

Using intelligent systems to improve case flow in court systems

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Abstract. Courts of Law often take so long to produce final decisions. The reasons why court cases do not flow faster have already been approached, but literature is scarce in exploring how to enhance that flow. This paper aims at identifying ways to make legal cases flow faster through the legal process and increase courts' value proposition from a technological perspective. Research is based on a flow and value approach. Two procedures are compared, a national Civil Declarative Procedure and the European Small Claims Procedure. Court procedures are analyzed from the perspective of its process' activities and human intervention. Findings point that delays of court cases occurs mainly due to direct human intervention, particularly from the judge the case is assigned to, and that the activities involved can be performed based on pre-defined rules. Recommendations are produced on how to improve court procedures' customer value using intelligent systems.

Keywords. Process management, Court procedures, Value, Intelligent systems

1 Introduction

Courts of law as known to take longer than expected to produce results. This situation results from accumulation of cases in specific points in the court process [1,2]. These critical points are located at activities that depend heavily on human interference [3].

Courts of law and their procedures are often analyzed from a legal perspective and this perspective is based on how the law is applied, on how the legal procedures are fulfilled and on the quality of the decisions produced. From a management perspective research is based on the enhancement of case flow and reduction of delays [1,2] [4] and on streamlining procedures and processes [5]. The management perspective is still scarce in terms of providing capacity improvements in bottleneck points in ways other than the increase of the number of human resources.

From the intelligent systems perspective it is possible to find positions defending that technological solutions can lead to better balanced resolution of disputes [6]. Nonetheless there are arguments highlighting underlying problems that need to be addressed before these technological solutions can fully replace human analytical and critical thinking capabilities, such as the complexity of the knowledge that needs to be

considered and the issue of the responsibility for the decision [7]. These contributions provide a hint on the possibility to add capacity to the problematic legal procedural points, but are focused on the technological perspective and lack the resource and process management impact.

Interface solutions between management and intelligent systems might provide some clues on how to enhance case flow without the immediate approach of increasing human resources. Can procedures be adjusted to allow more standardization in terms of the analysis of the cases? Can standardization provide robust solutions and value to customers? Can intelligent systems deal with specific requests from legal procedures?

The debate concerning the use of intelligent systems in the legal decision process making is still active and the impact of such systems on the management of flows in the courts has not yet been approached. The purpose of this research is to overcome this gap in literature by analyzing to what extent intelligent systems can be used in the context of legal procedures and to assess the managerial impacts of such use. As a consequence this research has three main objectives. The first objective is to perceive the premised and rhetorical perspective of the use of intelligent systems in the legal arena to create human-like decisions to legal disputes and improve court's value proposition. The second objective is to identify the adjustments required in the legal procedures to accommodate the use of intelligent systems. The last objective is to assess the impacts of intelligent systems on the flow of cases and the delays in the legal processes.

To illustrate the debate a national declarative procedure will be used as well as the European Small Claims Procedure. As a conceptual paper it starts with an analysis of the fundamental conceptual arguments of flow management in service processes and on the ability of the court system to create value. The conceptual advantages of the use of intelligent systems in the legal context are also approached. A brief description of both legal procedures is provided as ground for the following discussion. Finally, suggestions are provided on how intelligent systems can contribute to enhance case flow in legal processes as well as challenges that still need to be addressed in parallel from the managerial and the technological perspectives.

2 Theoretical background

2.1 Flows in the service process

According to the Council of Supply Chain Management Professionals [8], logistics management is the part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point-of-origin and the point-of-consumption in order to meet customer's requirements.

Services are provided using more or less pre-defined process and its activities are supported on resources. Services provide their output to its customers based on the capacity installed at each of the pools of resources (always limited) in each of the activities in the process and on how the flow is managed between the different activi-

ties. Services are characterized by having a level of demand that is not stable and each unit of demand may require different service times from the different resources. The consequence is a flow of service requests that is uneven. Requests may accumulate between the activities, which allows improved efficiency in the use of resources but leads to poorer effectiveness of the overall service process.

