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A Framework for Public eServices Transparency

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ABSTRACT

Different aspects of government transparency have been analyzed by the research community, but no structured framework was found concerning public eServices transparency. This article considers transparency from a service users' point of view and outlines a framework rooted in a systematic literature review, complemented by a selected literature analysis on the fields of eServices quality and public sector values. The framework defines the concept of 'public eServices transparency' and characterizes the information that should be made available, according to different service user profiles. The aim is to assist practitioners from public administration to develop eServices and scholars to assess existing eServices transparency.

KEYWORDS

eGovernment, Online Information, Public Digital Services, Public eServices, Transparency, Services

INTRODUCTION

It is possible to trace back the concept and practice of government transparency for more than 250 years (Meijer, 2015). Unsurprisingly, there is by now an extensive body of literature on the topic (Cucciniello et al., 2017) which include an abundance of transparency definitions (Bannister & Connolly, 2011), complemented by different dichotomies, categorizations, and varieties of transparency (Fung, 2013; Heald, 2006). A common characteristic of the many transparency definitions is that they encompass three elements: an observer, an object and a method for observation (Oliver, 2004).

Citizens are usually considered *the observer* seeking to access information about public administration organizations' internal workings. The goal is to "open up the working procedures not immediately visible to those not directly involved to demonstrate the good working of an institution" (Moser, 2001, p. 3) or, more specifically, to foster "the disclosure of information by an organization that enables external actors to monitor and assess its internal workings and performance" (Grimmelikhuijsen & Welch, 2012, p. 2).

The *object* of transparency may be an organization as a whole, a specific object or a specific activity (Cucciniello et al., 2017), such as policy-making processes and activities (Brunswicker et al., 2019), budgetary information (Birskyte, 2019) or financial information (Puron-Cid et al., 2019). In this context, assessment studies usually adopt, adapt or create an analysis framework which establishes a set of (information) items that should be available online (Lourenço, 2015) and use the framework to assess the degree of online transparency.

Regarding the *means or method* to disclose information, information and communication technologies (ICTs) became an important driver of transparency (Bertot et al., 2012; Meijer, 2015). The

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Internet, in particular, has had such an impact on (traditional) transparency that the term e-transparency was coined (Bannister & Connolly, 2011), and government transparency often became "equaled to information on a government Web site" (Meijer, 2015). As a consequence, there has been a push for more open government data to be released (Nikiforova & McBride, 2020), with a positive impact on eGovernment services adoption (Mensah et al., 2021), alongside other factors influencing adoption (Alryalat et al., 2015; Mensah et al., 2022; Rana et al., 2012, 2015, 2017; Rana & Dwivedi, 2015).

This article addresses the transparency of public digital services (eServices) or e-government services. While eGovernment may be broadly defined as "the use and application of information technologies in public administration to streamline and integrate workflows and processes, to effectively manage data and information, enhance public service delivery, as well as expand communication channels for engagement and empowerment of people" (United Nations, 2014, p. 2), examples of such services include online income tax filing, goods and services tax filing, or passport application filing (Sharma et al., 2021). And while providing these online services usually relies on websites and portals, nowadays different technologies are being used, such as mobile technology (mGovernment) and social media (Al Najjar et al., 2019; Alryalat et al., 2017; Hebbar & Kiran, 2019, 2022).

From a citizen (service user) perspective, digital services may become a kind of black box: once a service is initiated there may be no way to see what is happening inside it and all that remains is to wait for its completion (Sabucedo et al., 2009). In a nutshell, eServices transparency simply means citizens can look inside the service black box.

eGovernment research theories and constructs do not seem to explicitly include transparency (Rana et al., 2011). Nevertheless, this is a relevant research topic since transparency has been considered one of seven innovations in digital public services (J. Bertot et al., 2016a) and, by the "transparency by design" principle, systems should "ensure that data is disclosed to the public for creating transparency" (Janssen et al., 2017). More recently, an analysis of 100 research articles concluded transparency is a relevant design criterion for public e-services (Hübl & Šepeľová, 2022).

But, despite its importance, transparency is seldom considered in association with eServices assessment. The maturity assessment framework for (local) government Web Electronic Services (Panayiotou & Stavrou, 2019) considers 64 variables, organized into 5 top-level clusters including 'e-Services' and 'Democracy,' but does not take transparency into account. Pina and Torres (2019) analyzed the disclosure of 108 items on Spanish Central Government agencies' websites but none was related to eServices transparency. Another assessment framework (Bearfield & Bowman, 2017) includes a 'Digital government' indicator but provides no further detail concerning the data expected to be disclosed about 'City services, request for services.' And the assessment model used in the Municipal Transparency Index (da Cruz et al., 2016) considers 76 indicators, including one 'Online Citizen Request and Tracking system' which simply assesses whether or not such a system is available.

