

## TOWARD VALUE CREATION IN LOCAL AUTHORITIES: THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

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**Abstract.** *Purpose* – The aim of this paper is to focus on the use of Information and Communication Technologies (ICT) by local authorities (LAs) in order to understand to which extent, they impact the value chain of local public services. The value creation in this article concerns not only economic effectiveness and efficiency but also the articulation and development of ICTs in the strategy of the LA, as well as the impact on citizen satisfaction.

*Research methodology* – The methodology applied is quantitative, based on a questionnaire addressed to managers and officials in different Moroccan LAs (regions, provinces and prefectures, municipalities). SPSS 25 was used as a materiel to analyze the result of the linear regression.

*Findings* – The results obtained confirm the importance of ICT in terms of optimization of expenses, the improvement of the quality of work by facilitating communications between services. In addition, the ICT are no longer centered on the managerial side, but contribute to the consecration of good governance principles, namely transparency and citizen participation.

*Research limitations* – The present research excludes political leaders throughout data collection. Methodologically speaking, this means that the study can also take on the meaning of an exploratory study with qualitative method (interviews, case studies) in order to understand how these ICT, contribute to local public value creation.

*Practical implications* – The research provides clues to LA managers about the importance of ICT and their contribution to value creation. The results obtained encourage decision makers to accept this change and to adopt the ICT approach in order to provide a higher quality of services.

*Originality/Value* – The originality of this paper lies in the variables and the context in which they are studied. The existing literature interested in introducing ICTs in the public sector focus on the use of these tools to achieve economic performance. Furthermore, only a few research papers have been conducted on value creation in LA including the impact of ICT which justifies the originality and novelty of this paper.

**Keywords:** value creation, information and communication technologies, local authorities, new public management.

**JEL Classification:** D73, O32, H83.

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## **Introduction**

Over the last few decades, works on public management have seen unprecedented changes in order to propose management models that are more suitable for a specific context. The logic of means has been replaced by a logic of performance and a few years later, there was a rise in power and the use of the concept of “value” in the management of public organizations. This observation is justified by a paradigm change that is manifested by the shift from New Public Management (NPM) to public value. This change is materialized by the adoption of new management tools that are open to innovative and agile techniques such as information and communication technologies (ICT). These are tools for rethinking local public management and a means of guiding decision-makers in their reflection on the creation of value for a given service.

The questioning of the potential contributions that ICTs could offer to the LAs is still an important and topical issue. The introduction of ICTs in the public sector has been known to have benefits in terms of improving the efficiency of public services, increasing efficiency and transparency, and improving the coordination of procedures and management of public administration. ICT are seen as a potentially more effective and efficient delivery of value along the value chain of public service provision (Porter, 1985). As a result, digital leverage is not only a powerful driver in the improvement of services to users but also a very effective means of fighting against illicit practices of corruption and other abuses of power and is likely to change the relationship with all stakeholders and accelerate the process of decentralization and deconcentrating.

A review of the existing literature and writings interested in the issue of introducing ICTs in the public sector shows a tendency to examine these tools from an instrumental point of view while focusing on variables of effectiveness and efficiency and consequently, the performance of public action in its economic dimension. Nevertheless, a marginalization of the expected effects and impacts of ICTs on public sector organizations and the services they provide has been observed. It is on the basis of this theoretical gap that we wish to engage in research that aims to find elements of answers to the following question: to what extent can ICT contribute to the creation of value for local public services?

The objective of this paper is to go beyond the reductive idea that tends to consider ICT as a means to accelerate NPM reforms and to obtain better financial results, focusing instead on their role as a source of value production for public services. In addition, we also want to focus on the use of ICTs by local governments and the expected and perceived contributions of these tools in terms of optimizing the value chain of local public services.

To address the question posed, we considered it appropriate from a theoretical point of view to first touch on the driving variables of this investigation, namely the creation of value and ICT in the public context, and to present their position with respect to the modernization of public management. From an empirical point of view, a questionnaire was designed for territorial executives and service managers in the different Moroccan LAs (regions, provinces and prefectures, municipalities). The questions asked were generally aimed at showing the level of articulation and development of ICTs in the strategy of the LA, as well as emphasizing the degree of involvement of the LAs studied in the implementation of ICTs and

their capacity to keep up with the pace of reforms related to digitalization. Finally, all these questions are intended to answer our initial question and to show the role that ICTs play in the redesign of public services and in the creation of value in the LAs.

## **1. ICT and public value creation: literature review**

### **1.1. Public value: a renewal of public management**

Since the 1990s, public value research represents a new “post-competitive” way of thinking that signals a shift away from the logic of results and efficiency to the broader governmental goal of creating public value (Hughes, 2006; Carmeli & Kemmet, 2006). This approach now pervades many works and inspires a vigorous stream of research and theorizing. Drawing on the work of Moore and Braga (2004) and Moore (1995), Stoker (2006) sought to articulate a model of public value management, an “alternative paradigm” or “holistic framework” for post-competitive and collaborative networked forms of governance. He argues that this represents in part a response to the weaknesses of the NPM approach but also recognizes that new neoclassical institutional and economic understandings of human behaviour conflict with the central goals of more collaborative forms of organization and operation.

While the debate about public value has become increasingly commonplace, a universal or absolute definition still remains elusive (Alford & Hughes, 2008). Some authors even point to the still ambiguous nature of the notion of public value (Rutgers, 2015; Cordella & Bonina, 2012). For these authors, this is because the notion of public value incorporates ambiguous and open-ended concepts that are both policy and context dependent. In the UK, for example, Benington (2007) points out that the concept of public value has been used loosely as a broad term expressing ideals and aspirations for public service which are capable of meaning many different things to different stakeholders.

The literature review reveals that the shift from the NPM paradigm to that of public value has three implications. First, it broadens the notion of public performance to include new dimensions of measurement in terms of trust, equity and legitimacy (1). Second, the idea of individual preferences is being challenged and the collective preferences of the community are gaining ground (2). And finally, the need to redefine new ways of steering public action that are likely to create public value is stated (3).

#### **1.1.1. Public value, expanding the boundaries of public performance**

For Benington (2007), the theoretical underpinnings and underlying assumptions of the notion of public value have been less rigorously developed and the concept has been less tested through the prism of different disciplines and cultures.

Public value concept is a part of a logic that incorporates broader notions of legitimacy, trust, and utility of public action. From this perspective, Bracci et al. (2014) identify three spheres to analyse public value. First, the sphere of its creation which informs how value is produced by the public organization. Second, the sphere of its measurement, which refers to the way users evaluate and assess the usefulness of public services. And, third, the sphere of its authorization, which refers to the way in which the community legitimizes the effects of public action (Figure 1).

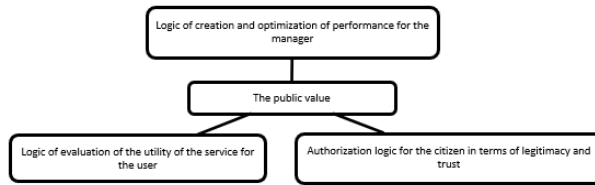


Figure 1. The triptych dimension of public value  
(source: authors' conception based on the work of Horner & Hutton, 2010)

Kelly et al. (2002) identify three key components of public value. The first component, they argue, provides the means by which public value is delivered through actual services to users or customers. The second component encompasses much broader aspirations and refers to the outcomes or effects of public policy. The third component concerns legitimacy and trust in government which the authors argue are essential to the creation of public value (Kelly et al., 2002). For these authors, these three “building blocks” of public value creation form the basis of a new way of thinking about government activity and a means of guiding decision-makers in their thinking about the value they create. Stoker (2006) highlights the fundamental differences between public and private sectors, by stating that the public sector governs differently from the private sector. He identifies four key propositions within the public value paradigm. (1) The first asserts that public policy is defined by the pursuit of public value which breaks with the justifications for market failure typically advanced by economists. (2) The second, that a wide range of stakeholders have legitimacy and should be included and involved in government activity, contrasts sharply with the traditional model and converges on a more collaborative and consultative approach. (3) The third, the adoption of an open relational approach to procurement, fits well with Hughes' (2006) call for a new pragmatism in public sector management, rejecting a one-size-fits-all approach to contracting and procurement. (4) The fourth proposition is that an adaptive, learning-based approach is needed in public service delivery, which fits well with Stoker's, (2006) emphasis on networked models but would surely conflict with more market-based approaches that may be appropriate in some circumstances.