All processes aim at creating value to its customers [9]. From a logistics perspective, of flow and process management, value is generated when customer satisfaction is achieved using the lowest total cost for the set of specific requests, which is to say that service benefits should be provided with cost minimization for the desired service level [10]. Value and logistics competitive positioning can be generated either by a service perspective or by a cost perspective [11]. Harrison and van Hoek [12] developed a more detailed approach to value from a logistics perspective by arguing that the hard goals of logistics are quality (supplying what the customer wants, which is translated as the quality of the service provided), time (a measurement of how long the customer has to wait to receive the service), and cost (the cost supported by the process to supply the requested service in a time frame that is acceptable by the end customer). Soft logistics goals also need to be considered [12], which vary from service to service and are more difficult to measure, such as confidence (efficiency of the process or requests answered promptly) and security (confidentiality in customer's information treatment).

Service capacity is a perishable commodity [13], which leads to the need to balance the level of capacity installed with the demand that that service experiences. In order to reduce service provision costs resources need to be used to the maximum level possible. At the same time if a high level of resource utilization and variation in demand is experienced long lead times are expected as the resources needed to supply the service are disputed by several requests simultaneously.

Process synchronization is a way to overcome variation in waiting times and a means to, simultaneously, allow faster flows and reduced costs [14]. Streamlined flexible flows are suggested to this purpose, matching supply with demand, and reducing variability as means to achieve reduction in variation [14]. Additionally, employee involvement and a continuous improvement approach are identified as fundamental for the success of the endeavor.

2.2 Value in the court system

The value to be provided by a process has to be defined by its customer [15]. The court system, i.e., the overall aggregation of processes and operations through the different entities in the legal supply chain that come together to provide a solution to disputes, aims at servicing more than one customer. The parties involved in a dispute are the basic level of customers of the court system, but as this system is financially supported by government funding, the overall population are also customers. The overall population aims not only at processes that are efficient but also at processes that are effective. This effectiveness can be read both in terms of the correctness of the procedure and the quality of the decisions produced [5] and in terms of the use of the resources available to solve the disputes. Nonetheless, the speed of the cases

through the process could also be pointed out as a relevant goal, as research show the interest of some legal stakeholders in this benefit [16,17] [3]. From the perspective of each of the parties involved value is the maximization of its individual position, which leads to conflicting perspectives on the outcome of the legal procedure (not only in terms of the contents of the decision but also in terms of how long the legal process takes to produce results). Each entity will act upon the process attempting to influence the timing and the content of the final decision in his favor. Overall, the value produced by the legal system is mostly based on the quality of the decisions and the assurance of justice, but also on the time needed to reach a final decision [5].

The court system is based on an overall operation consisting of several processes (here defined as a set of activities linked together for the purpose of supplying a service) with resources available at each node and flows that flow between them [18]. In order to increase capacity at each node costs will rise but a faster service could be provided.

In order to create value to its customers the court has to balance the flows of cases though the process focusing both on supplying the fastest possible service and minimizing the costs it has to support.

In legal procedures, the overall service process is pre-defined. Nonetheless there is always discretionary assessment by the service provider (in this case, the judge), which can influence the value produced [19]. This discretionary assessment limits the universal applications of the procedures at the same time that it allows dealing with the complexity of specific legal cases, i.e. on the one hand it promotes value by being flexible enough to deal with specific situations but on the other hand it limits value by reducing standardization and requiring more time to produce results. Dealing with this complexity requires additional time in some of the legal process activities. Nonetheless, if management practices are improved, such as scheduling practices, delays could be reduced [17][3] leading to an improved value proposition by the courts.

2.3 Intelligent systems in the legal process decision making

The introduction of intelligent system in the legal systems started to be discussed many decades ago. Although it is theoretically possible, in practice, due to the natural ambiguities of the law, it is not yet possible to be used massively in the court system.

