bowler, & Hiskey, 2005). In its latest phase, Brazilian judicial reform has incorporated not just legal changes but also new elements related to management issues and investment in equipment, buildings, and IT (Hammergren, 2009b).

According to Scholl (2008) e-government is a multidisciplinary knowledge field. Multiple disciplines are supposed to be used to duly address the complexity of the aforementioned phenomenon. Thus, in order to analyze IT investment in the Brazilian Judiciary System and the respective efficiency expected of courts of justice, it is necessary to address the e-government stages and services compatible with them, the relation between IT investment and e-government, and the use of e-government services by Brazilian citizens. It is also necessary to address the factors that have influenced the adoption of e-government services by the Brazilian Judiciary System, namely its organizational development, the legislative reforms, and the new technical systems (Jansen & Lodval, 2009). All these elements influence each other and the phenomenon studied (Figure 1).

Based on this conceptual framework, this paper examines the role of the NCJ on the definition of IT investment and e-government initiatives, and the correlation between IT investment and efficiency of the courts. This analysis encompasses two themes of the eGOVRTD2020¹: mission-oriented goals and performance management, and assessing the value of government ICT investments (Wimmer, Codagnone, & Janssen, 2008).

The case study methodology, described by Yin (2004), was chosen to conduct qualitative and quantitative research, exploring and describing a phenomenon in its own context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (Benbasat, Goldstein, & Mead, 1987; Yin, 2004). The phenomenon to be studied, examines the role of the NCJ on the definition of IT investment and e-government initiatives. Fur-

Figure 1. Factors influencing IT investment and e-government services (adapted from Jansen & Lodval, 2009)



thermore, the correlation between IT investment and efficiency of the courts is intricately connected to political, social, historical, and personal issues, providing wide ranging possibilities for questions and adding complexity to the case study (Soy, 2009). The case study conducted here follows Stop methodology in four stages, namely designing the case study, conducting the case study, analysis of the evidence and report writing (Tellis, 1997a).

The research question that summarizes the purpose of this chapter is: how does IT investment affect the efficiency of the Brazilian Judiciary System (Paré, 2004)? This question follows the recommendations of Paré that the question of a case study is clear, simple, obvious, intriguing, feasible, socially important, current and scientifically relevant (Paré, 2004). And the central thesis is that IT investment has a positive influence on efficiency. For this purpose, documents and data were collected from reliable government sources (Paré, 2004) and a case study database was created (Tellis, 1997b).

The unit of analysis for the case study is the Brazilian Judiciary System (Stake, 1988) and a qualitative analysis of the role played by the NCJ in defining and coordinating the IT investment of the Brazilian Judiciary System was conducted. The choice of sub-units of analysis for the quantitative research (Stake, 1988; Soy, 2009) was the State

Courts. Given the wide variety of the administrative units of the Brazilian Judiciary System and their differences, it was necessary to select a population that can be compared. There are 27 State Courts that are similar in their attributions, which provide a large sample with similar characteristics in order to isolate the phenomenon under scrutiny. This choice allows a comparison between the sub-units of analysis, but does not remove the appearance of a single case study (Yin, 2004). However, for a more precise statement of scope, the case being studied could be redefined as: IT investment of the Brazilian State Courts. And the question for research: how does IT investment affect the efficiency of the Brazilian State Courts?

Although the choice of the case and sub-units of analysis is restrictive, it does not imply abandoning the possibility of generalizing the results obtained. The choice of the Brazilian State Court as an object of study was necessary to establish efficiency comparisons. However, the results obtained in relation to the state courts can be generalized for the entire Brazilian Judiciary System, or even other countries, at least those with similar procedural dynamics.

This chapter includes a brief review on e-Government literature, focusing on e-government stages that later will be considered as the framework to analyze the development of the Brazilian

Judiciary System automation process, describes the use of Internet and e-government services among the Brazilian population, and review the literature on IT investment and the measurement of its impact on efficiency. When analyzing e-government on the Brazilian Judiciary System, this chapter presents the organizational structure of the Brazilian Justice, its automation phases, the electronic lawsuit, the role of the NCJ, and the correlation between IT investment and courts' efficiency.

E-GOVERNMENT STAGES

E-government represents the use of ICT tools to reinvent the public sector by transforming its internal and external way of doing things and its interrelationships with citizens (Ndou, 2004). E-government provides numerous opportunities, including for developing countries: it reduces cost and efficiency shortfalls; it increases the quality and scope of service delivered to citizens; it promotes transparency, anticorruption, and accountability; it fosters network and community creation; it improves the quality of decision making; and it promotes the use of ICT in other sectors of society (Ndou, 2004).