The European eGovernment Benchmark (European Commission, 2018) does consider seven items to assess its 'Transparency of service delivery' sub-indicator, as part of the 'Transparency' top-level benchmark. However, some of these items cannot be considered as part of an effort to make eServices more transparent (e.g., 'Save as draft'), while others are too generic e.g. 'Service performance information available'). Finally, the E-Government Service Delivery Quality Framework (Corradini et al., 2009, 2010) proposes three levels of "e-service delivery transparency", *No Transparency* ("citizens completely unaware of the process execution"), *Activity Aware* ("process tracking mechanisms") and *Role Aware* ("specification of an activity responsible"), which are still somewhat generic. Other research efforts focus on assessing transparency concerning a particular dimension of digital public services, such as algorithmic systems and corresponding decisions (Saldanha et al., 2022).

In sum, despite these research efforts, there is no comprehensive framework concerning public eServices transparency, including a workable definition of the concept and a comprehensive description of the type of information that should be disclosed.

This conceptual article aims to fill this research gap. Specifically, the main goal is to develop and propose a comprehensive public eServices transparency framework answering two important

research questions: what is meant by 'public eServices transparency'? And what information should be disclosed to make an eService transparent?

To answer both questions and develop a public eServices transparency framework, this article begins by laying out the principles and perspective considered (next section). The proposed framework (section A Framework For Public eServices Transparency) results from a systematic literature review (section Systematic Review Analysis) complemented by a directed analysis of eServices quality and public sector values literature (section eServices Quality And Public Sector Values Literature Analysis).

THE FRAMEWORK PRINCIPLES AND PERSPECTIVE

The concept of *service* has been described in the literature according to different perspectives, including one that contrasts services with goods and perceives services as an activity, characterized by intangibility, inseparability, and heterogeneity (Lindgren & Jansson, 2013). The "e-" prefix means that some sort of technology is used in association with at least one of three major service components: the service request is initiated by digital means (the hallmark of an eService), its internal processing is (at least partially) supported by an information system, and (at least) some part of service delivery (e.g. notification) is given through digital means upon completion. Among the many definitions proposed in the literature (Taherdoost et al., 2012) this work will consider an eService "as the provision of interactional, content-centred and electronic-based service over electronic networks" (Taherdoost et al., 2012, p. 75).

When applying the adjective 'public' to 'services' different interpretations are possible (Lindgren & Jansson, 2013). On the one hand, the expression 'public services' may simply mean that services are provided by public organizations. Another possible interpretation is that the service is entirely funded and provided by a private organization, but it is intended to be used by the public. Lindgren and Jansson (2013, pp. 10–11) further differentiate between private and public services by associating the latter with three characteristics, namely the public ethos ("public organizations, at least indirectly, work for all citizens"), the lack of exit ("usually operate in a monopolized or some sort of compulsory situation") and the role of the users ("a user of public services … cannot be viewed merely as a consumer but first and foremost as a citizen … [with] … certain constitutional rights which have to be ensured"). Finally, the provision of services by public organizations is also guided by a set of duty-oriented values, service-oriented values, and socially oriented values (Bannister & Connolly, 2014) which will be further detailed in section 5.2.

To clearly distinguish between different interpretations, in this article the expression 'public eServices' refers to "the services provided by public organizations to citizens … either directly or by financing private providers" (Lindgren & Jansson, 2013, p. 8). Therefore, public eServices are an integral part of eGovernment initiatives, "typically deal[ing] with intangible goods such as exchange of information to receive permits, disbursements, register tax or similar" (Lindgren & Jansson, 2013, p. 166). The adoption of digital technologies transformed traditional local and global public services making them more efficient, transparent and reliable (Hübl & Šepeľová, 2022).

As it is common in eGovernment transparency studies, citizens are usually considered the *observer* or *external actor* seeking to access information about public administration organizations' internal workings. Studies on online transparency assessment of public organizations (e.g. (Lourenço, 2013)) frequently adopt a *taxpayer* (provider of resources needed for public organizations to function) or *constituent* (that elects his/her political representative) point of view. This, according to an accountability principal-agent-based model, establishes the obligation for public officials to report on the usage of public resources and answerability to the public to meet stated performance objectives (Armstrong, 2005; Behn, 2001; Wong & Welch, 2004). This public accountability perspective focuses on disclosing information about resources used, outputs produced, or process efficiency.

In the context of this article, citizens are still the primary recipients of transparency but in their capacity as digital public services (public eServices) users. From the citizens as *clients* or *service users'* perspective, information about the resources used on eService production may be considered

irrelevant as long as the service itself is executed following agreed public values (e.g., equity), and expected standards of service/quality. As such, transparency in this context is about the possibility to "monitor and assess its [eServices] internal workings" (Grimmelikhuijsen & Welch, 2012, p. 2) and expose "the inner workings of government" (Bannister & Connolly, 2011, p. 24). This means that when users initiate an administrative process using an eService, this eService acts as a kind of black box and the purpose of transparency will be to look inside the black box.