In the same logic, Bouckaert (2005) considers that results and outcomes are not objectives in themselves in the public sector since the ultimate ambition is to ensure a functional level of trust and legitimacy of public action. Benington (2007) and Spano (2014) support this idea and argue that the notion of public value is expressed at the level of the interaction of two aspects that can often assume a relationship of tension and sometimes conflict: First, what the community appreciates or values (external evaluation by citizens/users), and then what adds value to the public sphere (the utility of the public service). The articulation of these two dimensions allows for a shift from a procedural approach to a more consumer-oriented mode of government.

Alford and Hughes (2008) argue that public value is not necessarily defined by those who produce it but rather by the citizens who collectively consume it. For Hefetz and Warner (2004) while in transactions with suppliers, private sector firms focus on efficiency, quality, safety, and reliability; in the public sector, managers combine these concerns with public accountability and preferences which are collective in nature. These distinctions make politics central to the public value paradigm, often overlooked by the NPM paradigm (Dereli,

2007). Indeed, government is more than just business and must incorporate the expectations of citizens and should not simply drive a market process (Denhardt & Denhardt, 2003). This theoretical debate about the limits of viewing citizens as customers has highlighted the need for managers to consider both technical efficiency concerns and the process of political engagement (Box et al., 2001; Feldman & Khademian, 2001; Nalbandian, 2005). This is a significant difference from the “input” status of policy in traditional administration and NPM (Stoker, 2006). For Moore (1995), public value creation results from an alignment of the enabling environment, operational and administrative capabilities as well as and values, goals, and mission of public organizations. From this perspective, policy and management strategies must be of substantial value to society, politically legitimate, feasible and supportable, operationally possible and practical.

### **1.1.2. Towards a collective rather than individual dimension of preferences**

An important element of the public value paradigm is the concept of collective preferences that distinguishes it from the individualistic approach of the NPM. For Stoker (2006) public value is not only defined as the aggregation of individual preferences of users or producers of public services but is collectively constructed through deliberations involving elected and appointed government officials and key stakeholders. In this sense, Cordella and Bonina (2012) argue that public value creation is related to the sustainability of public policies that aim to pursue the political mandate that citizens give to government through the democratic process of elections. As such, it is based on the politically mediated expression of collectively determined preferences, i.e., what citizens consider valuable or useful (Alford, 2002; Kelly et al., 2002). This calls into question the idea that individual preferences can be aggregated to reflect what the “public” expects from government, such as is the tendency in the NPM paradigm. This is very different from the direct economic exchange relationships that take place in the private sector, so it is possible to argue that public value is something provided by government organizations to its citizens rather than to individuals (Alford, 2002). Including these points into a new way of thinking forms the basis for a major shift, and for Stoker (2006), the adoption of the public value management model would represent a paradigm shift in the way public services are managed.

### **1.1.3. Public value: towards a new management mode for public organizations**

The integration of the notion of value creation implies that traditional performance management models, often based on assumptions of standardization and stability of social needs, are being questioned (Lorino, 1999). Public organizations must limit their approach to offering public services in a logic of openness to personalization, and therefore to listening to the user who is now positioned as a customer (Millard, 2008).

The development of the notion of “public value management” implies the redefinition of the ways in which public organizations produce public services in a value-creating logic. From this perspective, the question of “what the public values” can be seen as a counterweight to earlier traditions of public administration in which “producers” defined and determined the value of public services (Benington, 2007). This dimension of public value focuses not only on the individual interests of current users, but also on the longer-term public interest, including the needs of future generations.

The complex nature of the public value concept underscores the importance of focusing on the outcomes and processes that add value to the public sphere, not just on inputs and outputs or input/output ratios and economic performance. In this sense, Moore suggests that public value can be measured in relation to the different stages of the value chain, i.e. inputs, procedures, activities, outputs and outcomes.

This mode of management puts value creation at the heart of the concerns of public organizations and requires modelling of the organization by showing transversal processes that create value for the different stakeholders, both internal and external, through activities and processes, outputs and outcomes, with the active help of co-producers and partner organizations (Figure 2).

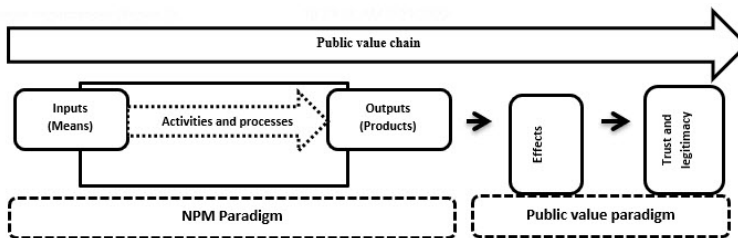


Figure 2. The public value chain as a mode of management and value creation for public organizations (source: authors' conception)

According to the literature review, this general and ambiguous nature of the notion of public value raises questions about the role that information and communication technologies (ICTs) could play in the production of public value, not only as a means of optimizing performance measured in terms of effectiveness and efficiency, as in the case of the reforms that fall under the NPM. The dominant approaches to estimating the impact of public sector ICT policies focus only on efficiency-oriented performance measures, such as cost reduction and return on investment, as well as on the achievement of management objectives, transparency and accountability which are closely related to private sector economic standards (Moore, 1995). ICT-based reforms integrated into the NPM domain still remain focused on managerial values (efficiency-oriented performance measures) while neglecting the broader political and social implications (Bonina & Cordella, 2009). However, the effects of ICT on other aspects of the public value paradigm, such as justice, equity, democracy and equality, are still neglected.

## 2. ICT, questioning of public value creation

Since the 70s and 80s, in developed countries, ICTs have gradually grown to be ubiquitous in the functioning of companies and organizations, both public and private (Benabderrahmane-Bouriche, 2012). Environmental changes, globalization and the technological revolution are the main factors that have made their introduction a major objective for organizations in order to achieve greater efficiency and responsiveness in the performance of tasks. The emergence of ICT is the result of the development and strong intertwining of three technical fields: telecommunications, audio-visual and computer science (Nwamen, 2006). However,

the literature review does not reveal a consensus about the definition of ICT, but it is possible to distinguish between classifications according to two aspects. The first one focuses on technical dimension (Tlich, 2013) and the second one focuses on managerial and organizational dimension. Taking into consideration the research question and the objective of the current investigation, we will give more attention to the last aspect (managerial and organisational dimension).

## **2.1. ICT in the organization**

According to a managerial approach, ICTs are considered to be a set of innovative and informative tools (Favoreu et al., 2019; Damanpour & Aravind, 2012; Walker et al., 2011) that allow to improve the management system of an organization and to enhance the efficiency mechanisms (Golubeva et al., 2019). Although they perform almost the same functions, ICTs do not have the same characteristics with regard to organizational determinants and their impact on coordination mechanisms. On the other hand, like any strategic choice, the integration of ICT requires organizational change as confirmed by several authors (Benabderrahmane-Bouriche, 2012; Deffayet, 2002; Tlich, 2013). Such a change affects both strategy, structure and human resources. More generally, the integration of ICT into organizations is illustrated through their information systems (IS) and the use of technological tools (Algan et al., 2016).

