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# ARE WE PROVIDING SERVICE QUALITY WITH IS? EMPIRICAL EVIDENCE FROM THE JUSTICE SYSTEM OF TWO DEVELOPING COUNTRIES

*Research paper*

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## Abstract

*Little is known about Information and Communication Technologies for Development (ICT4D) impacts in Latin America justice system and few theoretical advances were done on this topic. This paper aims to propose a model grounded in Task-Technology Fit theory and explore its rationality in the justice system of two developing countries: Brazil and Argentina. Interviews with public managers and employees were conducted, and content analysis was applied to examine ICT4D impact on individual performance and public service quality. Our research makes several contributions by proposing a model on how ICT4D intervention can be assessed in an application area like the justice system. We examine the effectiveness of two national ICT4D endeavours, represented by the electronic lawsuit, thus showing how government can lead successful ICT4D implementations in developing countries. The practical value of this research rests on clarifying how ICT4D impacts public employees' performance and public service quality. The results should help managers reduce gaps between policy and design of electronic lawsuits, thus guiding ICT4D endeavours by practitioners in other developing countries.*

*Keywords: ICT4D, justice system, developing countries, public service quality.*

## 1 Introduction

Information and Communication Technologies for Development (ICT4D) are tools to achieve sustainable socio-technical change. Initially, in the public sector, these Information Systems (IS) were mainly used in the activities of the executive branch of government, taking advantage of the Internet to publish information and facilitate administrative transactions (CEJA, 2012). Accordingly, research has a heavy emphasis on the executive branch of the government and government in general (Lan and Anders, 2000). In fact, Lan and Anders (2000) found that 35.3% of the articles they analysed discussed issues related to the executive branch of the government, 39.7% to the government in general, 2.8% to the legislative branch, and only 0.9% to the judicial branch. Consequently, little is known about IS implementation, impact, challenges, and pitfalls in the judicial branch of government (Sandoval-Almazán and Valle-Cruz, 2016).

In Latin America, due to the democratic restorations of the '80s and '90s, there have been progressive reforms in judicial matters. Among them, the implementation of IS endeavours appears (CEJA, 2014) as a possible solution to the problem of law losing its capacity for timely response in the dynamics of the current tech-society (Lezcano and Olivera, 2009). Although, the judicial branches around the world continue to be among the least willing institutions to implement policies on transparency and

access to information, generally because of their conservative tradition and lack of accountability practices, the judicial branch is making progress toward developing IS projects to improve their processes and strengthen the relationships with stakeholders (Elena, 2015b). Among these IS endeavours are electronic lawsuits, court management systems, electronic notifications, electronic signatures, and electronic communications. Therefore, countries in the region should continue to advance in ICT4D projects in the justice system, while sharing and exchanging good practices (CEJA, 2015).

In Brazil and Argentina, the justice system transformation through ICT4D use is underway as it is spreading to many tribunals (Andrade and Joia, 2012). Simultaneously, the justice system in Brazilian is in the spotlight because of the investigations into money laundering and politicians' corruption in the operation *Carwash* or *Lava Jato* (The New York Times, 2017). Meanwhile, in Argentina the justice system is criticised being among the most costly in the world, with a large staff and numerous vacations, which means the service is interrupted for 45 days a year (Infobae, 2017). This contemporary historical moment in both countries proves that court management is critical for society to remain without systematic and continued research attention (Guimarães *et al.*, 2011). Therefore, ICT4D implementation in the justice system of Latin America becomes attractive to researchers.

Some investigations show that IS projects in courts importance have increased (Sousa and Guimarães, 2017) as they are institutionalized and ordinarily used with a high level of acceptance (Luzuriaga and Cechich, 2011). Moreover, previous studies show that IS projects in courts positively influence performance measures, such as efficiency, efficacy, effectiveness, and accountability (Joia, 2008, 2009). These points highlight the relevance of IS projects in courts as a topic of interest to other courts and justice systems around the world, mainly those that are struggling with similar management problems (Guimarães *et al.*, 2011).

However, several studies (e.g. Luzuriaga, Martínez and Cechich (2009) and Luzuriaga and Cechich, (2011)) are merely descriptive of the initiatives undertaken, thus lacking a rigorous theoretical background. Other studies built on theories of intellectual capital (Joia, 2008, 2009), strategic planning and Information Technology (IT) strategies (Andrade, 2009; Andrade and Joia, 2012), innovation in the public sector and the role of resources and capabilities (Guimarães *et al.*, 2011; Sousa and Guimarães, 2017), and research in open government data (Elena and Pichón, 2012; Elena, Aquilino and Pichón Rivière, 2014; Elena, 2015a, 2015b; Sandoval-Almazán and Gil-García, 2015; Sandoval-Almazán and Valle-Cruz, 2016). This suggests that few theoretical advances were done on this topic. That may be a common problem in e-government literature as articles often do not use specific theories as a foundation for the study (Belanger and Carter, 2012). Thus, further studies about the IS impacts in the justice system in Latin America using a rigorous IS theoretical foundations are lacking. In fact, more research is needed to explore the main factors that impact the quality and performance of IS endeavours that automate processes and improve bureaucratic tasks in order to improve policies and governance of the justice service (Sandoval-Almazán and Gil-García, 2015).