The United Nations (UN) and the American Society for Public Administration (ASPA) adopt a scale with five stages to classify e-government initiatives (Ronaghan, 2002). In the first 'emerging' stage, an official government online presence is established through a few independent official sites, and information is limited, basic and static. In the second 'enhanced' stage, government sites increase in number; and information becomes more dynamic and is updated with greater frequency. In the third 'interactive' stage, users can download forms, send e-mails to officials and interact through the web, making appointments and requests. In the fourth 'transactional' stage, users can pay for services and perform other transactions online. Citizens can perform complete and secure

transactions such as obtain visas, passports, birth and death records, licenses, permits, as well as pay online for a services, pay parking fines, automobile registration fees, utility bills and taxes. Secure sites and passwords are present and digital signatures may be needed to facilitate transactions. In the fifth 'seamless' stage, there is total integration of e-functions and services across administrative and departmental boundaries.

While online access to information on the progress of lawsuits is a second stage service, the electronic lawsuit is an example of an e-government service that is related to the fourth stage. Moving to the fifth stage requires full integration of e-government services by a 'virtual agency' without boundaries between governmental bodies, which is difficult for the Brazilian Judiciary System in its current development stage, given its organizational structure (Andrade & Joia, 2010) and the existing multiple and non-interoperable information systems (Andrade, Mallet, & Fleuryl, 2008).

THE USE OF E-GOVERNMENT SERVICES IN BRAZIL

Since 2005, the Brazilian Internet Steering Committee (CGI.br) conducts an annual survey on the use of ICT in Brazil. This section of the chapter refers predominantly to the latest version, conducted in 2009 and published in 2010 (Barbosa, 2010). When data from a previous version is referred to, it is highlighted.

E-government can be seen as a tool of public policy to foster social inclusion through the democratization of access to justice (Andrade & Joia, 2009). For this purpose, it is important that the use of e-government is not limited to the more privileged classes (Ndou, 2004). In the Brazilian case, the lack of skills to access the Internet (53%) is the major barrier to be overcome (Barbosa, 2010). And for a large part of the population

(36%), there are no clear benefits derived from accessing the Internet (Barbosa, 2010).

Despite these problems, digital inclusion is growing at a brisk pace (Wagner, 2009). From 2008 to 2009, the percentage of individuals of the total population who had accessed the Internet at least once rose from 43% (Barbosa, 2009) to 45% (Barbosa, 2010) and the same variation was observed between 2007 and 2008 (Balboni, 2008). The frequency of Internet access has also increased: 58% access it daily and 30% at least once a week (Barbosa, 2010). From the above statistics (Barbosa, 2009) it is possible to deduce that users migrated from less intensive (once a week) to more intensive access (daily).

The use of e-government services experienced the same growth as the percentage of individuals who accessed the Internet, namely from 25% in 2007 (Balboni, 2008) and 2008 (Barbosa, 2009) to 27% in 2009 (Barbosa, 2010). Only 13% of the individuals who accessed e-government services used the Internet to monitor the progress of lawsuits in the courts (Barbosa, 2010), a decrease from the previous year (16%) (Barbosa, 2009). This data shows that the use of e-government services of the Brazilian Judiciary System is not benefiting directly from the growth of Internet and e-government service usage by the Brazilian population.

The number of individuals who did not use e-government services, but who accessed the Internet and declared willingness to consult the progress of lawsuits in the courts, decreased from 30% in 2008 (Barbosa, 2009) to 27% in 2009. This reinforces the above analysis, proving that the use of the Internet to follow up lawsuit status is reaching saturation point at approximately 3 to 4 percent of the total population (3.22 in 2008 and 3.28 in 2009). Further, the potential number of citizens monitoring the progress of lawsuits over the Internet increased from 9% of the population in 2008 to almost 15% in 2009.

Analysis of these data shows that in order for e-government to foster social inclusion through the

democratization of access to justice, three major steps are necessary, namely to increase the access to ICT including the Internet, to increase the use of e-government services among Internet users, and to provide new value-added services corresponding to the fourth and fifth levels of e-government initiatives. On the other hand, 56% of Internet users who did not use e-government services preferred to make personal contact, 15% had data security concerns, 13% said that the services were hard to find, 9% declared that the services needed were not available online, and 8% thought that it was too complicated (Barbosa, 2010). Given the existence of multiple answers, less than 30% can be reached by providing more easier-to-find and easier-to-use services. More than 70% of Internet users who do not use e-government services have behavioral and trust barriers.

These results raise a question for the Brazilian Judiciary System in general and the NCJ in particular, namely what are the effects of the IT investment in the advancement of the use of e-government services of the Brazilian Judiciary System? Only three years of data accessible on consulting the progress of lawsuits via the Internet, and no data on the others services available, makes answering this question even more difficult.

IT INVESTMENT AND E-GOVERNMENT

IT investment has the potential to create value for the investing organization (Lucas, 1999). IT investments encompass several IT related items, as hardware, storage, software purchase, system development, network, Internet access, management and training. The use of IT can be associated with productivity and efficiency gains, as it makes a shift in production arrangements possible (Crede & Mansell, 2002). For developing countries, IT offers opportunities for economic development, and plays a critical role in rapid economic change, productive capacity improvements and

the enhancement of international competitiveness (Ndou, 2004).