Certainly, in the public sector, the use of ICTs can support the effective and efficient redeployment of resources and capacities, making public organizations more dynamic and much more resilient (Bekkers & Homburg, 2007; Gupta et al., 2008). However, the changes that ICTs bring about affect the nature or the means by which services are provided and therefore have significant political and administrative consequences (Cordella & Iannacci, 2010). Indeed, for several authors (Barca & Cordella, 2006; Cordella, 2007; Currie & Guah, 2007; Homburg, 2004), ICTs have often been seen as tools for deploying the public administration reforms envisaged by the NPM trends, with a view to rationalizing information and optimizing performance. According to Cordella and Bonina, (2012), previous works on the most frequently identified impacts of ICTs in the public sector have been limited to examining their capacity to improve the efficiency and productivity of government performance which means that their use is mainly considered instrumental as stated by Aberbach and Christensen (2005), Cordella, (2007) and Orlikowski and Iacono (2001). Indeed, the literature on the introduction of ICTs in the public sector has largely been limited to examining the expected effects of these tools in terms of efficiency, effectiveness, and economy of public action. This approach has focused primarily on the search for best practices and universal strategies for successfully implementing these programs, and marginalizes the broader impacts of these reforms (Bannister, 2007). However, several authors lament that this research has often neglected to discuss the effects and impacts that ICTs can have on public sector organizations and the services they provide (Danziger & Andersen, 2002; Andersen et al., 2010; Cordella, 2007; Dawes, 2009). The ICTs have profoundly changed the nature of the service rendered to citizens as well as the means used to deliver public services. Consequently, the public value created by ICT could not be understood only in terms of the effectiveness

of government actions but must also incorporate broader dimensions related to the effectiveness of government program achievements in relation to certain democratic outcomes. For O’Flynn (2007), the introduction of ICTs in the public sector should take into account the particularity and complexity that are associated with their implementation and do a better job of addressing the social and political outcomes of their adoption. In the same sense, authors such as Cordella and Iannacci (2010), and Cordella and Willcocks (2010), emphasize the importance of the mediating role of ICTs in public administration with regard to their ability to change the way public administrations organize and deliver their services. In this context, O’Flynn (2007) suggests that the analysis of the effects of ICT-related public sector reforms, whether positive or negative, should not be limited to the analysis of their impact in a logic of effectiveness and efficiency of public management. For him, it is necessary to go beyond individual preferences and to focus on the collective dimension of citizens’ needs as indicated by the public value paradigm. In the same perspective, Mergel (2020) concludes in his work that the introduction of ICT in the public sector highlights four dimensions of public value: economic, administrative, democratic and citizen. From this perspective, the focus should be on how ICT can be a source of public value production of public services and not only as a means to achieve better financial results, as in the case where ICT is adopted to facilitate NPM reforms.

## 2.2. Conceptual model

In this paper, we will refer to the work of Bonina and Cordella (2009) in order to propose a holistic framework to study the value creation associated with the use of ICT in the public sector. Based on This intersection our conceptual model can provides a framework of public value that is relevant to measure the effects of these tools on public sector performance (Figure 3). Therefore, in public management, resources are not ends but rather a means to create public value, which is the natural purpose of the organization. The purpose of designing this public sector scorecard is to produce a performance measurement system for public sector managers who need a non-financial measure to indicate whether they are effectively investing financial resources to create public value (Moore, 1995).

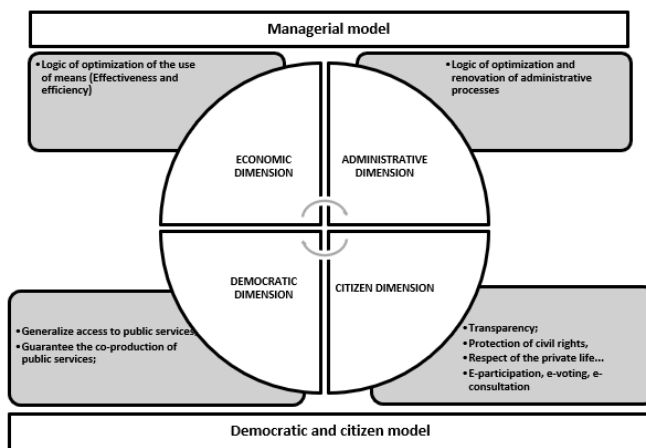


Figure 3. A new framework for assessing the effects of ICT on public value creation (source: authors’ conception adapted from Mergel, 2020; Bonina & Cordella, 2009)



### 2.2.1. The managerial model

This value domain is part of the performance logic prescribed by the NPM (Jørgensen & Bozeman, 2007), which is assessed in terms of effectiveness and efficiency in public service delivery. For Mergel (2020), ICTs are characterized by their ability to simplify and automate tasks. They are likely to reduce the number of interactions between the various stakeholders and the administration due to the reduction in the number of agents needed to perform basic tasks. Indeed, the use of ICT and its impact on efficiency is mainly related to the improvement of internal operating systems. These include the use of management tools such as financial and budgetary management systems, data collection and transmission, payment processes, internal communications and human resource management to generate savings, and ATMs (Bonina & Cordella, 2009). In addition, the availability of information and the provision of online services are the most emphasized elements in the promotion of e-government policies aimed at streamlining the dissemination of information and the interactions between citizens and the administration. For Mergel (2020), value creation results from the ability of ICT to enhance responsiveness, responsibility and accountability in the delivery of public services by decreasing the volume of data corrections transmitted by users, decreasing the number of missing data and interaction with other public organizations due to the heterogeneity of information systems. From this point of view, public value reflects the renovation of internal administrative processes that are directly linked to external services.

### 2.2.2. The democratic and citizen model

The public values that fall into the banner of this group refer to values related to the prevention of distortions, the search for “correctness”, legitimacy and political rights (Hood, 1991). The use of ICTs in this logic should make information a means to improve governance and strengthen democratic and ethical values (Brewer et al., 2006; Kernaghan, 2006). In addition to the professional values, Kernaghan (2006), distinguishes two other categories of public values. Those of ethics, which are assessed in terms of integrity, fairness, disinterestedness, and a sense of justice, and those that refer to democratic values, namely impartiality, respect for the law, neutrality, etc. These values are complex, intangible and difficult to assess (Bonina & Cordella, 2009). In other words, the implementation of ICT in the public sector must be conceived as a tool to improve trust and promote a more participatory relationship between the citizen and the government. This area captures the ability of ICT to simplify and facilitate access to public services, especially for those who are excluded. From this perspective, public value aims at generalizing access to remote services for all citizens regardless of their knowledge, skills, and specific needs (Mergel, 2020).

The citizen dimension focuses on how the latter benefits from digital transformation, i.e., how ICTs should guarantee transparency, privacy, protection of civil rights, community participation in public policy design, deliberation and dialogue, and the provision of key, relevant and reliable information to citizens (Eppler, 2007). Similarly, ICTs have been used to strengthen participation and democracy by opening up new and innovative channels of participation (Jaeger, 2007), such as e-mailing, Internet-based public deliberation and electronic voting systems.

The literature review on the introduction of ICTs in public administrations calls for reflection on the existence of a holistic representation of their contributions to value creation.

Previous works highlight two models that reflect the concern for improving performance but also the consideration of the democratic and citizen dimension. However, the managerial and democratic models of public value were conceived from different logics. From this, the conceptual model is presented as follows (Figure 4).