The present study intends to fill these gaps by exploring an extension of Task-Technology Fit (TTF) theory (Goodhue, 1995; Goodhue and Thompson, 1995) in the justice service of two developing countries: Brazil and Argentina. The TTF is suitable for this research because civil servants in public institutions are obliged to use IS to deliver public services. This means that regardless of the assessment of the electronic lawsuit by the justice service employees, it is impossible to provide the service without using it. According to Carter and Grover (2015), it is important to recognize the mandatory nature of IS use because we might reasonably suppose that when individuals are compelled to use IT (e.g., a newly implemented corporate IT), they may engage in resistance behaviours. In addition, when IS usage is mandatory, the constructs and relationships of Technology Acceptance Models (Davis, 1989) provide limited explanations of IT acceptance, and applying such models may lead to inappropriate organizational decisions (Brown *et al.*, 2002). Kim and Ammeter (2014) argue that when the acquisition of an IS occurs in an organization through an adoption decision made by senior managers or executives (i.e., CIO), the end user has much less flexibility to choose to use it or not. This process places the majority of end users in a more passive role, and an implicit assumption in the theory of TTF is that adoption has already occurred once the IS is in the hands of the end users. Therefore, in the context of organizational adoption, after obtaining the IS, TTF can be applied to evaluate the speed of

adoption, impact on performance and the overall success of its implementation and use, along with in what ways and to what extent the technology fits the task (Kim and Ammeter, 2014). TTF focuses on the employee's perspective, which was deemed suitable for the present study in which the perceptions of public employees in the evaluation of the electronic lawsuit are considered, according to the individual's characteristics and task characteristics. To the best of our knowledge, no empirical examination was performed using TTF to understand individual performance and service quality in the justice system of developing countries, thus creating an interesting gap of research. This study is relevant because it has the potential to create knowledge in an area that relatively lacks studies and to generate contributions that result in the improvement of management IS in courts (Sousa and Guimarães, 2017).

Likewise, the choice of Brazil and Argentina as reference countries is justified because they are developing countries, where the use of e-government services is still at an early stage compared to other developed countries such as the United States and the United Kingdom (Kumar, Sachan and Mukherjee, 2017). In fact, experiences in emerging countries are gaining increased attention and are worth documenting for greater comparison with developed countries (Barbosa, Pozzebon and Diniz, 2013). Within the Latin America region, Brazil has been a reference in the computerization of the judiciary (Andrade, 2009). In Brazil, Federal Law 11419/06 (December 19, 2006) permits the use of IS in the management of legal cases and allows each and every judicial unit to develop its own IS, although such development is not mandatory. This means that each agency has the freedom to choose the development model that best suits its own use without the need for a specific IS, such as that developed by the Council of Justice (Andrade and Joia, 2012). This is completely different from the Argentinean federal courts, where there is only one software allowed to manage court records. Federal Law 26685 (July 7, 2011) authorized IS use in the justice service and delegated its development and implementation jointly in the Supreme Court of Justice and the Nation Council of the Magistracy. Although the different regulatory context, the justice system of Brazil and Argentina have similarities due to their geographical proximity, their reality as public institutions belonging to the judiciary and the application of the Roman-German legal system.

Consequently, the objective of the research is to propose a model grounded on TTF theory and explore the relationships of the model in the justice system of two developing countries. This model allows to study IS relationship to individual performance and public service quality in the justice system. Hence, this paper proposes a theoretical model on how ICT4D intervention can be assessed. An empirical qualitative study was conducted, which examines the drivers of ICT4D enabled socio-technical change for public service quality based on public employees' perception. This paper contributes to the academy by assessing the relationship between ICT4D and application areas like the justice system. We examine the effectiveness of two national ICT4D public policy, represented by the electronic lawsuit implemented in Brazil and Argentina, thus showing how government can lead successful ICT4D implementations in developing countries.

This article opens with the theoretical development of this research. The research model and propositions are then proposed, followed by the method. Finally, the results are examined, and the conclusions are presented.

## 2 IS implementation in the justice system of Latin America

The judiciary in Latin America adopted many reforms due to the democratic restorations of the '80s and '90s (CEJA, 2014). The major changes in courts management discussed modernisation, improvement of management and better offer of services, automation of activities, generation of statistical data and indicators of performance, prevention of lawsuits, and incentives to alternative solutions (Andrade, 2009). These reforms included IS innovations which counteract the daunting administrative task face at courts in the management of their workload (Guimarães *et al.*, 2011). For example, the electronic notification is a mean for spreading information faster and safer along with visibility and transparency of the process (Luzuriaga and Cechich, 2011). Another example is the electronic lawsuit, which has a decisive role as a tool to improve the work conditions of courts and access to justice (Andrade, 2009). An electronic lawsuit facilitates standardisation and homogeneity of routines (Sousa

and Guimarães, 2017) as it allows to manage and produce information from cases simplifying administrative tasks while texts and documents are standardised (Luzuriaga and Cechich, 2011). In this sense, the electronic lawsuit helps to achieve the transformation of structures and integrate the organizational redesign within the justice system (Andrade and Joia, 2012).

Because of these initiatives, academic studies are emerging in Latin America in order to describe, evaluate and compare IS endeavours implementation in the justice system. In Brazil, Joia (2008, 2009) measured the perceived variation of intellectual capital in 30 Courts of Justice involved in a government-to-government project which links the Brazilian Central Bank and the Justice Department. Andrade (2009) identified different actors and institutions in the process of strategic planning and definition of IS strategies in the Brazilian justice system. Later, Andrade and Joia (2012) analysed the influence of the organizational structure of Brazilian justice system in the definition and implementation of IS strategies. Moreover, Guimarães *et al.* (2011) described administrative reforms involving management innovations undertaken at the Brazilian Superior Tribunal of Justice, while Sousa and Guimarães (2017) assessed the adoption of innovation, i.e. the electronic lawsuit, in Brazilian labour courts.