There are reports of several projects that used intelligent systems to produce/facilitate/support decision making in the legal area [6]. These can be from Decision Support Systems that help judges in the decision making process by analyzing the inputs against the applicable law and past decisions; to online dispute resolution systems; to the application of game theory in maximizing the outcome for the several parties involved in a dispute (assuming that all parties aim at maximization of the overall outcome). All these applications are specific to very narrow areas and the outcome has to be validated, i.e., not only the outcome does not enforce the participants as it is voluntary; they act as facilitators for decision making [7]. These intelligent systems have to be feed with pre-defined explicit rules. The systems can even be supplied with knowledge modules to be able to deal with uncertainty, but such as the law can be interpreted in different ways and the same set of norms may end up being

able to produce different outcomes, complexity and intentions would have to be considered, and the current intelligent systems are not yet able to accommodate such situations.

It is clear that overloaded courts take longer to produce results. Resources are always limited and are used for a multitude of different requests, many of them very repetitive and with little impact of value creation. The use of intelligent systems has been attempted in the legal area but always with limited scope. There is not yet research aiming at a more broad use of intelligent systems in courts of law. Aiming at filling this gap, the main research questions pursued in this research are:

RQ1: To what extent can the court system benefit from the use of intelligent systems?

RQ2: What are the expected impacts in the value propositions of court systems by the use of intelligent systems?

3 The Portuguese civil declarative procedure

The Portuguese court system is continental style and is based on a set of predefined laws that are applied by the courts and its judges to solve disputes. This specific court system is divided in three levels, each acting as the appeal arena for the decisions from the previous level. The court system is an independent entity but works along with other entities to collect information on the accused or asking for technical advice/support.

Each court consists of several departments, each with a judge and its support assistants, hereby called “judge staff”. Judge staff receives all requests to and from the judge, links the judge to the entities outside the court (parties involved or other entities), and schedules the cases that are sent to the judge on a daily basis.

The procedure is pre-defined and every activity in the process has an owner (the resource that supports processing in that specific activity). The declarative civil procedure is composed out of three sub-processes, each needing to be completed before the following one can be initiated: arguments (in which parties involved present their reasoning, which can be conflicting, and the outcome is a set of the specific arguments each party presented); definition (in which the judge assesses the arguments and evidence provided and defines what is in fact the nature of the dispute); verdict or conclusion (where a final decision is produced by the judge). Most of the decision making in terms of pathway in this procedure is of IF-THEN nature. Final decisions are of a different nature as many other factors have to be considered and do not fit that kind of approach (such as intention or motivation).

The judge staff, the judge and the lack of courtrooms (problems in terms of scheduling) are the causes of delays in this procedure [2], as well as difficulties in communication between entities in the legal service supply chain, the continuous participation of the judge in every decision concerning the case, “even trivial ones”, the courtrooms availability as consequence of poor scheduling skills, and to judge staff batch

mentality and shortage of understanding the case flow perspective [16]. On a broader level delays also emerge from overloaded judge staff and their lack of support from technology; from the pressure placed on the judges to make more cases flow faster and the consequence of delaying the most complex/time consuming ones; and from the insufficient management skills for case scheduling issues in both the use of court-rooms and case flow [3].

Although there are several reasons why this legal process takes so long to produce results, these can be summarized in lack of management skills and overload of human resources which leads judges to focus on the most repetitive decisions and to delay/sacrifice the more complex ones in order to achieve a better overall flow of cases.

4 The European Small Claims Procedure

In order to overcome the time consuming and expensive national procedures used to solve civil disputes between parties from different European Union (EU) countries, the European Parliament along with the European Council developed the European Small Claims Procedure (ESCP) (set by Regulation (EC) No 861/2007 [20] and currently under revision). This can be seen as an alternative procedure to the Portuguese civil declarative one, in the case of disputes that include parties from different European Union countries when that dispute emerged in the Portuguese jurisdiction.