To guide the selection of information to disclose it is important to additionally distinguish between *transparency* and *information*. While transparency requires access to information, not all information release efforts equate to transparency. For instance, National Statistical Offices release large amounts of information (or more precisely, data) but that does not make them automatically more transparent unless it is information about their inner processes (resources used to gather and process data, for instance). It is simply their mission to produce and divulge such statistical data. Additionally, releasing information about office operating hours, facilities location, or contacts may be helpful for organization clients, but it does not meet the criteria for being considered transparent such information is not about the organization's internal workings.

In accordance with these principles, and the focus of this work, the framework will consist of two major components:

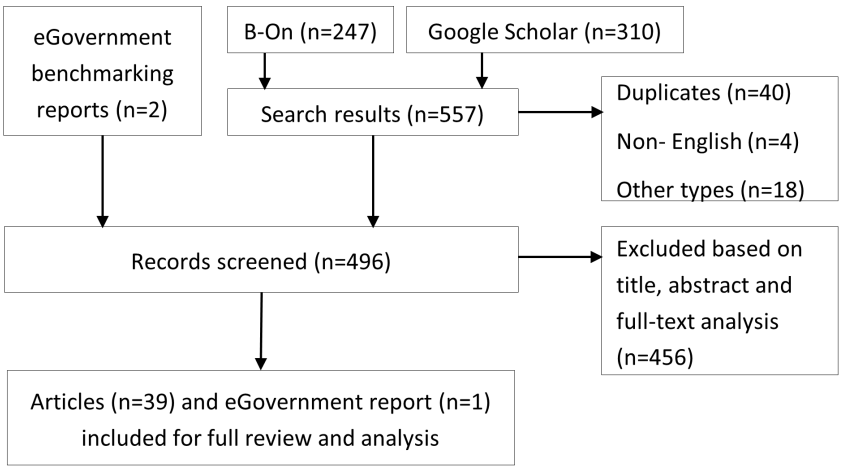
- A definition of 'public eServices transparency.'
- A list of information (items) that should be available online as part of 'public eServices transparency.'

RESEARCH APPROACH

The research approach adopted in this work is exploratory, resulting in a framework for public eServices transparency. It is rooted in a systematic literature review on the topics of eServices and transparency, complemented by a selected literature analysis on the fields of eServices quality and public sector values.

The systematic review of the literature was conducted as a first effort to answer both research questions (What is meant by 'public eServices transparency?' What information should be disclosed to make an eService transparent?). The search for relevant articles, summarized in Figure 1, was conducted on July 2021 using two search interfaces: Google Scholar and B-On[1].

Figure 1. The systematic search process



Six independent searches were performed on each interface using one expression for digital service ('digital service,' 'eservice,' 'e-service,' 'electronic service,' 'eGovernment service,' 'online service') always combined (AND) with 'transparency.' Search filters were set up to include only articles written in English and published in academic journals or conference proceedings since 2000, and results were ordered by relevance. In the case of B-On, a full page of results (50) was considered for each search which yielded a total of 247 unique records. In the case of Google Scholar, three pages of results were considered for each search (20 records on each page) which yielded a total of 310 unique records.

All records (557) were stored in a unique repository and 62 were excluded: 40 were duplicated references, 4 were not written in English, and 18 references were not published in either academic journals or conference proceedings.

The remaining 495 references were subjected to several rounds of analysis concerning their relevance for this work. In some cases, the reference to digital services and/or transparency was merely contextual (e.g., "The Reality of Social Inclusion Through Digital Government"). In other cases, although digital services or transparency themes were indeed addressed, the article did not contribute to answering either research question. In the end, 39 research articles were selected for final analysis.

Additionally, the eGovernment Benchmark 2020 (European Commission, 2020) and the E-Government Survey 2020 (United Nations, 2020) reports were considered for analysis. The latter identifies "promoting transparency and accountability within the public sector" (United Nations, 2020, p. 25) as a trend in online transactional services but it does not specifically address public eServices transparency. Therefore, only the European Commission Benchmark (2020) was considered, resulting in a total of 40 articles selected for analysis (Section 4). The qualitative content analysis of these articles was done inductively, involving several rounds of "open coding, creating categories and abstraction" (Elo & Kyngäs, 2008, p. 109), resulting in a preliminary framework.