In Argentina, there are academic studies that described the design and implementation of electronic signature and notification in the context of the justice system of Neuquén Province (Luzuriaga, Martínez and Cechich, 2009; Luzuriaga and Cechich, 2011). In Mexico, Sandoval-Almazán and Gil-García (2015) proposed a framework to evaluate judicial websites, which was tested in 20 from the 32 states of that country. Later, this instrument was refined and updated by Sandoval-Almazán and Valle-Cruz (2016) to evaluate judiciary websites in a cross-country study of 25 countries in Latin America. Another cross-country study, based on previous studies (Elena and Pichón, 2012; Elena, Aquilino and Pichón Riviére, 2014; Elena, 2015a), assessed existing conditions and current status of openness of judicial data and its emerging impacts in seven countries of Latin America: Argentina, Chile, Uruguay, Brazil, Costa Rica, México and Peru (Elena, 2015b). Jointly these articles show that IS implementation in justice service is done for administrative purposes following policies to increase transparency. However, IS developments usually are not citizen centred, thus failing to meet citizens' needs, neither improving justice service delivery. In fact, there is no evidence to confirm that the information from the judiciary may have been specifically planned for systematic use in the design of quality justice policies or might be used to improve the productivity or efficiency of courts in terms of quality, quantity and duration of court processes (Elena, Aquilino and Pichón Riviére, 2014).

As future research, Guimarães *et al.* (2011) highlight longitudinal and cross-sectional studies are needed, which focus on a broader sample of courts, to deepen understanding of court administration. In the same way, Sousa and Guimarães (2017) called for analysis of the development and adoption of innovations in other judicial fields and courts. Similarly, according to Andrade and Joia (2012), more research is needed to examine how similar endeavours have worked in different countries in order to enhance the external validity of investigations, i.e. to verify whether the conclusions can be replicated in different political, economic, social, legal and technological contexts. To achieve this, it is important to remind that legal systems are different throughout the world, which highlights how difficult it is to develop general prescriptive solutions addressing e-government. For instance in the case of the justice system, the USA and the UK adopt the common law paradigm, which is very different from the Roman-German legal system adopted by Brazil and Argentina, and several Latin countries (Andrade and Joia, 2012).

In this sense, a study that evaluates IS implementation in the justice service of different countries becomes interesting. To the best of our knowledge, there are no academic articles that assess the impact of IS projects on individual performance and service quality of the justice system from TTF theory. We aim to fulfil this gap by proposing the model shown in the following section.

### 3 Proposed research model and propositions development

The proposed research model considers users' evaluations of a particular system in order to assess ICT4D impact on individual performance and public service quality. Hence, the proposed research

model aims to study the antecedents that may possibly have an influence on the quality of service delivered (Petter, DeLone and McLean, 2013). The proposed research model is shown in Figure 1.

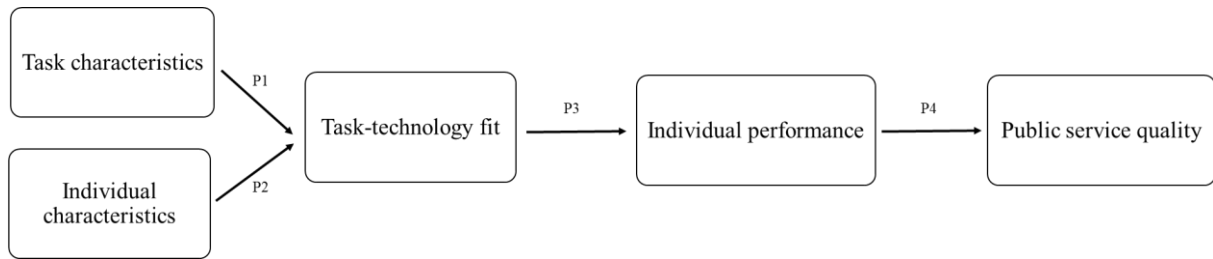


Figure 2. Proposed research model.

Based on TTF theory, the proposed model (Figure 3) aims to reflect associations between *characteristics of tasks* and *users* of a particular system in order to determine to what extent these variables are the antecedents of the *fit between IS and tasks* and the effects of that *fit* on *individual performance*. Moreover, the impacts at the individual level also affect the organizational level, which in this research will focus on *public service quality*. The definitions in Table 1 delimit the constructs of the research model shown in Figure 4. Thus, the model assesses IS impact on individual performance and public service quality, as we demonstrate in the following propositions.

Term	Definition	Author
Task characteristics	Characteristics and requirements of the tasks that the user must perform using IT.	Goodhue (1995)
Individual characteristics	Attributes related to the individual that could affect how he or she utilize IT.	Goodhue (1995)
Task-technology fit	The degree to which a technology assists an individual in performing his or her portfolio of tasks.	Goodhue (1995)
Individual performance	The extent to which a particular IS enables an employee to effectively and/or efficiently execute his or her tasks.	Goodhue and Thompson (1995)
Public service quality	The degree to which an IS facilitates the competent delivery of efficient services to help citizens, businesses and agencies in achieving their governmental transactions.	Tan, Benbasat and Cenfetelli (2008, 2010, 2013); Alanezi, Mahmood and Basri (2010)

Table 1. Definitions.