Several research projects have been conducted on the impact of IT investment on business (Barua, Kriebel, & Mukhopadhyay, 1991; Greenan & Mairesse, 1996; Brynjolfsson & Yang, 1999; Lin & Shao, 2000; Subramani & Walden, 2000). Brynjolfsson and Yang (1999), for example, used financial markets valuation of the firms to estimate the intangible costs and benefits of computer capital. Lin and Shao (2000), on the other hand, measured the positive impact of IT on organizational performance. Nonetheless, determining the costs and benefits of e-government initiatives are still a problem that needs to be solved (Johnson, 2002).

It is important to note that in the public sector any IT investment will be influenced by the political mission of the government agency (Chircu & Lee, 2003). Investing in IT in order to enable providing e-government services to citizens becomes a political decision to be taken by the political agents running the agencies. To provide e-government services, it is necessary to have an ICT infrastructure that includes: Internet connectivity; bandwidth capacity; secure servers; computers, etc. (Srivastava & Teo, 2004). A solid and secure ICT environment is an essential prerequisite for the successful implementation of e-government.

It is also important to appreciate that not all IT investment represents a direct e-government investment, although it can provide the infrastructure necessary in order to provide e-government services. As the strategic planning developed by the NCJ for the Brazilian Judiciary System focuses on IT investment to enable e-government and the Brazilian Courts are developing information systems to host electronic lawsuits, which represents a fourth stage e-government services, we will use IT investment as a proxy for or precursor to e-government investment.

MEASURING THE IMPACT OF IT INVESTMENT ON EFFICIENCY

How investment in IT is related to efficiency is a problem that transcends the boundaries of public administration (Lin & Shao, 2000). However, as governments are subjected to greater budget control and public scrutiny, the efficiency and effectiveness of public spending ranks high on the political agenda (Mandl, Dierx, & Ilzkovitz, 2008). Measurement of efficiency in the public sector is never an easy task.

Measuring an organization's efficiency involves a comparison between the inputs it requires and the outputs it produces (Crawford, Klemm, & Simpson, 2003). If the outputs are sold in a competitive market, the value of these outputs can be measured by their price. However, in the public sector the goods and services are provided for free, or for a price that it is not related to their cost or to the vagaries of market forces (Crawford, Klemm, & Simpson, 2003). For this reason, it is very difficult to place a value on these outputs. On the other hand, the aggregated inputs are clearly stated in the budget. So, how can we solve the problem of measuring outputs and efficiency? In the case of the Brazilian Judiciary System, this task is easier as we can find similar organizations and compare them. The annual report entitled "Justice in Numbers," published by the NCJ since 2004, provides the data necessary for this analysis (Brasil, 2009a).

According to the Vera Institute for Justice (2003), the most reliable administrative data are those an agency collects for its own operational purposes. In relation to the reliability of data provided by the NCJ, it has to be mentioned that they are provided directly by the courts, with no verification and auditing by the NCJ. The lack of experience in collecting these data by the courts is another problem to be mentioned. Even if there is no fraud, innocent errors can be made and affect the outputs. The Vera Institute for Justice (2003) also suggested a number of potential indicators

for judicial performance. None of them are widely available for the Brazilian Judiciary System.

The congestion of lawsuits in courts (percentage of lawsuits waiting for a judge's sentence) is the best available proxy for operational efficiency, because it embodies both the regional characteristics, as the number of lawsuits in a given administrative unit. It also provides the efficiency characteristics, as the court performance in judging the lawsuits that come before it. The cost per lawsuit judged (average cost of each lawsuit judged in an administrative unit) is the best proxy for financial efficiency that can be calculated from NCJ indicators.

Another measurement problem is the return on IT investment over time. How long does it take for the investment to mature and have the expected effects on efficiency? It is a difficult question to answer, and even more so if we don't know the structure of the IT investment. Investment in software development, notably in the early stages, has uncertain returns. Investment in training has a more rapid return. The solution adopted here was to consider all the time series available (five years) to evaluate the results of medium-term investment in IT. This approach was designed to reduce the effects of the considerable fluctuations in IT investment from year to year within the same court.

The performance indicators used address two characteristics that affect the perception of the efficiency of the Brazilian Judiciary System: length of the proceedings (congestion) and public spending (cost per lawsuit judged). This is a different approach than that which uses economic and social indicators as a proxy for the efficiency of the public sector (Afonso, Schuknecht, & Tanzi, 2003), like the works developed by Pinheiro (2000, 2001) to estimate the negative impact of the inefficiency of the Brazilian Judiciary System on the country's development.

Another approach adopted in this study is the use of data directly related to the activities of the Brazilian Judiciary System. It is the best approach

available for the purposes intended, despite the fact that the currently available data do not cover all aspects of efficiency, such as correct and non-biased decisions, and promoting access to justice (Hammergren, 2009a). Furthermore, the available indicators do not include the relative weight of the products, and the dynamic effects of exogenous factors (Smith & Street, 2005).