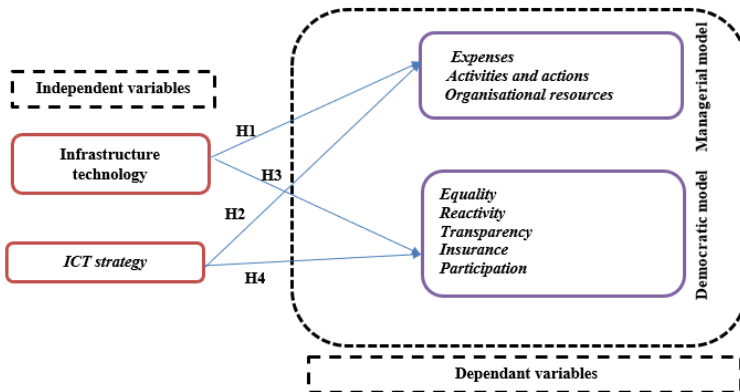


Figure 4. Conceptual model (source: author conception)

The first model places the optimization of performance and the improvement of the responsiveness of internal processes at the centre of the organization's concerns through the use of ICT. At this stage, our first two hypotheses are as follows:

*H1: the use of ICT is likely to improve the performance of the local authority.*

*H2: the integration of ICT in the strategy of the local authority is likely to improve its performance.*

On the contrary, the second hypothesis makes information and communication technologies tools whose use is likely to improve governance and strengthen democratic and ethical values (Bonina & Cordilla, 2009; Brewer et al., 2006; Kernaghan, 2006; Gilman & Lewis, 1996). At this point our second hypothesis is as follows:

*H3: the use of ICT improves democratic value creation in the local government.*

*H4: the integration of ICT in the strategy of the LA improves the creation of democratic and citizen value.*

### 3. Methodology

#### 3.1. Operationalization of variables

Each of the variables in our study were measured by using indicators made up of various items in the survey. Since the literature does not give information over the consensual existence of a scale of measurement, notably for both independent variables, we had to develop those items and send them out to experts in ICT in order for them to be revised. Likewise, the experts also received the objectives of the study as well as a detailed description pointing out the constructions of interest in specific items. The definitive survey was formalized in respect to the steps proposed by Dillman (2000).

### 3.1.1. Independent variables

In the conceptual model, we have defined two independent variables. The first one is “technological infrastructure”, measured the level of access to technological infrastructure within LA. Due to the lack of a measurement scale in the literature, we had to construct an index based on the aggregation of four sub-variables which determined the degree of use of ICT in LA (Table 1).

The items relating to the first sub-variable “electronic platforms” looked into the level of availability to electronic platforms set up by the central state in the framework of the project of electronic administration at the level of the LA. To operationalize this variable, the respondents were asked to indicate the existence or none of these platforms at the level of their LA. As for the second sub-variable “official gateway”, this was represented as a dichotomous variable in which the respondents were asked about the existence or none of an

Table 1. Operationalization of independent variables (source: author’s conception)

Independent Variables	Items	Measuring scale
Electronic Infrastructure	Availability of electronic platforms	Dichotomous variable: 1: Existence of regular use of platforms set up by the LA; 0: Non-use
	Use of intranet	Dichotomous variable: 1: Regular use of intranet for LA services; 0: Non-use
	Use of administrative computer programs	Dichotomous variable: 1: Regular use of computerized administrative programs and tools; 0: Non-use
	Existence of operational electronic official gateway	Dichotomous variable: 1: Access to an operational official gateway regularly updated by the LA; 0: Non-use
ICT Strategy	Modernization of the LA	Dichotomous variable: 1: Consideration of the integration of ICT within the strategy of development of the LA; 0: None
	Normalization of information	Dichotomous variable: 1: Existence of a normalized information strategy in the LA; 0: None
	Evaluation of IT risks	Dichotomous variable: 1: consideration of the assessment of computerized risks in LA; 0: none
	IT- Audit	Dichotomous variable: 1: Regularly practiced computer-based audits; 0: None

operational electronic gateway – a Facebook page, online website or others – at their LA. The third sub-variable asked about the use of internal communication tools or electronic messaging services by the LA while the fourth sub-variable dealt with the regular use of computer programs and tools of bureaucratic administration, applications and other such platforms, geographic information systems and the like. The table gives a summary of the different sub-variables and the measuring scales used.

The second independent variable referred to the strategic dimension of ICT, which called “strategic ICT”. This variable assessed the level of articulation of the ICT within the overall strategy of the LA. In order operationalize this variable, we had to resort to an exploratory study according to experts in ICT as well as we referred to the works of Beynon-Davies and Williams (2003). For these authors, the strategic dimension of ICT refers to the activities essential activities of IT planning and includes the auditing and the normalizing of information, the setting up of a cartography and the conception of the process for the treatment of information, the strategy and the modernization of the territorial public administration, IT strategy, risk assessment and cost-benefit analysis.

In the framework of our study, we operationalized these variables by defining the items that dealt with the level of articulation of the ICT into the strategic orientations of the LA. Four sub-variables were defined to determine the presence of the axes dedicated to the integration of the dimension ICT within the orientations of the strategic programs of the LA, the regular practice of computerized control and risk assessment. In general, the existence of a policy of the normalization of information at the level of the territorial administration (Table 1).

### **3.1.2. Dependent variables**

The current research looks forward finding the link between the introduction of ICT and the creation of value by the LA. From the literature review, we draw a distinction between the two models, the first dealing with the improvement of economic or administrative performance (Bonina & Cordella, 2009), while the second falls within the democratic and citizens logic (Bonina & Cordella, 2009; Cordella & Bonina, 2012; Kernaghan, 2006). According to Gerbing and Anderson (1988), the setting up of all conceptual frameworks should operate in two steps, first of all, exposing the results of the development phase and then evaluating the measurement scales followed by the presentation of the results relative to test the hypothesis. However, in the framework of our research, the operationalization of our dependent variables was based on an analysis of the existing literature given the abundance of texts over the measurement of the notions of performance, particularly of public value in general.

After having determined the measurement scales in the literature, it was necessary to carry out a contextualization and depuration. We had to go into an analysis of the main components in order to reduce and summarize the volume of information captured by the measurements (Donada & Mbengue, 2014). Likewise, two criteria for internal reliability and consistence of the measurement scales employed had to be taken into account, namely that of Kaiser (the values associated with factors greater than 1) and that of the internal coherence of factors determined through Cronbach’s indicator.

For managerial model, to operationalize the variables in this model, we started from 22 items found in the literature which were presented to respondents (Carassus, 2007; Carassus et al., 2012, 2017) who were asked to indicate on the Likert scale from 1 to 5, the potential

gains perceived from the use of ICT in their administration. To test the validity in the measurement of the variables in this model, we analyzed the main components through the varimax rotation. The results led us to discard three items due to their low percentage of representation. Finally, the principal component analysis (PCA), as predicted, pointed out the appearance of three factors which accounted for 67% of the variance, a high index of internal reliability ( $\alpha = 0.929$ ) and a KMO index of 0.732, significantly above the threshold of 5% (see Appendix). The first factor was called “organizational resources” and dealt mainly with the reduction of the delays in users’ waiting times. The third category, “Expenses”, deals with the time required to select suppliers and issue tenders, as well as with the general expenses of the LA.

For the democratic model, to construct the measurement scales, we used the works of Grimmelikhuijsen and Knies (2017) and Sabadie (2003). Similarly, to the previous model, we carried out an PCA analysis with a varimax rotation. The results of the factorial analysis brought out a structure made up of 5 factors which accounted for 77% of variance, an important index of internal reliability ( $\alpha = 0.941$ ) and a KMO index of 0.745, significantly above threshold of 5% (see Appendix). The first factor is called “Equality” and concerns the equal treatment of all users, the protection of their personal information and remote access to public services for people with specific needs. The second factor, “Participation” refers to the possibilities offered to the citizens to be able to participate in the elaboration of public services and policies. The third “Reactivity” deals with information as to the treatment of the users’ records as well as to receiving their inquiries. The fourth factor, “Transparency” refers to the public diffusion of information about works carried out by the local authorities while the fifth factor, “Assurance” deals with the possibility of users to follow up on and act upon their records (see Appendix).