### 3.1 Task and individual characteristics: Task-Technology Fit

IT is designed for specific tasks (Burton-Jones and Grange, 2013). Users are aware of the inconveniences an adopted IS may bring to their work and may also know more about how an IS differs from alternative IT and how it may fit the task context (Sun, Fang and Zou, 2016). Hence, *task characteristics* define the purposes, and the functionalities that are expected of that IS (Kim and Ammeter, 2014). This means that different tasks must be supported by different IT, thus task characteristics can affect users’ perceptions of the IT they use in performing their tasks (Goodhue and Thompson, 1995). Recently, it has been proven that *task characteristics* positively moderate the relationship between the habitual use of mobile business systems by employees and their perceived work performance (Chung, Lee and Kim, 2014).

In general, government employees will be assigned to tasks that differ in content and complexity (Luarn and Huang, 2009). Furthermore, in the public sector, the tasks that a manager performs have implications for his or her IS use and IT is more valuable to managers on routine tasks compared to less routine management tasks (Kraemer et al., 1993). Hence, it is expected that employees judge IS to be more useful for structured, routine tasks than for complex tasks. In the context of local mobile gov-

ernment, Chen *et al.* (2015) identified five types of tasks that affect TTF: non-routine (difficult and unstructured task to analyse and predict); interdependence (the task is related to other tasks and requires coordination with other colleagues or organizational units); time-criticality (the task must be done on time and is generally urgent); mobility (the task is usually done in several locations); and location relevance (when performing the task dynamic information related to the location is needed). Among them, the authors emphasized that the attributes of non-routineness and interdependence are generally accepted in the existing literature, while the importance of time, location and mobility may reflect the special characteristics of mobile business environments.

*Individual characteristics* are often complex and may include needs and learning abilities, among other issues (Sun, Fang and Zou, 2016). The consideration of *individual characteristics* is important to assess whether users' attitudes toward an IS are biased (Torkzadeh and Doll, 1999). Indeed, characteristics of the individual that uses the IT (training, computer experience, motivation) could affect how easily and well he or she will utilize IT (Goodhue, 1995; Goodhue and Thompson, 1995). Consequently, these issues need to be considered to achieve high alignment between IT and individuals' work (Sun, Fang and Zou, 2016). In fact, articulating the intertwinement of IT and individual identity is important to understand individuals' behaviour with respect to IT in embedded social contexts because individuals' self-concepts will, increasingly, be bound up with IT (Carter and Grover, 2015).

Users with greater computing experience are likely to rely upon IT more extensively and to find it more useful (Kraemer *et al.*, 1993). Goodhue (1995) believes that people more competent, better trained, or more familiar with IS will find that any given IS more completely meet their needs and will give higher evaluations of systems. Venkatesh *et al.* (2016) investigated how governments can help citizens solve their uncertainty about e-government services and found that gender had not significant effect on the intentions of citizens to use two e-government services, while age and self-efficacy of the Internet had significant effects on both services and education was significant only in one of them. More recent research based on TTF proposes that, within the individual component, social influence, performance expectations and effort expectations affect IS use (Muslimin, Hadi and Nugroho, 2017).

Considering that a single IS could get very different evaluations from users with different task needs and abilities, the central assertion of TTF theory is that "*task and individual characteristics moderate the relationship between technology and user evaluations*" (Goodhue, 1995, p. 1836). Indeed, in TTF perceptions, there are significant contributions from the task characteristics (Ahmed *et al.*, 2017) and the individual characteristics of the system user (Muslimin, Hadi and Nugroho, 2017). Hence, the first two propositions of this research state:

*P1: Task characteristics influence users' evaluations of TTF.*

*P2: Individual characteristics influence users' evaluations of TTF.*

### 3.2 Individual performance

Researchers have found that *TTF* is essential in explaining task performance (Sun, Fang and Zou, 2016). *Individual performance* refers to a specific task performance outcome accomplished with an IS at the individual level (Serrano and Karahanna, 2016) because it involves an evaluation of the degree to which the task outputs meets the task goals (Burton-Jones and Straub, 2006). This IT impact on work of the individual end-user (Torkzadeh and Doll, 1999) is one of the main downstream performance impacts of individual level IS use and has been a long-standing phenomenon of interest in IS research (DeLone and McLean, 1992, 2003; Goodhue, 1995; Goodhue and Thompson, 1995; Torkzadeh and Doll, 1999). In fact, in the current end-user IT environment, both academics and practitioners recognize that the success of IT can potentially be measured through its impact on work at the level of the individual. In the context of public services, *individual performance* of public employees working with IS is critical (Luarn and Huang, 2009). A better *individual performance* can be obtained with a better *TTF* (Goodhue, 1995; Goodhue and Thompson, 1995; Luarn and Huang, 2009) and employees' perceptions of IS are a critical factor in determining the performance of the employees (Bharati and Berg, 2003). Thus, the third proposition of this investigation affirms:

*P3: TTF influences individual performance.*

### 3.3 Public service quality

Improved service quality ultimately means improved organizational performance (Hays and Hill, 2006). Organizational performance depends on tasks accomplished by individuals (Kositanut, Ngwenyama and Osei-Bryson, 2006). First-order effects of IT arise at the process level, and they form second-order effects of IT at the organizational level (Barua, Kriebel and Mukhopadhyay, 1995). On the individual level, this research focuses on the effect of IT on individual performance, while on the organizational level the model focus on the *public service quality*. *Public service quality* is highlighted because it should not be ruled out the possibility that IT investments in government agencies may improve their cost efficiency by engaging at the quality of public services (Pang, Lee and DeLone, 2014). IS impact on employees' performance has an influence on service quality (Bharati and Berg, 2003). This means that employee performance (first-order effect) contributes to service quality (second-order effect). Hence, the fourth proposition of this investigation states:

*P4: Individual performance influences public service quality.*

## 4 Method

Following the guidelines for developmental mixed-methods studies (Venkatesh, Brown and Bala, 2013; Venkatesh, Brown and Sullivan, 2016), we adopted a qualitative research method first to explore IS impact on individual performance and public service quality in the justice system of two developing countries: Brazil and Argentina. Here, we present the first part of a more extensive study.