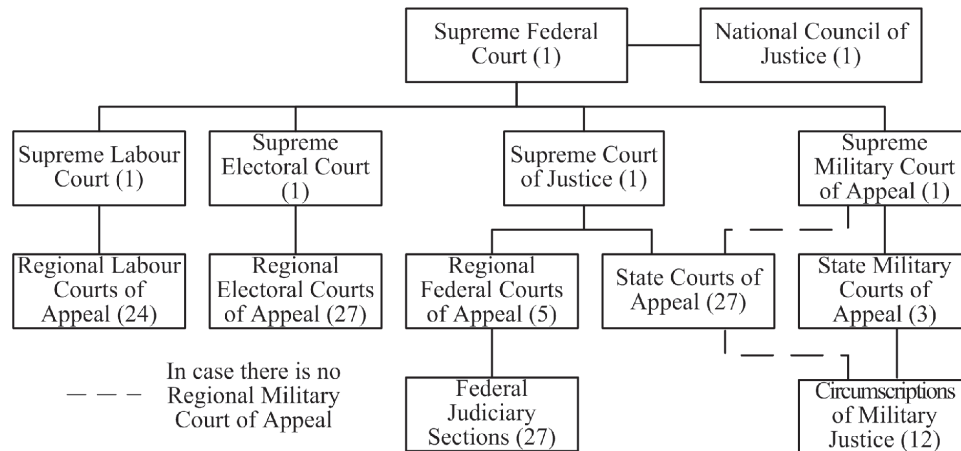
E-GOVERNMENT IN THE BRAZILIAN JUDICIARY SYSTEM

The Brazilian Judiciary System

The Brazilian Judiciary System consists of a complex combination of nature of lawsuit, physical location and level of jurisdiction (Andrade & Joia, 2010). The jurisdiction for deciding a certain issue is based on a combination of the right in dispute (nature of lawsuit), location of the dispute (physical location) and level of jurisdiction of the judge (level of jurisdiction). Although the explanation may be simple, the multitude of possible combinations offers a complexity of options that goes beyond the number of administrative autonomous units of the Brazilian Judiciary System.

Because Brazil is a federative republic, the basis of the Brazilian Judiciary System lies at state level. The macro-organizational structure of the Brazilian Judiciary System is established in Title IV, Chapter III, Section I, Article 92 of the Brazilian Constitution: "Art. 92. The organs of the Judiciary Power are as follows: I - the Federal Supreme Court; II - the National Council of Justice; III - the Superior Court of Justice; IV - the Courts of Appeal and Labor Assizes; V - the Courts of Appeal and Electoral Assizes; VI - the Courts of Appeal and Military Assizes; VII - the Courts of Appeal and State, Federal District and Territorial Assizes" (Figure 2) (Brasil, 2010a). Due to this division, Brazil has more than 100 autonomous administrative judiciary units (Andrade, 2009). Besides the federal and state justice, there are

Figure 2. Structure of the Brazilian judiciary system (Andrade & Joia, 2010)



three more specialized instances of jurisdiction: labor, electoral and military.

With 26 states and a federal district, each one with its own structure for almost all of the 5 different instances of jurisdiction, coordination is no simple task. In this fragmented environment, information systems were developed in an uncoordinated manner, according to the local internal needs of the organizations (Andrade, Mallet, & Fleury, 2008). Rarely were the different stakeholders interested in the Judiciary administration heard (Andrade, 2009). This resulted in several concurrent and non-interoperable systems for lawsuit automation, with low knowledge-sharing and high costs (Andrade, Mallet, & Fleury, 2008).

In 2004, Constitutional Amendment No. 45 created the NCJ and established the constitutional right to a “reasonable” duration of the judicial process (Brasil, 2010). While the “reasonable” duration established a constitutional right with no adequate means to ensure its accomplishment, the creation of the NCJ was a response to the social demand for an external control of the Brazilian Judiciary System, given the broad autonomy of its units (Andrade, Mallet, & Fleury, 2008).

The attributions of the NCJ include defining strategic planning and the goals and programs for institutional evaluation of the Brazilian Judiciary System. Strategic planning could be found in units

of the Brazilian Judiciary System since the early 1990’s (Baracho, 2002). Most of these initiatives were isolated and/or discontinued in the course of time. The isolation was given by the fragmented structure of the Brazilian Judiciary System and the discontinuity was caused by the short duration of the administrations of the Judiciary units, limited to a two-year term (Andrade & Joia, 2009).

IT IN THE BRAZILIAN JUDICIARY SYSTEM

According to Tapscott (1997), there are three stages in the virtualization of working processes. First, the value chain is still physical, though there is the use of electronic tools such as word processors, spreadsheets and simple databases. Second, automation becomes part of the activities associated with the execution of working processes. Third, the value chain is fully digital with intensive use of ICT.