Results from two major research areas were also considered to complement the systematic review analysis: eServices quality, since the framework adopts a *service user* perspective on transparency, and quality is an intrinsic eService characteristic; and public sector values, because public services operate within a specific value-set (compared with the private sector) which may influence when what information to disclose. One comprehensive literature review for each area (Bannister & Connolly, 2014; Sá et al., 2017) was analyzed (Section 5). The preliminary framework was further refined and complemented by adopting a more deductive qualitative content analysis approach since it was "based on earlier work such as theories, models, mind maps and literature reviews" (Elo & Kyngäs, 2008, p. 111).

SYSTEMATIC REVIEW ANALYSIS

Main Research Themes

The 40 articles were clustered according to six main research themes, as shown in Table 1.

All these themes are closely connected, and it is difficult to make a sharp distinction between them. As expected, most articles (11) focus directly on eServices (design and implementation issues/

Table 1. Research themes addressed

Research theme	N. of articles
eServices	11
Service quality and citizens' satisfaction	10
eGovernment (in general) and eGovernance	9
Privacy, personal data use and trust	6
Business process models, interoperability, semantic-based approaches	3
Algorithms and decision-making process	2

guidelines, digitalization process, …) and, since public eServices are at the core of eGovernment, 9 articles were clustered as eGovernment research. But it is interesting to note that an even larger number of articles (10) address eServices transparency in the context of service quality, confirming this a relevant research theme to consider when developing the framework (see section 5.1).

What Is Meant By 'Public eServices Transparency'?

The analysis of the 40 articles revealed several expressions being used in the literature that associate *eService* and *transparency*, as listed in Table 2.

Table 2. Expressions that associate 'eService' and 'transparency'

Expression used	Definition/characterization
Transparent digital public services	"Critical question regarding the delivery of transparent digital public services: Can citizens know about how decisions about their services are made by government?" (J. Bertot et al., 2016a, 2016b)
Transaction transparency	"Transaction transparency may include cost effectiveness, communication for a cancelled or incomplete transaction and providing receipt or acknowledgement immediate to a transaction" (Bhattacharya et al., 2012)
[Service] Transparency	"Ability of the PA to make citizens aware of the delivery process in terms of activities and people in charge of its execution and governance." (Cognini et al., 2014)
[e-service delivery] Transparency	"Ability of the administration to make citizens aware of the delivery process" (Corradini et al., 2009)
Process tracing and activity-aware transparency	"Ability of the administration to make citizens aware of the delivery process and its execution state" (Corradini et al., 2010)
Service-delivery transparency	"Degree of transparency concerning the performance of governments with regard to the delivery of services to the public and businesses" (Cucciniello et al., 2015)
[Service] Transparency	"Truly open access to the availability of information to the public and clarity about the information" (Ekaabi et al., 2020)
[Process] Transparency	"… make processes transparent through open up previous internal and closed processes" (Göbel & Cronholm, 2016)
Transparency of the service delivery process ToS (Transparency of Service)	"…availability of information about status and progress of service transaction life cycles." (Gouscos et al., 2007)
[Administrative processes] Transparency	"…administrative processes should be understandable, citizens and businesses should get the right to monitor the administrative procedures that involve them, to understand the decisions …" (Limba & Gulevičiūtė, 2013)
Transparency of service delivery	[indicator] "measuring whether public services provide clear, openly communicated information about how the service is delivered." (European Commission, 2020, p. 58) [indicator intended to] "assess the extent to which public administrations inform users about the public service itself, setting expectations on timeliness, process and delivery for citizens and entrepreneurs from the moment a user request a service until the service is delivered" (European Commission, 2018, p. 41)

Other expressions were found which do not directly address public eServices transparency but are somehow related, as listed in Table 3.

Finally, expressions were found which were not explicitly defined or characterized. Instead, the authors describe their broad characteristics. These expressions include "transparency of the service" (Weerakkody et al., 2019), "procedural transparency" (Margariti et al., 2020), "transparency of actions" (Sá et al., 2016), "system operation transparency" (Stančić et al., 2017), "service level transparency" (Voss, 2000), "transparency quality" (Corradini et al., 2010) and "algorithmic transparency" (Kim & Moon, 2021).

The analysis shows the term *transparency* is used in different ways when applied to (public) eServices, but no common definition for *public eServices transparency* was found.

Table 3. Other, related expressions and definitions

Expression used	Definition/characterization
Decision-making transparency	"Extent to which the users perceive the underlying reasoning of the decision-making process" (M. Li, 2011)
Privacy information transparency	"privacy information aspects provided to users to ensure an understanding required to evaluate online privacy assurance and performance" (Agozie & Kaya, 2021)
Information-use transparency	"the extent to which an online firm provides features that allow consumers to access the data collected about them and informs them about how and for what purposes the acquired information is used" (Karwatzki et al., 2017)
Transparency-Enhancing Tools (TETs)	"A conceptual means of informing users of online data services about how their personal data are processed" (Murmann & Karegar, 2021)

What Information Should Be Disclosed To Make An eService 'Transparent'?