In this research, semi-structured interviews were conducted (Yin, 2001), i.e. interviews that have a basic questionnaire to follow but allowing the interviewer to ask the interviewee new questions in order to record other facts and peculiarities that are not included in the initial questionnaire. The questions were developed based on the questionnaires used by Sousa and Guimarães (2017), Alanezi *et al.* (2012), and Karunasena and Deng (2012). The questions were designed to extract information from personal experiences (Kumar, Sachan and Mukherjee, 2017) and had the objective to empirically validate in the field how the theoretical aspects that sustain this research are perceived in practice.

Hence, the primary objective was to collect opinions regarding the rationality of the theoretical propositions defined a priori in this study. Interviews with public managers and employees of the justice service in Brazil and Argentina were conducted to understand their perceptions and explore the relationships of the proposed model. We conducted 14 interviews and the interviewees' profile was classified in a similar way to Barbosa, Pozzebon and Diniz (2013) based on three criteria: 4 public managers (PM), 4 IT managers (ITM) and 6 public employees (PE). The selection of respondents corresponding to different profiles was justified because different people have different values and forms of expression (Kumar, Sachan and Mukherjee, 2017). In addition, interviews with key actors in different relevant social groups characterize the triangulation of data sources (Barbosa, Pozzebon and Diniz, 2013).

Similar to the study by Kumar, Sachan and Mukherjee (2017), the logic to obtain the sample was such that the participants could better explain their experience regarding IS implementation in the justice service and what they value about them. Therefore, the interviewees were obtained through non-probabilistic sampling and convenience. This method of sampling was chosen because it allows the identification of potential subjects in studies where they are difficult to find (Hernández Sampieri, Fernández Collado and Baptista Lucio, 2010). First, the potential interviewees were contacted and, then, each included subject studied proposed others to complete the sample. We interviewed 12 people until no newer concepts were found and, then, conducted the last 2 interviews to confirm that no other relevant information was missing. Although this sample does not contain an extensive number of officials, it provided a significant mass of data (Myers, 1997) and helped to understand the processes of IS implementation within a complex political environment (Yildiz, 2007). It may be the case that participants were difficult to find maybe because judicial institutions are among the least willing to implement policies on transparency and access to data (Elena, 2015b).

In order to present the results without breaking the ethical commitment of anonymity of the interviewees (Guimarães *et al.*, 2011), all references to them are done with letters and numbers, according to



their profiles (i.e. PM, ITM, PE) and the order in which the interviews were conducted. All interviews were conducted personally in the offices or places selected by the interviewees and in three different cities (Bahía Blanca and Buenos Aires from Argentina, and Porto Alegre from Brazil). The average duration of the interviews was 50 minutes. Summary of the 14 interviewees' data is shown in Table 2.

Code	Country	Profile	Code	Country	Profile
ITM1	Argentina	IT manager	ITM8	Brazil	IT manager
ITM2	Argentina	IT manager	PE9	Brazil	Public employee
PM3	Argentina	Public manager	PE10	Brazil	Public employee
PM4	Argentina	Public manager	PE11	Brazil	Public employee
ITM5	Argentina	IT manager	PE12	Brazil	Public employee
PM6	Argentina	Public manager	PE13	Argentina	Public employee
PM7	Brazil	Public manager	PE14	Argentina	Public employee

Table 2. Interviewees.

The interviewees were asked permission to record the interviews, which allowed to transcribe them completely to facilitate content analysis (Kumar, Sachan and Mukherjee, 2017) of the data that was converted into accessible text format for further analysis (Barbosa, Pozzebon and Diniz, 2013). The recordings of the interviews were literally transcribed. Then, content analysis of the interviews was carried out. A content analysis involves conducting a systematic analysis of the words and topics that emerge during the interviews, identifying the content and characteristics of the information contained in the text. In this phase, we followed the three chronological steps proposed by Bardin (1977): pre-analysis, exploitation of the material and treatment of the results, inference and interpretation.

As in the studies of Guimarães et al. (2011), Barbosa, Pozzebon and Diniz (2013) and Kumar, Sachan and Mukherjee (2017), content analysis was conducted using a software: QSR NVIVO®. This software provides a series of data management tools, such as coding, attribute creation, categorization and relationship determination, and when using it we followed the steps of the analytical process presented by Barbosa, Pozzebon and Diniz (2013). The coding of data was done in nodes, which produces a structured view of the main concepts under study, thus facilitating the structuring, categorization and organization of the empirical data (Barbosa, Pozzebon and Diniz, 2013). The nodes were classified by inductive themes based on the literature and the relationships proposed in the research model. One node was established for each of the propositions, i.e. P1, P2, P3 and P4, and sub-nodes were labelled based on the agreement, partial agreement or disagreement of the interviewees with each proposition. Next, the results are presented.

## 5 Results and Discussions

This section presents the results of the content analysis. Following da Silva Freitas Junior, Maçada and Brinkhues (2017), for each proposition a table is presented with evidence that aims to verify the relationship proposed and then discussed with the literature. The right column of the table expresses to which degree the evidence and proposition relate, according to the analysis extracted from the QSR NVIVO® software and based on the evidence representativeness as stated by other interviewees. Similar to da Silva Freitas Junior, Maçada and Brinkhues (2017), we consider high when the evidence is mentioned by more than half of the interviewees, medium when mentioned by four to seven, and low when mentioned by two or three. Although other pieces of evidence emerged, due to space limitations we present a maximum of three pieces of evidence for each proposition sub-node, which are mentioned by at least more than two interviewees.