The automation of the Brazilian Judiciary System is more than three decades old (Andrade, Mallet, & Fleury, 2008). However, during this time there was hardly any coordination between the various individual initiatives. Indeed, until recently no coordinated ICT planning was detected and separate information systems were developed

for each and every unit (Andrade, 2008). This problem is even more acute in the state courts, given the administrative autonomy of each state.

The evolution of the computerization of the Brazilian Judiciary System is fully compatible with Tapscott's model (Andrade, Mallet, & Fleury, 2008). First, judges and civil servants use word processors and simple databases to type decisions and hearings and register information on the progress of lawsuits. Second, the courts implement information systems to control the progress of lawsuits, which Tapscott (1997) defines as "control of working processes," and early steps of automation. Third, the virtualization of lawsuits referred to as electronic lawsuits takes place, when the courts start to implement a fully digital value chain, with intensive use of ICT, including e-government tools.

All the administrative units of the Brazilian Judiciary System have completed the first phase, and most of them have also implemented phase two. In rare cases, part of the lawsuits of a given court is not controlled through an information system. All of them have initiated the third phase (digital value chain), though none of them have completed it yet. It is expected that, by the end of 2011, the administrative units of smaller states will have completed this task, with all their lawsuits in electronic format.

THE ELECTRONIC LAWSUIT

The increasing computerization of the Brazilian Judiciary System, motivated among other things by the desire to speed up judicial lawsuits, is a solution involving technical procedures rather than new lawsuit routines per se (Duarte, 2003; Silva, 2004). Undoubtedly, the most important initiative in the field of e-government by the Brazilian Judiciary is the so-called electronic lawsuit. Although it is known by this name, it is a lawsuit in a differentiated physical medium with the same rules as traditional lawsuits, rather than a new type

of lawsuit. Instead of the court dockets being on paper, the lawsuit is processed using electronic means. In other words, the standard principles and rules of judicial lawsuits are maintained, though documents that were stored on paper (and often generated via electronic media) are stored and managed electronically.

After the enactment of Federal Law 11.419/06 the implementation of the electronic lawsuit has been essentially pragmatic. The control of routines such as the distribution of initial briefs, fulfillment of court orders, accompaniment of lawsuits, publication routines, scheduling of hearings, among others, undoubtedly benefit from computerization (Marcacini & Costa, 2008). The first instances of electronic lawsuits were implemented by isolated courts in the various autonomous units, often based on previously available lawsuit information systems (Andrade, Mallet, & Fleury, 2008). In many cases, there is more than one system in place in each court (Andrade, Mallet, & Fleury, 2008).

In order to clear up this problem, the NCJ developed the Digital Judicial Lawsuit (PRO-JUDI) (Andrade & Joia, 2009). However, the autonomous administrative units of the Brazilian Judiciary System use different versions of the system and have a high degree of freedom to customize them. This situation repeats the same model of decentralized development, with high costs and low knowledge sharing, although on a common platform. The unification of the platform can contribute to reducing the problems of communication and interoperability that need to be overcome in order to achieve the fifth (seamless) stage of e-government initiatives, in accordance with UN/ASPA standards (Ronaghan, 2002).

CRITICAL ANALYSIS OF THE NCJ'S ROLE

Since its deployment in 2004, the major innovation of the NCJ was to conduct centralized strategic planning for the entire Brazilian Judiciary System,

which is something that had never been attempted before. In 2009, the NCJ staged the 2nd National Meeting of the Judiciary, the main result of which was to establish coordinated strategic planning that set 10 national leveling goals for 2009, including six specifically dealing with IT investment and four focused on providing e-government services to citizens. These goals include: computerizing all the judicial units and interconnecting them to the respective courts and the Internet; computerizing and automating the distribution of all lawsuits and appeals; implementing management systems for criminal enforcement and monitoring mechanisms for temporary incarceration; making the procedural information available in the portals of the world wide web (Internet), with up-to-the-minute lawsuit accompaniment and content of decisions, while duly respecting the privacy of justice; registering all magistrates in the electronic systems of access to information on people and property and reporting court orders (Bacenjud, Infojud, Renajud); and implementing the electronic lawsuit in part of their units (Brasil, 2009b).

On September 29, 2009, Resolution 90 of the NCJ established requisites for IT in the Brazilian Judiciary System (Brasil, 2009c). It recommends the number of civil servants in the IT area according to the size of the Court, the rules for developing or contracting information systems, the minimum IT infrastructure required, and the need for strategic planning in IT. In Resolution 91, also dated September 29, 2009, the NCJ established the Model of Requirements for Information Systems for Management of Lawsuits and Documents of the Judiciary Authority (MoReq-Jus) (Brasil, 2009d). The MoReq-Jus established technical and functional specifications to govern the acquisition, detailing and development of systems for lawsuits and documents management.