Most articles specifically refer to one or more information items which should be disclosed as part of eServices transparency efforts. Table 4 lists such items, organized in broad categories.

Not every article identifies which specific information should be disclosed to increase eServices transparency. In some cases, articles simply make generic statements such as "make processes transparent through open up previous internal and closed processes" (Göbel & Cronholm, 2016).

Usually, these information items contribute to complementing the concept of eServices transparency considered in the article. But, in some cases, the opposite seems to occur since there

Table 4. Information items available as part of transparency efforts

Information	Articles
Personal data handling: How and which data is collected, for what purpose, how is it stored and processed	(Agozie & Kaya, 2021; Janic et al., 2013; Karwatzki et al., 2017; Murmann & Karegar, 2021)
Personal data access: How and what personal data is accessed, shared, or disclosed by whom and to whom (including public officials, other agencies and third parties)	(Agozie & Kaya, 2021; Janic et al., 2013; Lips et al., 2010; Sari et al., 2019; Stančić et al., 2017)
Process progress: Tracking, status monitoring and progress of service requests (applications)	(Bayona & Morales, 2017; J. Bertot et al., 2010; Ekaabi et al., 2020; European Commission, 2020; Foley & Alfonso, 2009; Gouscos et al., 2007; Karna & Gupta, 2012; Khan et al., 2020; Y. Li & Shang, 2020; Lips, 2010, 2012; Lips et al., 2010; Ntaliani et al., 2010; Ramessur, 2009; Sabucedo et al., 2009; Safiullin et al., 2020; Stančić et al., 2017; Venkatesh et al., 2016; Voss, 2000; Weerakkody et al., 2019) (Cognini et al., 2014; Tan et al., 2013)
Service completion: Notification for service completion (successful, unsuccessful, cancelled, incomplete)	(Bhattacharya et al., 2012; European Commission, 2020)
Activities: Which activities, tasks and administrative procedures are part of the service (already carried on and that need to be completed)	(Cognini et al., 2014; Corradini et al., 2009, 2010; Limba & Gulevičiūtė, 2013)
Public officials: Who is responsible for the service and/or for each task, activity, or procedure	(Cognini et al., 2014; Corradini et al., 2009; Karna & Gupta, 2012)
Decisions: Who made them, which algorithms, data and models were used, what were the premisses to reach the final decision, and how is the decision justified	(Kim & Moon, 2021; M. Li, 2011; Limba & Gulevičiūtė, 2013)
Complaints and inquiries: Which complaints and inquiries were made, and what is their status (answered, solved, ….)	(Sari et al., 2019; Venkatesh et al., 2016)
Delays: What caused delays and at what point in the process (activities, tasks) they have occurred	(Cognini et al., 2014; Karna & Gupta, 2012)

is a mismatch between the concept and the information items associated with it. For instance, the eGovernment Benchmark 'Transparency of service delivery' indicator, adopted by the European Commission benchmark (2020), considers whether the 'Save as draft?' functionality is available for a public eService. Likewise, Bertot and colleagues (J. Bertot et al., 2016a, 2016b) link transparent digital public services to a critical question: "Can citizens know about how service decisions are made by government?". To illustrate their concept, the authors consider a case where the existence of directories, meeting agendas, committees' composition, video libraries and blogs is a sign of higher transparency.

Yet another set of articles associate the concept of public eServices transparency with public accountability. This means disclosing information about service performance (Cucciniello et al., 2015; European Commission, 2020) or transaction cost-effectiveness (Bhattacharya et al., 2012). But while accountability may be an important goal of transparency, it is essentially directed to citizens as providers of public resources (interested in its good use).

Table 4 clearly shows eServices transparency is strongly associated with the possibility to track the progress of service requests. There is also a significant number of references to the need to know how personal data is handled (collected, processed, used, …) and some references to inform about the activities included in the service, the public officials that handle the requests, the need to justify and explain decisions, the status of complains or the cause for delays.

Three Dimensions Of Information Disclosure: Individual, Reference And Aggregated

The analysis also suggested three dimensions of information disclosure. In general, the information associated with eService transparency concerns what is happening, and can be observed, to an individual service request. We will refer to this dimension as 'individual [service] observed information' and it is directed towards an actual service user (information recipient).