Sub-dimension	Evidence	Relation
Agree	PE10: <i>“Everything that is related to the instruction, notifications, separate requests during the instruction ... the process comes and goes several times, suffers from “n” movements... it involves much more technology ... much more automation... It has a series of tools in the process, if that happens, what is going to happen next? That is automatized... [On the other hand, in] the final analysis of the process to be judged ... it is less useful ... The process is moved very little... we analyse the pieces of the process to make the sentence, only one document... That is totally personal, totally human, none technology.”</i>	High
	PE9: <i>“The software includes all the support [administrative] activity and all the primary [judicial] activity. Then it has a lot of information that we, of the primary activity, have to insert in it, that for us ... is a waste of time.”</i>	Medium
	PM6: <i>“It depends on the objective pursued with the use of technology... the system should not be evaluated in the same way ... because the functionality that that part of the system is going to have is another... As the objective is different, the conception of the system to achieve this goal will be completely different and the evaluation ... is also different.”</i>	Low
Partially agree	-	-
Disagree	PE14: <i>“If the technology is well oriented for each one’s task, ... it is useful for all of them; it serves the person at the public attention desk to look for a file; it serves the one who is going to notify because it is done through the system, so it is much more... agile than going out to travel the city by car with a notification; it serves the judge’s assessor who is writing he can correct, save, paste ... while writing he is looking for jurisprudence”</i>	Medium

Table 3. P1: Task characteristics influence users’ evaluations of TTF.

As stated by Guimarães *et al.* (2011) management innovation at the Superior Tribunal of Justice of Brazil has affected the administrative processes and the management of cases at the Tribunal but it has not changed the judicial process itself. As we can see in table 3, the interviewees highlighted that with the electronic lawsuit the judicial process has not changed: the final decision is still made by a judge without IT use; the only thing that has changed is the process instruction, which is faster because many operational activities are automatized (e.g. electronic notification). So most interviewees support P1 as they believed that *“the computer system has more repercussions in more repetitive tasks and less in the tasks that are of elaboration”* (PM3). Similarly, Sousa and Guimarães (2017) stressed that the electronic lawsuit impacts on Brazilian labour courts enhance performance because of eliminated bureaucratic steps in the flow. Among the modernization of justice is the automation of justice activities (Andrade, 2009), such as an automatic mechanism for controlling judicial cases deadlines and tasks (Sousa and Guimarães, 2017) or controlling notification delivering (Luzuriaga and Cechich, 2011).

The interviewees also made clear the distinction between support and primary activities, which have different objectives and thus different system functionalities. Guimarães *et al.* (2011) also found a strong demarcation between primary and support activities: there was a differentiation between judges and their legal staff, on one hand, and the non-legally trained staff members responsible for conducting administrative support activities, on the other. In this sense, there was a strong difference of perceptions between administrative staff and judges of how the primary activity is conducted, with judges emphasizing the judicial aspects of how they conduct their work and administrative staff focusing on the administrative aspects of the same work (Guimarães *et al.*, 2011).

However, some interviewees disagree with P1 because *“for everyone it’s the same”* (PE11), *“it facilitates for all”* (PE12) *“when the system is integral it ...serves in all estates...”* (PE13) *“if the system offers the tools for each of the tasks executed by that person, to solve his problem, i.e. his work...”* (ITM5). Likewise, Joia (2008, 2009) concluded that there was no cognitive dissonance between the judges’ and employees’ perceptions about a positive impact on the intellectual capital variation in courts of justice and the value accrued from an IS endeavour.

Sub-dimension	Evidence	Relation
Agree	PE12: “ <i>whenever the IS people say “look, from this moment on you will have to use this system” ... many where like “...are they going to change again? Do we have to do it again? I'm used to doing this way.” So I think that ... being open to adapt, that adaptability is fundamental.</i> ”	High
	ITM5: “ <i>The characteristics of the individual clearly change ... in their age ... although there are many people who have ability regardless of their age to learn ... because learning about technology is an intelligence.</i> ”	Medium
	ITM1: “ <i>In the public sector many times you have what you have and you do not dispense with the person, the person will remain. Then individual characteristics obviously condition. If the person is no longer or is not properly committed to the service, the technology does not matter; we are talking about something else... It has to do with issues of incentives and human profiles.</i> ”	Medium
Partially agree	PM3: “ <i>In informatics, there is a paradigm that for older people is harder than for younger people. However, many young people are very reactive to informatics also, or at least, is very reactive to informatics in their work, although perhaps in their personal lives they use social media and Google ... On the other hand, older people, in general, have more difficulty in informatics, but many old people have been very innovative. Therefore, we do not allow ourselves to work on that kind of statements because many times it does not work that way.</i> ”	Low
Disagree	-	-

Table 4. P2: Individual characteristics influence users' evaluations of TTF.