### 3.2. Data collection

The scope of our study is LA in Morocco which are considered democratically-elected organs of government by the population with a bicephalous system of political-administrative management. The Moroccan constitution recognizes three levels of LA: (1) the municipality, (2) the provinces and the prefectures and (3) the regions, (Figure 5). These organizations

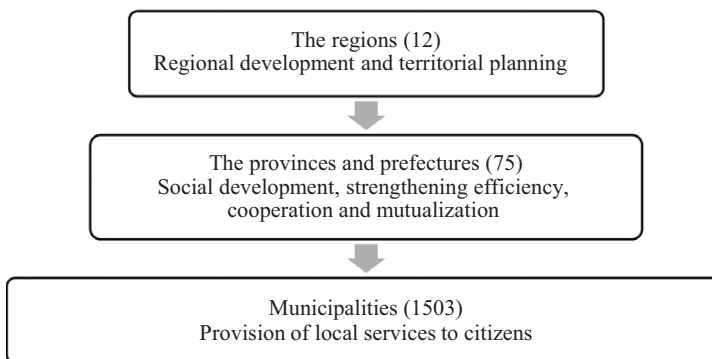


Figure 5. Levels of LA in Morocco (source: author’s conception)

have at their disposal a wide range of maneuver in their management of local affairs thanks to the principle of free administration and financial and moral autonomy.

Through the general policies of the State, Moroccan LA are invested with a large management power to work with. Power-sharing among the three levels of LA obeys the constitutional principle of subsidiarity which recognizes each level of jurisdiction in their specific domains. In this sense, the lowest level of LA, made up of the municipalities which are considered to be polyvalent ss of proximity which provide the widest range of services such as public illumination, garbage collection and disposal, street maintenance etc while the second level, the provincial councils and prefectural provide social service actions, rural development, major infrastructures and highways. The regions make up the largest level of these LA and are in charge of missions of sustainable development for the improvement the territory attractiveness and enhance the economic competitiveness in the region.

The data used in this research was collected through a questionnaire administered via the internet to the Moroccan Association of Directors and Managers of LA during the first six months of the year 2021. As a sample target of our study, we chose only 103 LA that involved in the programme of performance improvement in Moroccan LA. We opted for a precise sampling method according to Royer and Zarlowski (2014), approach whose choice was based on several reasons. First, it enabled to access to a broad sample of LA from different regions and with various sizes, representing around 55% of the total population. Then, this approach allowed us to avoid the risk of being denied response due to the delicate and still unfamiliar character of the notion of performance in the public sector in Morocco. Therefore, was more likely to generate results which could be analytically generalized and from there, further our aim to explore the potential link existing between the use of ICT and the creation of value within the LA.

The questionnaire is structured in two parts. The first part aims at revealing the statement of ICT use in the LAs. The items were generated on the basis of different sources: the literature review and an exploratory qualitative study conducted with managers and officials in LA. The items ask about the degree of integration of electronic platforms set up by the central government as part of the e-government project at the level of the LAs, as well as the availability of other tools voluntarily adopted by these organizations (internal communication and electronic messaging tools, software, office management tools, intranet, applications and platforms, geographic information system, etc.). Other questions focused on the level of articulation and development of ICTs in the LA strategy. Then, other questions focused on the services/department that use ICT.

### **3.3. Data processing**

The quantitative data collected were analyzed using SPSS 25 software. In total, 100 usable replies were received (Figure 6), a very high index of response of 97%. Nonetheless, one of the most notable limits to our research was the inherent difficulty to be able to give an external generalization due to the fact that our sample only represented 7% of the total of 1503 Moroccan LA. Further studies over a broader sample base would be pertinent. In order to guarantee the success of our remote questionnaire, it was necessary to conduct a pre-test to find out whether the protocol of the study was realistic or the measurement scales were valid



Figure 6. Statistics of variables (source: authors' conception)

or understandable for the respondents (Baumard et al., 2014). This preliminary test was carried out in two steps: first, in face-to-face interviews with five territorial managers after which surveys were emailed to four other managers among our personal network of relationships.

## 4. Results

The results obtained will be presented according to the variables making up the conceptual model. We will therefore start with the managerial model component and then the democratic model while doing a cross reading of the independent's variables.

### 4.1. Managerial model

Overall, the model of the dependent variable «expenses» is very significant at the 1% which confirms the existence of a high correlation among the explicative variables introduced into the model. Concerning the variables relative to the strategic dimension of ICT, their explanatory capacity, measured by the determination coefficient, is acceptable ( $R^2 = 0.235$ ). This model of regression shows, however, that only one variable seems to have a statistically significant influence over this occurrence: the normalization of information while other explanatory variables are insignificant. It's interesting to point out that the regression equation shows the negative influence of this variable through regression coefficients ( $\beta = -0.485$ ). In other words, setting up procedures of normalization in the diffusion and sharing of information at the level of a territorial administration has an indirect effect over its expenses. Besides, the regression results confirm the existence of significant effects of two explanatory variables in relation to the technological infrastructure dimension (Platforms, Intranet). For these two independent variables, the regression model presents an acceptable explanatory capacity and adjustment to the data ( $R^2 = 0.135$ ). Our results show that the use of intranet acts indirectly over the expenses of the LA ( $\beta = -0.280$ ) while on the other hand, these evolve in the same degree as the use of electronic platforms ( $\beta = 0.294$ ).

In the case of the second dependent variable of the managerial model “actions and activities”, the linear regression results reveal that only the variable “modernization strategy” has a significant influence ( $P < 0.001$ ) according to the regression model obtained with a positive effect ( $\beta = 0.493$ ). For this model, the capacity rises to 21.2% which is significant ( $F = 19.862$ ;  $R^2 = 0.212$ ). At the level of the use of technological infrastructure, our results reveal that our model is significant at the 1% with an explanatory capacity of 24.3%. At this level, two variables seem to significantly affect the follow-up of actions and activities of the LA. First,

the existence of an operational official gateway allows for optimization of internal processes by offering a range of on-line services which lightens the workload of the administration and reduces waiting times and delays in the handling of user records ( $\beta = 0.385$ ). However, the use of intranet does not seem to have a positive effect over internal processes which can be seen in the surprisingly unexpected result from our research ( $\beta = -0.238$ ). At this level we can put forth the hypothesis according to which the use of intranet still remains weak due to the bureaucratic and often routine character of the Moroccan public administration.

The “organizational resources” variable in the model is overall significant which points out the connection between the variables introduced into the model and the dependent variable (correlation coefficient  $R = 0.461$ ;  $F = 16.708$ ;  $P < 0.001$ ). The determination coefficient which measures the explanatory capacity of the model remains acceptable ( $R^2 = 0.212$ ). In the case of the variables having a significant effect, the model demonstrates that the effect is indeed significant but negative as far as the normalization of information as well as the optimization of the use of organizational resources is concerned ( $\beta = -0.461$ ;  $P < 0.001$ ). Additionally, at the level of components of technological infrastructure such as platforms and the intranet, these seem to be the only variables having a significant effect, with  $\beta = 0.502$  and  $\beta = -0.219$ , respectively. As far as the connection between explicative variables in the model and the dependent variable is concerned, the Fisher Test indicates an important correlation ( $F = 6.457$ ;  $p < 0.01$ ). The explanatory capacity of the variables introduced into the organizational resources model is relatively high at 5% ( $R^2 = 0.284$ ).

#### 4.2. Democratic model

The results of the linear regression related to the equality model shows an explanatory capacity of the introduced variables relatively lower but still overall acceptable and very significant at the 1% (correlation coefficient  $R = 0.380$ ;  $R^2 = 0.415$ ). In this model, only the variable that measures the setting up of a process of IT auditing seems to have a significant positive effect over equal treatment of users of territorial public services ( $\beta = 0.380$ ;  $P < 0.001$ ). In the case of the operational dimension of ICT, only the use of electronic platforms and the existence of an official gateway seem to have significant effects ( $P < 0.005$ ) over the dependent variable (equality). These results allow us to deduce the legitimacy of the causality among the explicative variables introduced into the model whose explanatory capacity remains acceptable as a sign of the value for  $R^2$  (0.196). Insofar as the sense of this relation, the beta coefficient allows us to understand that for the two variables introduced, there exists a significant positive effect ( $\beta = 0.367$  for the platforms and  $\beta = 0.223$ ). In other words, our results confirm the existence of a significant positive influence due to the use of electronic on-line platforms and the setting up of an official electronic gateway over the strengthening of equal treatment of users of local public services among the study sample. The digitization of the bidding process, for example, tends to ensure equal treatment among those who submit bids for public services.