But even if a particular user can observe how his/her service request is progressing, how does he/she realize there is a delay (Cognini et al., 2014) in the process, for instance? If one service request took 30 days to be processed was this excessive or was it expected considering the complexity of the underlying administrative process? To detect a delay (and ask for a justification) the user needs to have a benchmark or reference to compare with. Therefore, for each eService and each category of 'individual observed information,' public organizations should also disclose 'reference information.' This 'reference information' may be considered as part of the eService design specifications (planned or expected performance, features, …), and it is primarily directed at potential (future) service users. Examples of 'reference information' found in the articles include disclosing expected process duration, delivery timelines and maximum delivery times in the eGovernment Benchmark (European Commission, 2020), estimates about the processing time for different kinds of e-government transactions (Tan et al., 2013), statements about the purpose for which data is collected (Agozie & Kaya, 2021; Karwatzki et al., 2017), or information about "how service providers claim to handle user's personal information" (as opposed to "how service providers actually handle user's personal information") (Janic et al., 2013). The distinction between ex-post transparency ("information on how personal data have been processed") and ex-ante transparency ("how personal data will be processed in the future") made by Murmann and Karegar (2021) further illustrates this distinction between 'individual observed information' and 'reference information.'

Finally, we may also consider a third dimension for each information type and for each eService type, 'aggregated observed information,' which reflects all service requests. This may be, for instance, the average or maximum time a specific type of eService is taking to completion. This 'aggregated observed information' may be used by the public (information recipients) to assess whether services are meeting their standards and specifications by comparing it with the 'reference information.' And actual eService users may use this 'aggregated observed information' before their service request, to form more realistic expectations about what will happen, or after service completion to, once again, identify any deviation vis-à-vis other similar services.

ESERVICES QUALITY AND PUBLIC SECTOR VALUES LITERATURE ANALYSIS

To further complement the list of information items in Table 4, two major research areas were considered. The goal was not to identify new quality dimensions or public sector values but to rely on already published comprehensive literature reviews and identify which dimensions and values would suggest new information items to include in the framework.

eServices Quality

Sá and co-authors (2017) developed a comprehensive model to evaluate the quality of online local government services, comprising 32 dimensions (assessment criteria) divided into four domains, which extensively synthesizes contributions from previous research.

'Transparency' itself is one of the dimensions proposed by Sá and co-authors (2017) in the 'Management' domain. Although this reinforces the link between service quality and transparency, which further justifies using service quality literature as a foundation to develop the framework, the description provided ("Clear reports and indicators are available for all provided services" [Sá et al., 2017, p. 417]) does not suggest any specific item of information to be disclosed.

Among the other dimensions in this domain, the following were considered relevant:

- 'Process Management,' regarding the way public administration internal administrative processes are handled (the 'inner workings' of eServices).
- 'Capacitation,' regarding the role, capabilities and qualifications of public officials involved in administrative processes.
- 'E-Participation,' regarding how service users' opinions and suggestions are collected and processed, and how they impact (improve) eServices.

Within the 'Services' domain, which includes dimensions such as 'Variety of Offered Services' and 'Customization,' the following were considered relevant:

- 'Deadline Compliance' and 'Processing speed,' which both refer to the time-related aspects of administrative processes.
- 'Privacy' and 'Interoperability,' which refer to how personal data is handled, consulted and shared among public organizations.
- 'Complaints' and 'Customer Support,' which, like the 'E-Participation' dimension, concern the way complaint and customer support mechanisms operate, how their inputs are processed and how they impact eServices.

The third domain, 'Quality of Information,' comprises two dimensions. The first one, 'Task Information' ("information that allows the citizen to find and carry out a service request"), is certainly essential for users to initiate any online service, but it is not related to the eService 'inner workings' (transparency). And, while all information released should adhere to 'Information Quality' principles (second dimension), it was not considered relevant to derive information items for the framework.

The fourth domain, 'Technical Quality,' comprises seven dimensions which focus solely on eServices technical conditions which were not considered relevant to the framework.

Public Sector Values

The rationale to consider this research area is that making available information about the inner workings of public eServices, thus improving its transparency, may originate in a desire to reinforce one or several public sector values.

As there is plenty of literature on public sector values, this article will resort to the comprehensive typology proposed by Bannister and Connolly (2014), which categorizes values into three major classes.

Duty-oriented values broadly correspond to all "aspects of the duty of the civil servant to government and to the state" (Bannister & Connolly, 2014), and include values such as 'Responsibility to the elected politicians of the day,' and values of a more personal nature, such as 'Integrity and honesty.' However, while relevant, none of these values suggests specific information items to be included in the framework. Other values, such as 'Proper use of public funds' or 'Efficient use of public funds' are related to the way civil servants (mis)use public resources and are relevant from a public accountability perspective towards citizens (Lourenço, 2015). But, from a service user perspective, what matters is whether and how the service was delivered (within the expected deadline, for instance), regardless of how the resources were used.