In 2010, a new round of strategic planning measures were proposed at the 3rd National Meeting of the Judiciary, and resulted in 10 new goals, two of which were specifically related to e-government being enabled by IT investment. These were: to

increase the speed of the links between the Court and 100% of their units installed in the judicial capital and at least 20% of the units of the interior to more than 2 Mbps; and to conduct 90% of official communications between the bodies of the Judiciary System electronically (Brasil, 2010b). The reduction in the number of IT-related goals in 2010 was to avoid overburdening the IT areas of courts that had been caused by the 2009 goals.

In the current development stage, the mission-oriented goal of NCJ is to eliminate the deficit in ensuring judgment to existing and new lawsuits. In 2009, the main objective was to judge all lawsuits filed in 2005 and before (Brasil, 2009b). In 2010, the main goal was to judge all lawsuits filed in 2006 and before, and there were two further goals dealing with measures to ensure a swifter pace in the processing of lawsuits (Brasil, 2010b). Consequently, the ability of the courts to judge cases at a faster pace than new lawsuits are filed (congestion) is an important measure. However, the backlog has to be cleared without increasing court costs. In 2010, one of the leveling goals was focused on reducing costs (Brasil, 2010b). This highlights the importance of cost efficiency that sets both a limitation and a goal to IT investment and e-government services. The NCJ not only sets the goals, but also the performance measurement tools, which reinforces mission-oriented management, establishing priorities and selected practices.

IT INVESTMENT AND COURT EFFICIENCY

Although many existing works address many aspects of the problem of efficiency of the Judiciary, none of them links efficiency to the use of IT (Hammergren, 2009a; Staats, Bowler, & Hiskey, 2005; Hammergren, 2009b). Given the constraints already discussed in the methodology, data analysis was conducted to establish if there is a reliable correlation between IT investment and state court efficiency. IT investment in the Brazil-

ian Justice System refers to any of the possible items previously referred to: hardware, storage, software purchase, system development, network, Internet access, management and training. No data is available related to investments on each of these items per se. There is data available on the number of computers but not on the type of computers (desktops, notebooks, servers, etc.), their cost or if the computer is still in condition to be used. As it is known that courts do include any computer that is part of their patrimony and do not sell or discard very often computers out of use, these data seems to be useless and is not considered hereinafter.

The analysis of the correlation of IT investment and court efficiency was conducted by considering two dimensions, namely operational efficiency and financial efficiency. The congestion of the courts was selected for measuring operational efficiency, while the cost of lawsuits judged evaluates financial efficiency. The selection of both the dimensions and their measurement variables is justified by the NCJ strategies and goals (Brasil, 2009b; Brasil, 2009; Brasil, 2010b). The definition of the variables and its abbreviations are those provided by the NCJ, where available (Brasil, 2009b):

- State population (H1) – number of inhabitants, according to data from the National Institute of Geography and Statistics (IBGE).
- Court budget (Dpj) – expenditure of a court in a given year, excluding expenses from previous periods.
- IT investment (Ginf) – all investment in IT resources, including those funded by third-parties.
- Total of sentences (Sent) – number of judicial sentences handed down in a given year.
- Congestion (tc) – Number of lawsuits awaiting a judge's sentence in relation to lawsuits in progress (lawsuits awaiting judgment plus new lawsuits). It is calcu-

lated by using the equation: $tc = 1 - (\text{Sent} / (\text{CN} + \text{Cpj}))$, where CN is the number of new cases in a given year, and Cpj is the number lawsuits carried over without judicial sentence from the previous year.

- Cost per lawsuit judged (DpjSent) – average cost of lawsuits judged in a given year. This is calculated by dividing the court budget (Dpj) by the number of judicial sentences handed down in a given year (Sent).

It is important to note that the higher the congestion (tc) is, the lower the operational efficiency. The same happens with the cost per lawsuit judged, i.e. the higher the cost, the lower the financial efficiency. Because of this, both variables are expected to have a negative correlation on IT investment. In other words, IT investment should lead to a reduction in both congestion and costs.

Brazilian states differ greatly in terms of environment and local conditions and feature a broad variance in important indicators such as population, number of municipalities, revenue, budget, and others. It is important to note that the budgets of the states in Brazil are heavily influenced by transfers from the federal government, especially in poorer states, and therefore do not necessarily reflect the economic activity of the state. The budgets of the State Courts (Dpj) are a percentage of the state budget (@ GT), which in 2008 ranged from 3.5% to 12.1% (G2) (Brasil, 2009a). IT investment (Ginf) is more irregular and varied in 2008 between 0.1% and 4% (inf1) of the court budget (Dpj) (Brasil, 2009a). The tool chosen to reduce the regional inequalities was balancing the variables by the state's population (H1). This is expected to narrow environmental differences, since it is impossible to isolate all local variables that affect the functioning of the state courts to calculate its efficiency.