In the case of the reactivity model, the regression results bring up the fact that three are connected with reactivity in local public services: modernization strategies of the LA through the use of ICT (positive effect;  $\beta = 0.219$ ;  $P < 0.1$ ), the normalization of information (negative effect ;  $\beta = -0.316$ ;  $P < 0.05$ ), and the evaluation of computerized risks (positive



effect;  $\beta = 0.275$ ;  $P < 0.05$ ) whereas other explanatory variables have no effect. Overall, the reactivity model is significant at the 5% with an explanatory capacity of 0.258 and a relatively weak Fisher test ( $F = 5.427$ ). The reading of these results enables us to conclude that the setting up of normalized processes for the handling of information calls into question the traditional way of functioning of the internal services of the collectives which accounts for the negative relation between the two variables. As for the variables relative to technological infrastructure, once again the use of an official gateway ( $\beta = 0.303$ ) and intranet ( $\beta = -0.227$ ) seems to have a significant effect at the 1% over the level of reactivity of the services of the LA. A reading to these results, we can set forth the hypothesis according to which the use of an official gateway reinforces the reactivity of services by offering citizens the possibility of access to on-line services. The use of intranet, on the other hand, is still bogged down due to heavy administrative procedures and the continued manual handling of certain tasks by internal services.

The results of the linear regression of the transparency model demonstrates the significant positive effects of two variables: the integration of ICT into the modernization strategy ( $\beta = 0.309$ ;  $P < 0.05$ ) and the existence of a formalized procedure of a computerized audit ( $\beta = 0.267$ ;  $P < 0.05$ ). The explanatory capacity of this model is in general moderate ( $R^2 = 0.145$  and significant at the 5%). Likewise, the sign of the Fisher Test indicates the existence of a connection between the variables introduced into the model and the dependent variable. Besides, under a more operational logic, as expected, only the use electronic on-line platforms seems to have a significant positive effect over "transparency" ( $\beta = 0.274$ ;  $P < 0.05$ ). As pointed out above, these platforms reduce human intervention in the handling of paperwork, for example, in the bidding process and the granting of authorizations by following a totally digital on-line procedure which greatly accounts for the influence these electronic solutions have over the reinforcement of transparency in management in territorial administrations.

The insurance model is significant at the 5% as indicated with the Fischer test ( $F = 4.844$ ). In greater to lesser intensity, the significant effects demonstrated by this model are first of all, the computerized audit, ( $\beta = 0.276$ ;  $P < 0.05$ ) followed by computerized risk assessment ( $\beta = 0.327$ ;  $P < 0.05$ ). These results were expected given the role played by audits and the IT assessment in reducing the risks associated with the misuse of users' personal data which is likely to increase users' confidence in the online services provided by LAs. In case of the technological infrastructure variables, the linear regression points to the existence of a connection between the explanatory variables in the model and the dependent variable ( $R^2 = 0.222$  and a signification of  $p < 0.05$ ); the explanatory capacity, however, is lower ( $R^2 = 0.223$ ). The results of the linear regression show two variables having significant effects: Platforms and official gateway with Beta coefficients of 0.372 for the former and 0.265 for the latter.

The participation model is overall significant with an explanatory capacity of 0.193. The results of the liner regression point out two variables which have significant but opposite effects over citizen participation in the production of territorial public services. The normalization of information seems to have a significant negative effect at the 5% ( $\beta = -0.381$ ) while setting up an assessment of computerized risks has a likewise significant yet positive effect ( $\beta = 0.286$ ).

Table 2. Summary of Beta coefficients and thresholds of significance (source: author’s conception)

	Managerial model			Democratic model				
	Expenses	Actions and activities	Organizational resources	Equality	Reactivity	Transparency	Participation	Insurance
Platforms	<b>-.294***</b>	Ns	<b>.502***</b>	<b>.367***</b>	Ns	<b>.274***</b>	Ns	<b>.372***</b>
Intranet	<b>.280***</b>	<b>-.238**</b>	<b>-.219**</b>	Ns	<b>-.227**</b>	Ns	Ns	Ns
Official gateway	Ns	<b>.385***</b>	Ns	<b>.223**</b>	<b>.303***</b>	Ns	Ns	<b>.265**</b>
Software	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns
Modernization strategy of LA	Ns	<b>.493***</b>	Ns	Ns	<b>.219*</b>	<b>.309**</b>	Ns	Ns
Normalization of information	<b>-.485***</b>	Ns	<b>-.461***</b>	Ns	<b>-.316***</b>	Ns	<b>-.381***</b>	Ns
IT Audit	Ns	Ns	Ns	<b>.380***</b>	Ns	<b>.267**</b>	Ns	<b>.276***</b>
IT risk assessment	Ns	Ns	Ns	Ns	<b>.275**</b>	Ns	<b>.287**</b>	<b>.287***</b>

Zone 1

Zone 2

Note: \*\*\* Significant at 1%; \*\* Significant at 5%

Reading the results of beta coefficients and significance levels (Table 2) allows us to draw the following conclusions:

First, only the “Software” variable seems to have no significant effect on the dependent variables of both models. As far as the democratic dimension is concerned, software remains much more oriented towards internal use and has no direct effect on citizens and users.

Second, the variables of the “technological infrastructure” dimension seem to be much more related to the managerial dimension because of their internal use, with the exception of the electronic platforms and the official portal whose use is rather external (zone 1).

Third, the variables of the strategic dimension of ICT seem to have stronger effects on the variables of the democratic model. Third, the variables of the strategic dimension of ICT seem to have more important effects on the variables of the democratic model. Therefore, variables such as computer auditing and standardization of information aim at reducing the risks linked to the computerized exchange of information, ensuring equality and transparency in the management of the LA (zone 2).

## Discussion

This analysis focuses on the interpretation of the results obtained on the influence of ICT on value creation for Moroccan LAs based on two dimensions: managerial and democratic/citizen. We named as explanatory variables the technological infrastructure and the ICT strategy adopted by the LA studied. Through this, we seek to compare our results with the existing literature and to see what implications they may generate.

The existing literature shows that in decentralized organizations such as LAs, ICTs can be instruments that can strengthen the cooperative links between actors and promote, through the sharing of knowledge and information, the creation of synergies with a view to improving the internal processes of services (Grosjean & Bonneville, 2007)

For several authors (Greenan, 2003; Lacoste & Grosjean, 1999), the use of ICTs facilitates the sharing of information by actors, thus enabling organizations to become more responsive and autonomous. Numerous empirical studies have emphasized the link between the introduction of ICTs within organizations and the decentralization (Bouamama, 2015; Čudanov et al., 2009; Dadashpoor & Yousefi, 2018; Marsal, 2006) that is gradually taking place thus promoting the development of non-hierarchical communication networks and the emergence of management autonomy for the actors.

By analysing the link that can exist between ICT and the creation of value within LA, we have considered the use of ICT not only in terms of the technical-operational dimension, assessed in terms of technological infrastructure, but also in terms of the strategic dimension, which refers to the introduction of ICT in the development of the organization. The objective was to analyse the impact of these two variables on the creation of public value in its dual dimension, managerial and democratic (Alford & Hughes, 2008; Benington, 2011; Cordella & Bonina, 2012; Cordella & Iannacci, 2010; Cordella & Willcocks, 2010; Meynhardt, 2009; O'Flynn, 2007).

From a managerial logic, the results of our study corroborate the positive link between the adoption of a modernization strategy via ICT and the improvement of the internal management of LAs. Indeed, the results of our study confirm the statement of Graziani (2014), who mentioned the positive effects of standardization on the administrative function. For this author, standardization applies to all components and levels of the organization which helps to improve the efficiency of each of them in terms of reducing costs and delays. Our study did not deviate from these statements because it confirms the existence of a positive link between the adoption of an information standardization strategy by the LA and the reduction of expenditure.