Aiming at disputes involving no more than 2000 euros between parties from different EU countries, this procedure has an online exchange platform based on standardized forms. All decisions are still based on a judge, but decisions making is less complex due to the use of the standardized forms and online document exchange. This allows a faster flow of cases through the process.

As the Portuguese civil procedure, the ESCP also has three sequential phases: commencement, conduct, and conclusion, each with similar aim as the Portuguese overall civil procedure. Systematized diagrams with the flow of the procedure [21,22] show that the process has little possible alternative paths, all of them pre-defined. Although not yet very much used in EU as the awareness of its existence is not very high, it is possible to perceive that there are three critical points in this procedure that may lead to longer lead times as the complexity of the activities is higher: deciding if there is a counterclaim in the conduct phase; deciding if there is enough information to conclude; producing the final decision. Excluding these activities, and helped by the fact that the process is based on forms, all other activities are routinely decided based on pre-defined guidelines, which can be approached from an IF-THEN perspective.

The high level of standardization of the procedure allows stating that it is aimed to reduce waste [21] but at the same time some flexibility is also required for the complex activities and deciding, for instance, on the alternative to include more information to the conclusion phase as at that point in the procedure non-documental evidence might be required.

5 Discussion

5.1 Comparison of the two procedures

The civil national declarative procedure is an overall guideline with specific milestones that have to be fulfilled. Some parts of the procedure are common to all cases and there is discretionarily of the judge to allow specific cases to jump to stages further down in the procedure as long as specific conditions are fulfilled. There are activities in the procedure that involve high levels of complexity, but these are only a few (such as assessing the arguments from the parties and the sufficiency of evidence in the arguments phase, the hearing, as well as issuing judgment and issuing the verdict). Most of the remaining activities (under the responsibility of the judge or the judge staff) are very standardized. The absence of standardized forms or even structure of documents increase the difficulty of analysis, and the complexity of the contents of some documents, which is most times introduced on purpose by the lawyers, can require much more additional time of analysis by the human resources at the court.

The ESCP is a procedure that is more standardized than the civil national procedure, involving medium complexity at assessing the correctness of the scope of the claim, and with higher level of complexity in analyzing the sufficiency of evidence, clarifying if a counterclaim actually exists, and issuing the judgment. Much of the complexity of the traditional national procedures was removed with the introduction of forms and with the online platform that allows immediate communication with the several parties involved.

In both cases the delays in the legal processes limit the flow of cases and reduce the value propositions of the courts where they are.

5.2 Alternatives ways to divert demand from the courts

The civil national declarative procedure used to be flooded with very simple cases (for instance traffic tickets, unpaid service bills) which delayed all cases. All of these involved the attention of a judge at least once. The use of this scarce resource on such routine and standardized decisions limited the time available for more complex cases, leading to longer waiting times in the legal process. As a consequence these simpler cases were channeled to an alternative path, outside the court (for instance the traffic tickets are automatically processed based on information from the traffic teams), reducing the work load on the court resources.

Additionally alternative dispute resolutions have already been rehearsed [16]. These considered solutions such as specialized courts (which allows more economies of scale and specialization) and mediation. The goal of these solutions is to reduce demand in the courts of law, allowing faster total processing times and more quality in the decisions produced.

The change in the way the process is fulfilled to comply with the legal procedure has to take into consideration those who relate to it (internally and externally). Standardization of forms and new ways to contact the court can present itself as a radical change in the way processes are conducted, which requires training to judge staff and

the judge and time to allow cultural adjustment (for instance to deal with the dematerialization of cases). Outside the court adjustment can be easier as the introduction of automatized systems only relates to them in terms of the interfaces they need to use. At the same time, these interfaces might limit the access to justice (or force the use of lawyers) in situations that legally do not require a lawyer and less educated defendants and/or claimants are involved.