Like any other change in the justice system, IS incorporation does not occur quickly, especially because IS could be seen as a risk factor that challenges political interests and resistance to change from judges and employees exists (Sandoval-Almazán and Valle-Cruz, 2016). The interviewees agree that individual characteristics affect users' evaluations of TTF because “*it depends on how people adapt to the changes*” (ITM2). “*There is always a resistance to something new*” (ITM5). Guimarães et al. (2011) found confrontation to innovation process such as resistance to work with indicators; the use of computerized operations, which requires a cultural change; the electronic processes because of security issues. They stated that some employees feared their jobs might become unnecessary, while some judges thought the system might be vulnerable. Lawyers also put up a resistance, e.g. with electronic notification because, depending on the notification content, attorneys may decide to delay a case as a legal strategy and, in this case, manual notifications are of great help (Luzuriaga and Cechich, 2011). When individuals are compelled to use IS, they may engage in resistance behaviours (Carter and Grover, 2015), such as minimal use (passive resistance), complaining, or personal withdrawal (active resistance) (Lapointe and Rivard, 2005). Nonetheless, in the justice service context, it was found that with time resistance may be overcome (Guimarães et al., 2011).

Sousa and Guimarães (2017) also found a cultural resistance associated with the generation gap, i.e., older court management staff and judges would be more likely to resist the adoption of innovation. The interviewees also highlighted issues related to age as “*those of us who were not born in the digital age are going to have much more... complications when interacting with these technologies than younger people*” (PM4). In fact, “*it has to do with age, but not because of physical age, because of attitude, for what he had to live regarding technology*” (PE14). However, other interviewees believed that age was not an issue “*because technology is so present in people's lives today... Therefore, I cannot feel that difficulty of individual characteristics interfering. Honestly, I do not see it, out of those one or two cases that are older people who still have a bit of difficulty.*” (PE10). In addition, “*there are attitudinal issues... that have to do with a commitment to work*” (PM4) as “*the interest of each one to learn*” (PE11). In this sense, individual skills management was found to be important to the implementation of electronic lawsuit in Brazilian labour courts (Sousa and Guimarães, 2017).

Sub-dimension	Evidence	Relation
Agree	ITM8: <i>“that adjustment allows you to automate more or establish the workflow in a clearer way, that will end up reflecting on the performance of him because it will help him to perform his functions in a clearer and more objective way, without so much interference from the individual and it ends up reflecting in the performance of him, because having a better orientation, he will have a better performance”</i>	High
	PE13: <i>“The technology that is going to be applied to ... a certain task ... it cannot be imported, it has to be created specifically for that task ... the fit of technology to the task ... obviously elevates the performance”</i>	Medium
	PM4: <i>“there must be a permanent feedback between the system user and the analysts... to make the changes or the improvements that are required in that sense”</i>	Medium
Partially agree	PE9: <i>“people still suffer from internet falling, slowness in the system ... As there are many more people occupying the internet, much more information circulating, the internet ends up being slower, the system crashes”</i>	Low
Disagree	-	-

Table 5. P3: TTF influences individual performance.

The interviewees agree on P3 since *“when the issue is anchored in the technology, the results are always more precise than when they depend on a human being”* (PE13). This means that the electronic lawsuit turns attendance into a standard (Andrade, 2009; Guimarães *et al.*, 2011; Andrade and Joia, 2012) well-understood process able to solve citizens' requirements in less time, and more importantly, with more accurate responses (Luzuriaga and Cechich, 2011). TTF helps to *“generate automatic actions”* (ITM1) and *“spend less time in bureaucratic tasks to gain more time in the quality of the service provision... for example, in the primary activity, in the elaboration of pieces”* (PE9). The standardized routines and eliminated steps in the flow speed up the process and procedural times (Sousa and Guimarães, 2017). This impact on individual performance and results are seen in the justice system: *“in times of physical process... we manage to reach an average of, at the most working hard, 200 judgments per month... Here we already reached 700 processes judged per month. You see the difference in productivity, of agility, of process production”* (PE10).

Furthermore, to acquire that fit and impact on performance the IS division has to *“continue to improve the system... to make the activity of the individual operator more efficient”* (ITM1). Some public servants believe that *“the person who makes the technical tool does not talk much with the one who is going to use that tool. So sometimes there is a communication conflict”* (PE11). Public managers also feel there needs to be *“feedback from the system so that a user can propose to do... the steps of the procedure in a different way”* (PM6). This means that for IS success there should be effective communication; communicating goals, schedule and deliverables helps to reach support; the IS division should listen to opinions and adjust the IS in consequence. This makes participants involved in the process and willing to support implementation (Luzuriaga and Cechich, 2011). For Goodhue and Thompson (1995), IS department relationship with users is important in the sense of communicating with users in familiar terms that are consistent, supporting customer business needs with interest and dedication, taking business problems seriously, and helping in solving business problems in a timely manner. Installing a help-desk service for communication and support (Luzuriaga and Cechich, 2011) and communication actions about system changes (Sousa and Guimarães, 2017) is essential because users must easily get assistance in accessing and understanding the IS data (Goodhue, 1995).

However, some interviewees stated that the relationship between TTF and performance might be compromised if there is service shutdown. In Brazil and Argentina, Internet access might be a large concern as there are regions with electricity and Internet connection problems (Sousa and Guimarães, 2017). For Goodhue (1995), IS must be reliable, in the sense of counting on IS to be available when needed and without frequent problems and crashes. According to Goodhue and Thompson (1995), this

means that IS are not subject to unexpected or inconvenient down times, which makes it harder to work. Reliability of the network, capability of providers, and service availability should be assessed in such a way that low quality does not affect service provisions, thus analysing risks and defining contingency plans in case of internet shut-down is critical (Luzuriaga and Cechich, 2011).