However, our results could not confirm the existence of a positive relationship between information standardization and the efficiency of organizational resources at LAs studied. Indeed, a paradox was raised because organizational resources have an inverse relationship with information standardization. This observation can sometimes be accounted for by the rigidity of the procedures that arise when new standards are adopted or by their complexity (Lambert & Ouédraogo, 2010). Given the specificity of their hybrid or dual political-administrative system, local governments are among the complex organizations whose operations are governed by well-defined laws and procedures. The organizational system of the

LAs reveals actors with sometimes divergent rationalities. The standardization of processes may be jeopardized by the reluctance of actors to change or by a lack of training of human resources. In the same vein, the results obtained prove that a modernization strategy seems to have had a contribution to the improvement of the social climate, as well as of the quality and the management process which we have reduced to “activities and actions”. This result corresponds to what Trosa (2010) has concluded in his work.

The implementation of an ICT strategy was also evaluated from a citizen democracy point of view. Indeed, our results show that the existence of an IT audit process in a LA favors the principles of good governance, notably equality, transparency and assurance. Indeed, we believe that the implementation of an IT audit approach is likely to strengthen the confidence of citizens/users with regard to the use of ICTs and remote access to services provided by the local authority.

Given the importance of responsiveness, LAs are directing their ICT strategies toward improving responsiveness through information standardization and IT risk assessment. In addition to IT auditing, transparency is enhanced by integrating ICT into the LA's modernization strategy.

Another determinant that should not be neglected to guarantee the assurance and participation of the citizen in the administration of LA, is the evaluation of IT risks. Indeed, a control of the risk creates a kind of motivation in the citizen and encourages him to participate in the production of public services and in the formulation of public policies. However, an exaggerated standardization of information can be a constraint that will hinder citizen participation. We can say that our results are in accordance with guidelines of the organic laws related to the LA and the strategies of digitalization adopted by the Moroccan government, which show to what extent these practices will contribute to the creation of value in the public sector.

Following the example of several previous studies (Bonneville, 2005a, 2005b), our results show that the technical-economic logic (Grosjean & Bonneville, 2007) guides the technological choices made by public organizations. Indeed, according to this logic, the implementation of ICT is justified by the need to control the cost of services.

In the context of our study, the use of electronic platforms put in place by the supervisory authority (Interior Ministry) in Morocco seems to have contributed significantly to the reduction of expenditures at the level of the LAs. Indeed, the Ministry of the Interior has made available to Moroccan LAs the “GID” platform (integrated expenditure management) for effective and efficient management of their expenditures. In the same vein, the implementation of these platforms has made it possible to reduce the delays relating to the procurement process, placing of orders and tenders by LAs. The same is true for the monitoring of actions and activities, which are done through the use of official gateway. There is an inverse relationship between the gateway and the intranet, even though the latter is intended for information exchange, coordination between services and facilitation of teamwork. The LAs rely on gateway to improve internal working conditions whereas this tool is only effective externally, i.e. in terms of posting information and contact with the citizen. The absence of a generalized use of the intranet in the LAs studied can be explained by the absence of a culture of change or by the problem of mastery among the administrators. This relationship is very logical as far

as organizational resources are concerned, where platforms are the most sought after by the LAs at the expense of intranets. Moreover, Moroccan LAs have recently integrated platforms such as “*watika*” and others in order to dematerialize tasks and to reduce delays as well as waiting in lines. These results perfectly validate the basic postulates of the resource theory which stipulates that organizations must be well equipped with specific resources in terms of knowledge and expertise, which allow them to be more efficient.

## Conclusions

The literature review shows that in the public sector, management is no longer centered on the classical model that implies a standardization of needs but rather on a logic of specialization and personalization in the framework of the new paradigm of value creation as some have preferred to call (Alford et al., 2017; Benington, 2007; Moore, 2000). The measurement and evaluation of public value is a highly since the introduction of ICT into the management of public organizations in recent years under the aegis of the NPM to solve problems.

The objective of the empirical study was to deepen the understanding of the use of ICT in Moroccan LAs and to show how these tools can contribute to value creation in this specific context. Our analysis was based on two logics: managerial and democratic/citizen, while focusing on strategic and technological infrastructure variables. Our results underline the determining role of these technological tools at the level of internal management, notably in terms of optimization of expenses, the improvement of the quality of work and of the actions carried out in the LAs studied thanks to communications and coordination between the services. And finally, the evaluation of organizational resources implies a rationalization of document processing times (reducing delays) and of the number of people assigned to the services (only those with added value are maintained). In addition, the results confirm that ICTs are real tools that contribute to the consecration of the principles of good governance, namely transparency and citizen participation.

However, our research has a number of limitations, which could be explored in future research. First, the data were collected from administrators (managers, directors and officials) which excludes in the study another rationality of political leaders as long as LAs, as public organizations, are specified by the existence of these two actors. It would be interesting to understand in further detail, how ICT influences the decisions of presidents and the degree to which they adapt to such tools. Besides, from a methodological point of view, the study can also take on the meaning of an exploratory study with qualitative method (interviews, case studies) in order to understand how these ICT contribute to local public value creation.

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## APPENDIX

### Descriptive statistics of independent variables

Table A1. Technology infrastructure

Items	Average	Standard deviation
Intranet	.47	.502
Official Gateway	.56	.499
Platforms	.5819	.22637
Software	.3867	.39910
N valid (listwise)	72	

Table A2. ICT Strategy

Items	Average	Standard deviation
Modernization of the LA	.67	.473
Normalization of information	.78	.417
Assessment of IT Risk	.50	.504
IT-Audit	.19	.393
N valid (listwise)	64	

## Descriptive statistics of dependent variables

Items	Average	Standard deviation
Expenses		
Reduction of LA expenditures	3.38	1.159
Selection of LA suppliers	2.60	1.497
Order lead times frs	2.99	1.227
Processing time for tenders	3.43	1.364
Organizational Resources		
Efficiency in the use of LA services by users	3.01	1.345
Time allocated to service delivery	3.22	1.390
Reduction of waiting lines in the LA	3.33	1.341
Reduction of errors in data processing	3.35	1.438
Reinforcement of the coordination between the information system of the CT and those of other partner public administrations (DGCL, TGR, IGAT...)	3.45	1.266
Reduction in staffing levels for services	3.11	1.270
Reduces the processing time of paraphrases	2.92	1.169
Reduction of the hourly workload in the LA	2.99	1.259
Activities and actions		
Improvement of the quality of internal work	3.14	1.326
Improved process for developing the LA action plan	2.95	1.334
Improved monitoring of projects and actions carried out by the LA	3.02	1.303
Strengthening communication and coordination between internal CT services	3.07	1.183
Improved teleworking in your LA	3.28	1.223
Facilitation of teamwork	2.90	1.193
Reactivity		
To listen to the expectations of the users	2.84	1.376
To provide citizens with relevant and reliable information	2.70	1.403
Provide clear and accurate information on the benefits provided by the LA	2.71	1.250
Provide users with answers to any problems or changes in their situation	2.70	1.330
Transparency		
Take into account the opinion of the users to establish its service offer	2.60	1.287
Promote media coverage of the work of the council (online dissemination of the work of the session, dissemination of the agenda... )	2.76	1.199
Promote claims	3.02	1.326

Items	Average	Standard deviation
Insurance		
Explain to users their nature and consequences	2.51	1.202
Inform users of the possibilities of recourse available to them	2.40	1.263
Provide the information necessary for them to evaluate the quality of the service provided	2.80	1.181
Participation		
Co-production of services delivered by the LA	2.28	1.111
Take into account users' suggestions to improve its services	3.00	1.428
Promoted citizen participation in the design of LA policies (goal setting, planning and decision making)	2.56	1.131
Promote deliberation and dialogue with citizens	2.69	1.412
Equality		
Promote access to information by citizens	2.76	1.240
Inform users of the follow-up of their files	2.62	1.170
Promote remote access to LA services for people with special needs	2.80	1.363
Ensure equal treatment of users	2.80	1.385
Equal treatment of candidates' files during recruitment procedures organized by the LA	3.03	1.439
Data protection and privacy of users/citizens	2.84	1.354
N valid (listwise)	88	