Service-oriented values broadly correspond to "the responsibility of public administrators to provide a high level of service to the citizen in the same manner as a commercial company would provide good service to a customer or client" (Bannister & Connolly, 2014). 'Transparency' is included in this category, thus reinforcing the relevance of defining an eService transparency framework. However, the authors do not provide any specifics or guidance about what type of information should be disclosed to reinforce eService transparency. The same applies to 'Respect for the individual' and 'Service to the citizen in his or her different roles' (which refer to technical issues). 'Effectiveness' and 'Efficiency' values, closely related to a "Proper stewardship of public funds" (Bannister & Connolly, 2014, Table 3) and the (mis)usage of public resources, were also not considered as already discussed.

Socially oriented values include both Hood's theta values (1991) – honesty and fairness – and broader social goals such as 'Accountability to the public.' Since accountability requires transparency, the eServices transparency framework may be used as an enabler of public accountability processes. However, as a broad public value, 'accountability' does not suggest specific information items to be included in the transparency framework. The same applies to other values, namely 'Inclusiveness,' 'Respect for the citizen,' 'Protecting citizens from exploitation,' and 'Protecting citizen security.'

Having analyzed all values Bannister and Connolly (2014) identified, the following ones were considered relevant to developing the framework.

Table 5. Public sector values considered in the framework

Public Sector Value	Transparency goal
Compliance with the law Due process	Allow users to assert whether internal administrative processes are conducted following all regulations and legal procedures
Responsiveness	Allow users to assert how public organizations react to user inquiries Related to the 'Customer Support' eServices Quality dimension
Justice, Fairness, Equality of treatment and access, Impartiality	Allow users to assert whether all service requests are being treated equally
Protecting citizen privacy	Related to the 'Privacy' eServices Quality dimension
Consulting the citizen	Related to the 'e-Participation' eServices Quality dimension

A FRAMEWORK FOR PUBLIC ESERVICES TRANSPARENCY

The framework's first component is a definition of public eServices transparency, primarily based on the 'Transparency of service delivery' eGovernment Benchmark indicator (European Commission, 2018, p. 41) and the transparency concept proposed by Grimmelikhuijsen and Welch (2012), as follows:

The disclosure of information by public administrations to enable digital service users to monitor and assess the service's internal workings, both against the service reference and in comparison with other requests, from the moment the service is requested until it is delivered.

This definition broadly identifies service users as the main information recipients, and the framework proposes three dimensions of information to disclose (section 4.4):

- 'Individual [service] observed information,' directed towards actual and current service users, allowing them to open the black box concerning a particular service request;
- 'Reference information,' which may be considered as part of the eService design specifications (planned or expected performance, features, …), primarily directed at potential service users;
- 'Aggregated observed information,' which aggregates information from all service requests, and it is directed to the general public (to assess whether services are meeting their standards and specifications) and actual service users (to form more realistic expectations about what will happen, and to identify any deviations vis-à-vis other similar services);

To complete the framework, Table 6 describes the information to disclose to achieve transparency in public eServices, clustered into nine categories.

The categories presented in Table 6, and their characterization in the different dimensions, should not be considered mutually exclusive since all information concerning eServices is closely related. And, particularly in the case of 'aggregated observed information,' the characterization should be considered more as an example of which information to disclose since different aggregations about the same category are possible.

These categories should also be considered alongside the three phases of eService development (Zaied, 2012): design, implementation and results. During the eService design phase and following the "transparency by design" principle (Janssen et al., 2017), it is necessary to define exactly which information should be disclosed for each category and each information dimension/purpose. The design effort must also include the design of mechanisms to collect data and produce the 'Individual observed information' and the 'Aggregated observed information,' preferably in an automated way. Such mechanisms must be implemented during the next phase, embedded in the eService itself, and all 'Reference information' should be made available before initiating the results phase (when users start using the eService). Then, as users begin using eService, both Individual observed information' and 'Aggregated observed information' should be updated and made available. Finally, it is necessary to monitor the whole transparency system and adjust it where necessary, be it in defining new information to disclose and/or adapting the 'Reference Information,' for instance.

CONCLUSION

Public administration (governmental) transparency has been addressed in the literature from many different perspectives. However, it seems no previous study addressed specifically public eServices transparency in a comprehensive way. To help close this gap, this work set out to outline a framework which addresses the following research questions:

- What is meant by 'public eServices transparency'?
- What information should be disclosed to make an eService 'transparent'?