IT investment per capita (GinfH1) was calculated for each of the five available years using the equation $GinfH1 = Ginf / H1$. The measurement of the congestion was limited to the regular courts,

given the inherent difficulty in comparing these data with data both from appeal courts or small claims courts. No transformation was made to Congestion (tc) or Cost per lawsuit judged (DpjSent) because these are proportional measures. Then, to reduce the effects of annual fluctuations, all the variables were converted into an average for the five available years. An average for Ginf for each state was found by adding up the results for Ginf and dividing by five ($\mu\text{GinfH1} = (\sum \text{GinfH1}) / 5$). The same was done to find an average for the Congestion (tc) for each state ($\mu\text{tc} = (\sum \text{tc}) / 5$) and an average of Cost per lawsuit judged (DpjSent) for each state ($\mu\text{DpjSent} = (\sum \text{DpjSent}) / 5$).

The analysis of the histograms of the transformed variables showed that none of them revealed normal distribution. Spearman's rho correlation was adopted because it does not require that data are from a normal population. The variable chosen to proxy the IT investment (μGinfH1) was then tested to establish if there was a negative correlation with the proxies for state court operational efficiency (μtc) and financial efficiency ($\mu\text{DpjSent}$), according to the hypothesis stated previously (that IT investment has a positive influence on efficiency). As a result, the one-tailed test of significance was selected. All tables (Tables 1, 2 and 3) were generated by SPSS Version 13

and given the software limitations the Greek letter μ is replaced by corresponding Roman letter m.

Table 2 shows the statistical outcome between two sets of the study sample: the population-weighted IT investment and the cost efficiency.

The analysis of the outputs considered the highly restrictive significance level of $\alpha = .01$. This means that the odds that the correlation is a chance occurrence are no more than 1 in 100. We also adopted Cohen's criteria for interpretation of a correlation coefficient.

In both cases, there is a medium to large correlation (by Cohen's criterion) within the confidence interval: -0.476 between the average spending on IT per capita (μGinfH1) and the measure of operating efficiency, Average Congestion (μtc) with a p-value (denoted by Sig.) of 0.006; and -0.524 between the average spending on IT per capita (μGinfH1) and the measure of financial efficiency, average cost per case decided ($\mu\text{DpjSent}$) with a p-value (denoted by Sig.) of 0.002. Therefore, one should reject the null hypothesis that $\rho = 0$, i.e. reject the hypothesis of no correlation and accept the hypothesis of its existence. Both are negative correlations. Assuming that the relationship is causal in the sense that spending on information technology influences congestion and cost, and not the other way around (although any expense

Table 1. Spearman's rho correlation between average population-weighted IT investment (μGinfH1) and operational efficiency (μtc)

Correlations				
Spearman's rho	mGinfH1	Correlation Coefficient	1,000	
		Sig. (1-tailed)	.	,006
		N	27	27
	mtc	Correlation Coefficient	-,476**	1,000
		Sig. (1-tailed)	,006	.
		N	27	27

** . Correlation is significant at the 0.01 level (1-tailed).

Table 2. Spearman's rho correlation between average population-weighted IT investment (μGinfH1) and cost efficiency ($\mu\text{DpjSent}$)

Correlations				
			mGinfH1	mDpjSent
Spearman's rho	mGinfH1	Correlation Coefficient	1,000	-,524**
		Sig. (1-tailed)	.	,002
		N	27	27
	mDpjSent	Correlation Coefficient	-,524**	1,000
		Sig. (1-tailed)	,002	.
		N	27	27

** . Correlation is significant at the 0.01 level (1-tailed).

Table 3. Cohen's criteria for interpretation of a correlation coefficient

Correlation	Negative	Positive
Small	−0.3 to −0.1	0.1 to 0.3
Medium	−0.5 to −0.3	0.3 to 0.5
Large	−1.0 to −0.5	0.5 to 1.0

does influence the cost), we can confirm the hypothesis that IT investment has a positive effect on the efficiency of the Brazilian Judiciary System.

FUTURE RESEARCH DIRECTIONS

Naturally, the potential benefits accrued from the implementation and use of e-government initiatives in the Brazilian Judiciary System hinge on the basic presupposition that qualified and skilled public administration personnel are on hand to deal with this new *modus operandi* (Lips, 2001). According to Araya Dujisin (2004, p. 28), it is not so much the challenge of having external specialists hired by the Judiciary System, but the need to envisage permanent training policies addressing the different knowledge fields embedded in e-government, as well as ensuring integration between them. On the other hand, it is necessary

to understand that e-government is far more than mere technology (Lau, 2004). According to Biasiotti & Nannucci (2004), a mix of several disciplines must be created, encompassing not only Information and Communication Technology and Administrative Science, but also Social, Human, and Legal Sciences, among others.