Results of the principal component analysis of the dependent variables

Rotation of the component matrix of the managerial model items			
	Components		
	1	2	3
Reduction of waiting lines in the LA	0.879		
Reduction of the hourly workload in the LA	0.694		
Reduction of errors in data processing	0.676		
Time allocated to service delivery	0.665		
Efficiency in the use of LA services by users	0.663		
Reduction in staffing levels for services	0.645		
Strengthening coordination between the LA information system and those of other partner public administrations (DGCL, TGR, IGAT, etc.)	0.616		
Reduces the processing time of paraphrases	0.527		
Improved process for developing the TK action plan		0.830	
Improved monitoring of projects and actions carried out by the LA		0.804	
Strengthening communication and coordination between internal CT services		0.782	
Facilitation of team work		0.779	
Improved teleworking in your LA		0.764	
Improvement of the quality of internal work		0.520	
Selection of LA suppliers			0.855

Rotation of the component matrix of the managerial model items			
	Components		
	1	2	3
Order lead times frs			0.837
Processing time for tenders			0.582
Reduction of LA expenditures			0.487
Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization.			
Convergence of the rotation in 6 iterations. $\alpha$ : 0.930 KMO: 0.732 Total variance explained: 67%.			

Rotation of the matrix of the components of the democratic and citizen model items					
	Component				
	1	2	3	4	5
Data protection and privacy of users/citizens	0.770				
Ensure equal treatment of users	0.769				
Equal treatment of candidates' files during recruitment procedures organized by the LA	0.755				
Inform users of the follow-up of their files	0.745				
Promote remote access to LA services for people with special needs	0.588				
Promote access to information for all citizens	0.570				
Co-production of services delivered by the LA		0.806			
Promoted citizen participation in the design of LA policies (goal setting, planning and decision making)		0.801			
Take into account users' suggestions to improve its services		0.727			
Promote deliberation and dialogue with citizens		0.654			
Listening to users' expectations			0.887		
Provide clear and accurate information on the benefits provided by the LA			0.623		
Provide users with answers to any problems or changes in their situation			0.606		
To provide citizens with relevant and reliable information			0.486		
Promote the media coverage of the council's work (online distribution of the session's work, distribution of the agenda.... )				0.807	
Take into account the opinion of the users to establish its service offer				0.741	
Promote claims				0.545	
Provide the information necessary for them to evaluate the quality of the service provided					0.802
Explain to users their nature and consequences					0.710
Inform users of the possibilities of recourse available to them					0.610
Convergence of the rotation in 7 iterations $\alpha$ : 0.941 KMO: 0.745 Total variance explained: 77.14					

Summary of linear regression models

	Model	R	R-2	R-2 adjusted	Margin of Error	Change in statistics				
						Variation R-2	Variation F	ddl1	ddl2	Sig. Variation of F
Managerial or economic values	Explained variable: Expenses of the LA									
	1	.273 <sup>a</sup>	.075	.065	.98631	.075	7.921	1	98	.006
	2	.391 <sup>b</sup>	.153	.136	.94854	.078	8.961	1	97	.003
	a. Predicted Values: (constant), Platforms b. Predicted Values: (constant), Platforms, Intranet									
	Explained variable: Organizational resources									
	1	.486 <sup>a</sup>	.237	.229	.88619	.237	30.360	1	98	.000
	2	.533 <sup>b</sup>	.284	.269	.86250	.048	6.457	1	97	.013
	a. Predicted Values: (constant), Platforms b. Predicted Values: (constant), Platforms, Intranet									
	Explained variable: Actions and activities									
	1	.365 <sup>a</sup>	.133	.124	.96225	.133	15.039	1	98	.000
2	.435 <sup>b</sup>	.189	.173	.93527	.056	6.736	1	97	.011	
a. Predicted Values: (constant), Official Gateway b. Predicted Values: (constant), Official Gateway, Intranet										
Democratic and Citizen values	Explained variable: Equality									
	1	.383 <sup>a</sup>	.147	.138	.99134	.147	16.834	1	98	.000
	2	.443 <sup>b</sup>	.196	.180	.96700	.050	5.996	1	97	.016
	a. Predicted Values: (constant), Platforms b. Predicted Values: (constant), Platforms, Official Gateway									
	Explained variable: Reactivity									
	1	.285 <sup>a</sup>	.081	.072	1.05105	.081	8.632	1	98	.004
	2	.364 <sup>b</sup>	.132	.114	1.02661	.051	5.722	1	97	.019
	a. Predicted Values: (constant), Official Gateway b. Predicted Values: (constant), Official Gateway, Intranet									
	Explained variable: Transparency									
	1	.274 <sup>a</sup>	.075	.065	1.01056	.075	7.924	1	98	.006
a. Predicted Values: (constant), Platforms										
Explained variable: Insurance										
1	.391 <sup>a</sup>	.153	.145	.95130	.153	17.730	1	98	.000	
2	.472 <sup>b</sup>	.223	.207	.91601	.070	8.696	1	97	.004	
a. Predicted Values: (constant), Platforms b. Predicted Values: (constant), Platforms, Official Gateway										

Summary of linear regression models (continued)

	Model	R	R-2	R-2 adjusted	Margin of Error	Change in statistics				
						Variation R-2	Variation F	ddl1	ddl2	Sig. Variation of F
Managerial or economic values	Dependent variable: Expenses									
	1	.485a	.235	.223	.89945	.235	19.052	1	62	.000
	a. Predicted Values: (constant), Normalization of information									
	b. Dependent variable: Expenses									
	Dependent variable: Organizational resources									
	1	.461a	.212	.200	.90279	.212	16.708	1	62	.000
	a. Predicted Values: (constant), Normalization of information									
	Explained variable: Actions and activities									
	1	.493a	.243	.230	.90201	.243	19.862	1	62	.000
	a. Predicted Values: (constant), Modernization Strategy									
Democratic and Citizen values	Dependent variable: Equality									
	1	.380a	.145	.131	.99539	.145	10.483	1	62	.002
	a. Predicted Values: (constant), IT-Audit									
	b. Predicted Values: (constant), Equality									
	Dependent variable: Participation									
	1	.335a	.112	.098	1.06799	.112	7.841	1	62	.007
	2	.439b	.193	.166	1.02685	.080	6.067	1	61	.017
	a. Predicted Values: (constant), Normalization of information									
	b. Predicted Values: Normalization of information, Assessment of IT Risk									
	Explained variable: Reactivity									
	1	.361 <sup>a</sup>	.130	.116	1.02561	.130	9.264	1	62	.003
	2	.437 <sup>b</sup>	.191	.164	.99733	.061	4.567	1	61	.037
	3	.508 <sup>c</sup>	.258	.221	.96299	.067	5.427	1	60	.023
	a. Predicted Values: (constant), Modernization Strategy									
	b. Predicted Values: (constant), Modernization Strategy, Normalization of information									
	c. Predicted Values: (constant), Modernization Strategy Normalization of information, Assessment of IT Risk									
Explained variable: Transparency										
1	.274a	.075	.060	1.01346	.075	5.022	1	62	.029	
2	.381b	.145	.117	.98230	.070	4.996	1	61	.029	
a. Predicted Values: (constant), Modernization Strategy										
b. Predicted Values: (constant), Modernization Strategy, IT- Audit										
Dependent variable: Assurance										
1	.461 <sup>a</sup>	.212	.200	.92015	.212	16.717	1	62	.000	
2	.520 <sup>b</sup>	.270	.246	.89289	.058	4.844	1	61	.032	
a. Predicted Values: (constant), Assessment of IT Risk										
b. Predicted Values: (constant), Assessment of IT Risk, IT-Audit										