An initial systematic literature review revealed several expressions and definitions were being used that associate transparency and eServices. But, even when accompanied by an indication of the actual information to disclose, such expressions were vague or, at most, focused on very specific

Table 6. Information to disclose to achieve public eServices transparency

Category	Sources[2]	Information dimension/purpose		
		Reference information (e.g.)	**Individual observed information (e.g.)**	**Aggregated observed information (e.g.)**
Activities	Activities [SLR]	Which activities are included in the process	Which activities have already been completed (including their results), which ones are being executed and which ones are still waiting for execution	How many service requests are currently waiting for each activity to complete
Decisions	Decisions [SLR] Compliance with the Law [V]	Which administrative decisions are part of the process, including the applicable legal and regulatory frameworks, and the algorithms, data and models which will be used (if applicable)	Which decisions have been made and their justification	Which decisions were made in different service requests, and their justification
Process	Process progress [SLR] Service Completion [SLR] Process Management [Q] Due process [V]	How the different activities, tasks and decisions are organized into a process (their sequence, conditions, …)	Track the corresponding administrative process throughout its stages (activities, decisions)	How the ongoing service requests are distributed along the process of each service type
Time	Delays [SLR] Deadline Compliance [Q] Processing Speed [Q]	What are the deadlines and completion times defined for each type of service request, as well as for each of the steps involved in the related administrative process	Monitor the service processing times and therefore become aware of any significant deviation (delay)	Average and maximum completion times for each service/activity type considering all service requests
Public officials	Public officials [SLR] Capacitation [Q]	Which public officials may intervene in a service request, their roles, responsibilities, and qualifications.	Which public officials intervened in the service request	Which of the ongoing and finished service requests were distributed among the different public officials
Responsiveness	Complaints and inquiries [SLR] E-Participation [Q] Complaints [Q] Customer Support [Q] Responsiveness [V] Consulting the citizen [V]	Which channels and mechanisms are available to submit complaints, feedback, and contributions (as part of participatory and consulting processes, for instance)	Track complaints, feedback, and contributions, including their consequences and impact	Which complaints, feedback, and contributions were submitted and their impact on service delivery
Personal data handling	Personal data handling [SLR]	How and which data will be collected, for what purpose, and how is it stored and processed	Track how and which data was collected, for what purpose, and how is it stored and processed	Which data, in which processes, was not handled according to what was expected
Personal data access and Privacy control	Personal data access [SLR] Privacy [Q] Interoperability [Q] Protecting citizen privacy [V]	When, by whom, to whom and for what purpose data associated with service requests may be accessed and shared	Check when, by whom, to whom and for what purpose data associated with their service request was accessed and shared	Which data was shared (to whom, by who) across all service requests, particularly when data sharing was not done as expected
Fairness	Justice [V] Fairness [V] Equality of treatment and access [V] Impartiality [V]	Which policies will be used to determine service order (e.g., first come, first served policy) and which mechanism exists to enforce the policy (e.g., sequential process number)	Assure users their requests are being processed in the order they were supposed to, including across all stages of the administrative process	How submitted service requests were processed according to the policies in place (e.g., their submission dates, sequential process number, …)

topics. The review was, therefore, further complemented by an eServices quality and public sector values literature analysis to propose a comprehensive framework.

Nevertheless, despite the attempt to make a systematic and comprehensive research effort, there were some limitations which may be addressed in future research. Other search engines and scientific resource collections may be considered, as well as different search parameters (particularly the keywords used). Also, other major research areas may be considered to complement the systematic review results and help structure the analysis and synthesis. Such synthesis, and resulting framework, may also benefit from the input of eGovernment and eServices experts.

The resulting framework is comprised of a definition for 'public eServices transparency' (answering research question 1) and a list of information categories to disclose as part of public eServices transparency (answering research question 2). The framework also distinguishes between different information recipients, with distinct information needs in the context of the same transparency process and proposes three dimensions to consider in association with each information category: reference, individual and aggregated information.

The contribution of this study is twofold. The proposed framework may support public officials and decision-makers in determining the actual information items that should be available for each eService as part of a global transparency effort. Hopefully, these decisions will be made while eServices are being designed (transparency by design) thus avoiding the extra costs of late adaptations. Also, the framework may guide benchmarking efforts concerning eServices transparency delivered by different public administration organizations. In this case, it will be necessary to consider the specifics of each eService available, define specific metrics to assess each information category, and define how to aggregate individual results into a unique, global, indicator (as it is done, for instance, in the European Commission eGovernment Benchmark).

In sum, developing the framework was just a first step as this was exploratory work. Further research is needed to assert the framework's applicability. Ultimately, its relevance will depend on whether it is used to reduce the eServices black box culture and improve public organizations' transparency as a whole.

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COMPETING INTERESTS

All authors of this article declare there is no competing interest.

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ENDNOTES

[1] An interface that uses an EBSCO search service that federates several collections including the ACM Digital Library, Academic Search Complete, Business Source Complete, Current Contents (ISI), Elsevier, IEEE, Sage, Springer, Taylor & Francis, Web of Science and Wiley (for a complete list see https://www.b-on.pt/colecoes/)

[2] Systematic Literature Review [SLR] / eService Quality dimension [Q] / Public Sector Value [V]

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