5.3 Impact of intelligent systems on the procedures' value proposition

The use of technological solutions to deal with sub-processes requires their standardization or at least the standardization of some of its activities. The use of forms can help feeding decisions support systems and automatize several parts of the procedures, but there are complex activities that cannot be overcome by the use of intelligent systems. These cannot interpret norms [6] nor decide upon intensions, which prevents them to be used in all process activities.

Nonetheless, the use of these systems in specific parts of the process or even in specific activities would allow the flow of cases to move faster in the administrative area (activities that are of judge staff responsibility) and even in some less complex decision making activities (that are responsibility of the judge). In parallel, the waiting times of the cases in the complex activities would be reduced as there would be more capacity available (measured in terms of the number of judge hours available) to analyze those cases.

The use of Decision Support Systems (DSS) shows itself as one of the most adequate solutions to support both judges and judge staff in decision making activities. Although the ESCP is already based on pre-defined forms it is possible to standardize the filling of those forms even more to adjust it, for the most current cases, in the choosing of pre-defined options that can be analyzed by the system to automatically produce suggestions of decisions (for instance, in terms of deciding the country to which the case is assigned to; to assess if the case is within scope of the procedure; to identify if a counterclaim exists and if the case is still within the scope of the procedure). The national declarative procedure is still very open in terms of the information inputs it accepts. Making these inputs more standardized (for instance by the development of pre-defined forms with specific information fields and on-line submission) would allow feeding DSS more easily and automatize some of its activities (for instance, assessing the scope of the call; calling the accused to the case; production of at least some parts of both the preliminary decision and the final decision). This solution is not intended to replace judges of staff, only to produce suggestions on the documents to be produced. Nonetheless, the time required per case would be less than before.

As each lawyer tends to use his specific way to report information concerning the legal cases, there might be resistance in the adoption of the more standardized forms, but as long as legal rules are issued resistance fades away. As a consequence, the development of intelligent interfaces [6] would allow direct feed of DSS.

There are cases that, for its complexity, might require specific submission and/or analysis. These cases can be identified in advance and eventually obtain special per-

mit to use alternative submission procedures, but this should be used only in exceptional situations pre-defined by law.

Although there are always limitations in the applicability of these solutions, they have been applied successfully in specific areas and/or sub-processes [6], which allow reducing the workload of the court resources (especially judges and other decision making resources) and therefore enhance case flow in the legal processes. The impact on the delays the cases experience through the procedure is expected to be positive as capacity is added to the bottleneck points by reducing average service time per case.

The value proposition of the court systems is a direct consequence of the performance of the court system and its processes. By using intelligent system in the court processes the time required to produce results would then be shorter and justice would be applied in a more standardized way to all situations. These intelligent systems would involve cost, but the investment not only would be diluted through time but can also be considered as an alternative to the traditional solution of adding capacity to these systems by hiring more staff and/or judges. Although the value proposition of the court system would improve in terms of assurance of application of the law if these systems are introduced, the fact that there are conflicting values from the different parties in the dispute [5] makes the system less appealing to those attempting to use its lack of efficiency in their favor (reduce demand placed on courts). As a consequence, a prevention effect would emerge and reinforce justice.

By being able to reduce the time cases remain in the court system, intelligent systems contribute to a virtuous cycle of effectiveness at the level of the courts and of prevention of disputes.

6 Conclusion

From the previous discussion it is possible to conclude that it is possible to use intelligent systems in court processes, but its application is limited due to the fact the currently these systems lack the ability to deal with intentionality and different interpretation of the same set of legal norms. As a consequence, although it is not yet possible to use intelligent systems to produce human-like decisions, it is possible to use them to support decision making and enhance the value propositions of the different courts and their procedures. To do so standardization of procedures and adjusting the way the different actors of the court system relate to the court and the procedure has to be introduced to fit the specific requests of the intelligent systems.

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