Sub-dimension	Evidence	Relation
Agree	PM7: <i>“public service quality is inherently allied to me as a public servant”</i>	High
	PE12: <i>“He can work faster, more efficiently, research better, better assist the magistrate. ... I think that helps quality”</i>	Medium
	PE11: <i>“quality and productivity, the two ally. Because in a courtroom, for example, that has a very big demand, the server can do 80 dispatches per day. Here I do not have that demand, the server does 1, 2, 3 dispatches per day, it takes a week to make a sentence, but the complexity is much greater.”</i>	Low
Partially agree	PM3: <i>“within quality management, a fundamental element is education or permanent training of employees and civil servants... not only in technological aspects, but also in the aspects of the specific legal task”</i>	Low
Disagree	-	-

Table 6. P4: Individual performance influences public service quality.

Individual performance is related to public service quality as *“the person who operates the system has total influence on how the information and the product come out”* (PE13). For a judge *“the operator is very important ... you can have a positioning technology ... and an operator not very committed to the task he is doing, little motivated, little interested in the final result ... and yes, it influences, a lot”* (PE14). Hence, *“many times public service quality is linked to the servant quality”* (ITM8) because for *“individual performance, obviously the individualities in any organization ... determine the functioning of everything, of the whole organism”* (ITM1). Other interviewees highlighted that *“one thing is linked to the other... quality and productivity have to be always together”* (PE11), and *“you have to make that fit and balance... which is complicated”* (PE9). Similar results were reached by Guimarães et al. (2011), who interviewed judges that stated the *“implementation... has really improved the quality of service delivery and the quality of the professionals that work here”* (Guimarães et al., 2011, p. 305) and *“Quality, basically, depends on people.”* (Guimarães et al., 2011, p. 307).

Nevertheless, other factors influence the relationship between individual performance and service quality. Among them, the managers highlighted employees’ training because *“if the user misuses the system, whether it is intended, unintentionally, or due to lack of training or for whatever reason, the system stops working in the way it should work. Then there the evaluation or the valuation of the quality will be impacted”* (PM6). In this sense, to achieve service quality, management of individual skills is needed, including the diagnosis and identification of skill-development needs, and the lack of budget for employees’ training and learning is a huge barrier (Sousa and Guimarães, 2017) to electronic lawsuit implementation success.

## 6 Conclusions

The objective of the research is to propose a model grounded on TTF theory and explore the relationships of the proposed model in the justice system of two developing countries: Brazil and Argentina. Hence, this paper proposes a theoretical model on how ICT4D intervention can be assessed. An empirical qualitative study that examines the drivers of ICT4D enabled socio-technical change for public service quality was conducted based on public employees’ perception.

The first contribution of this work is the development of the proposed research model (Figure 1) grounded on TTF theory to be applied in the context of the justice system of developing countries. It was found that there are gaps in the study of IS impact on individual performance and public service quality in the justice system in Latin America using a sound IS theoretical foundation. The literature presents some studies that do not combine these issues and treat them in isolation. The second contri-

bution is the validation of the propositions that are based on IS literature for companies and were adapted for the public sector. This qualitative study with justice service managers and employees through interviews allowed proving that the proposed research model adheres to the needs of public administrators. The interviewees evidence the lack of validated instruments to support the decision-making process for IS management, aligning the characteristics of users and tasks with individual performance in order to see if there is an impact of IS investments on public service quality. The third contribution is that this article overcomes limitations of previous studies that only analyse the application of IS in the justice system of a single country (Joia, 2008, 2009; Andrade, 2009; Guimarães *et al.*, 2011; Andrade and Joia, 2012; Sandoval-Almazán and Gil-Garcia, 2015; Sousa and Guimarães, 2017) or province (Luzuriaga, Martínez and Cechich, 2009; Luzuriaga and Cechich, 2011). In this sense, it is imperative that proposed models be validated in different user populations and different contexts (Wang and Liao, 2008).

As future research, a quantitative data collection instrument is required, using a large sample collected in different places for greater generalization (Wang, Wang and Shee, 2007). Hence, in a forthcoming study, the model hypotheses will be tested using a quantitative approach with partial least squared based structural equation modelling (PLS-SEM) (Hair *et al.*, 2017). A survey will be applied to collect public employees' perceptions of the particular IS of electronic lawsuit that they use in order to assess these IS impact on individual performance and public service quality in the justice service of Brazil and Argentina. The survey will be elaborated based on results of the qualitative phase presented in this study and a literature review. Despite the previously highlighted contributions, the study context selected for the validation of the model also represents a limitation of the present research, since the perception of only a relatively small sample of employees within the Brazilian and Argentinian justice systems is considered. In future research, the proposed model could be tested with a bigger number of officials being interviewed at different times and in a broader context of public organizations in order to compare results. In addition, the results of the forthcoming quantitative study could be discussed in interviews with public officials.

In summary, this paper addresses gaps in knowledge by complementing existing IS research through its study in justice system organizations. This paper contributes to the academy by assessing the relationship between ICT4D and application areas like the justice system. We examine the effectiveness of two national ICT4D public policy, represented by the electronic lawsuit implemented in Brazil and Argentina, thus showing how government can lead successful ICT4D implementations in developing countries. The results provide findings from the qualitative part of a major study in which the model will be quantitatively tested in the near future. It is hoped that this research can reinforce and provide guidance for future IS research in the justice system of developing countries. For managerial practice, this study aims to clarify the interaction between IS and employees in an organizational context, so that public administrators understand how IS impacts on employees' performance and public service quality. The results that emerged from interviews with public managers and employees show that the justice system should move beyond digitisation to transform judicial processes. These results should help managers reduce the gaps between policy and design of electronic lawsuits in other developing countries, thus guiding ICT4D endeavours by practitioners and governments in developing countries.

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