Several endeavors are underway to train civil servants in e-government (see, for instance, Augustinaitis & Petrauskas, 2004; Elovaara, Eriksén, Ekelin, Hansson, Nilsson, & Winter, 2004; Biasiotti & Nannucci, 2004). However, the training models are very much centered on the content and duration of the courses (Augustinaitis & Petrauskas, 2004; Kaiser, 2004; Lau, 2004), avoiding classification of the civil servants into specific training groups, according to the current hierarchy, so as to deliver different skills to different actors within the public administration arena. Consequently, it becomes clear that there is a pressing need to link all the aspects involved in e-government training efforts into a single integrated framework, so as to allow capacity-building endeavors to achieve the outcomes sought by policy-makers (Joia, 2005), which constitutes a future research direction in this realm.

Moreover, according to Ballantine and Cunningham (1999), increasing recognition of the need

to monitor multiple dimensions of performance has led to the development of a substantial body of Performance Measurement literature (see, for example, Fitzgerald, Johnston, Brignall, Silvestro, & Voss, 1991; Brignall, Fitzgerald, Johnston, Silvestro, & Voss, 1992). Among the earlier contributors to the literature, Checkland, Forbes, and Martin (1990) conceptualized Performance Measurement by using the concept of a system and the measures necessary for it to remain stable over time. Their research led to the recognition of three levels of performance which, they argue, should be used to monitor a system's performance (see also Checkland, 1981):

- Effectiveness: Is the right thing being done?
- Efficacy: Does the means work?
- Efficiency: Is resource usage minimum?

Roebeke (1990) broadly concurs, recognizing the need to monitor effectiveness, efficacy and efficiency. He suggests that the three criteria constitute a hierarchy, within which measures of effectiveness are of greater importance than measures of efficacy, which in turn are more important than measures of efficiency.

According to Morkate (1999), something is efficacious if it succeeds or does what it should do. He defines efficacy as a way of establishing an objective to be attained, which must include the quality of what is proposed. Further, he states that this objective must stipulate a time at which one hopes to generate a determined effect on the product. For this to occur, an initiative becomes efficacious if it fulfills the expected objectives at a programmed time with the expected quality.

Furthermore, there is also a need to incorporate the impact of e-government implementations into the accountability of the Brazilian Judiciary System. To Campos (1990), this concept may be understood as a question of democracy. The more advanced the democratic stage, the greater the interest in democracy. And government account-

ability tends to follow the advance of democratic values such as equality, human dignity, participation and responsibility. Thus, future research initiatives in this realm must investigate not just the impact of e-government on the efficiency of the Brazilian Judiciary System (as in this chapter) but also on its efficacy, effectiveness and accountability.

CONCLUSION

The main goal of this research was to analyze e-government being enabled by IT investment of the Brazilian Judiciary System. For this reason, a qualitative and quantitative case study was performed. This composite research was able to answer research questions from two eGovRTD2020 themes: how might a mission-oriented view of e-government change priorities, investments, practices, and the assessment of results (mission-oriented goals and performance management), and provide a tool to evaluate cost and benefits of ICT investment (assessing the value of government ICT investments)?

Analysis of the role of the NCJ in the strategic planning of the Brazilian Judiciary System shows that it focuses on the efficiency of the courts and its capacity to judge the lawsuits in a timely manner. In order to accomplish this, the NCJ has chosen IT as one of the main tools (management being the other one). The reduction of IT goals to enable e-government from 2009 to 2010 does not reduce its importance, given that the radical change that began in 2009 has overburdened the IT areas of the administrative units of the Brazilian Judiciary System and reduced their ability to cope with new demands. The analysis of the 2010 goals showed the NCJ's concern about the budget, so IT investment is also seen as an opportunity to cut operational costs (electronic communications is a clear example).

The NCJ's focus on operational and financial efficiency established the parameters for defin-

ing the variables to evaluate the effects of IT investment on the Brazilian Judiciary System. The existence of a medium to large correlation between IT investment and both measures of efficiency (Average Congestion and Average Cost per lawsuit judged) within a narrow confidence interval, shows that IT investment has a clearly positive influence on the efficiency of the Brazilian State Courts. Faster and less expensive lawsuits can become a reality and foster access to justice.

The analysis of the data on the Internet and e-government services used by the Brazilian population shows that there is an opportunity for the Brazilian Judiciary System to provide higher levels of e-government services through the Internet, such as electronic lawsuits. However, providing access to justice through e-government is no easy task, as there are several restrictions to the use of e-government services, particularly by the lower classes.

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KEY TERMS AND DEFINITIONS

Accountability: The obligation to suffer the consequences for failure to perform as expected.

Court Efficiency: Comparison between the inputs it uses and the outputs it provides.

E-Government: Provision of government services through information and telecommunications technologies.

Electronic Lawsuit: Lawsuit processed in electronic format.

Information Technology: Acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information using a microelectronics-based combination of IT and telecommunications

IT Investment: All expenses applied to acquiring IT resources.

Judicial System: Responsible for the deliverance of justice.

ENDNOTE

- ¹ eGovRTD2020 is a project co-funded by the European Commission under the 6th Framework Programme of Information Society Technologies. It seeks to project the scenario of e-Government in 2020 and thereby identify future strategic research fields for the development of e-government and the public sector per se.