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# Towards a Network Government? A Critical Analysis of Current Assessment Methods for e-Government

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**Abstract.** Contemporary public administrations have become increasingly more complex, having to coordinate actions with emerging actors in the public and the private spheres. In this scenario the modern ICTs have begun to be seen as an ideal vehicle to resolve some of the problems of public administration. We argue that there is a clear need to explore the extent to which public administrations are undergoing a process of transformation towards a network government linked to the systematic incorporation of ICTs in their basic activities. Through critically analysing a selection of e-government evaluation reports, we conclude that research should be carried out if we are to build a solid government assessment framework based on network-like organisation characteristics.

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## 1 Introduction

According to network society theorists [10] social structures and activities are increasingly organised around network forms, largely grounded in electronically based information and communication technologies. If large private companies and social movements are inventing and becoming part of this new society, governments are apparently lagging behind in understanding this new logic, living still in the old hierarchical structure, or adventuring in losing some of their traditional characteristics through New Public Management policies. Contemporary public administrations have become increasingly more complex, having to coordinate actions with emerging actors in the public sphere, such as non profit organisations and the private sector; thus the silo like, inward-looking culture, slow decision-making and knowledge diffusion [29] of the old bureaucratic model seem to be ill-suited to improve flows of information and cooperation, levels of legitimacy and trust as perceived by citizens, and ultimately efficiency and efficacy.

In this scenario the modern information and communication microelectronic technologies (ICTs) have, since the middle of the 1990s, begun to be seen as an ideal vehicle to resolve some of the problems of contemporary public administration. The usual argument is that the intensive use of technology could transform the operating rules of the public administration to increase its efficiency, simplify administrative procedures [16], expand the processes of citizen participation [19] and make the activity of governments more transparent and accountable.

In the context of these high expectations there is a clear need to explore the extent to which public administrations are undergoing a process of transformation linked to the systematic incorporation of ICTs in their basic activities. It is particularly interesting to verify whether there is a transition towards a new form of network organisation at the core of the public administrations that might be conceptualised as a virtual state [18] or, as a network administration [11] [4].

Our second concern is of normative interest and focuses on the evaluation models that have been applied to electronic government and their effects on policy making. High ranked characteristics by comparative research and evaluation reports, largely developed by big consulting companies, may have an influential role on governments' policies, with some ultimately adapting their strategies to score high in the comparative rankings of those reports.

Through reviewing a selection of evaluation methodologies, this paper aims at identifying, where they exist, research and evaluation methods and indicators that are concerned about the possible transformations of public administration towards a network government. The paper is organised as follows: the first part briefly clarifies our use of the concept "network government"; it follows with an introduction to the state of the art of evaluation reports on e-government and their general characteristics; it then analyses a selection of five research and reports and tries to identify indicators that could assess a network administration. It concludes with a synthesis of the main findings and points towards topics for future research.

It should be noticed that instead of the traditional analytical model of the social or organisational impact of technology - dominant in greater part of the literature on e-government - we opt for a constructivist analytical perspective [7][21] that emphasises the two-way process of interaction between technological innovations and the specific social contexts (institutional, organisational and cultural) where these are designed or adopted. Therefore, we consider that the public administrations are not merely passive receivers where technology is consumed and used. Instead, their regulations, processes and own organisational forms play an active and determinant role in the final configuration of the ICTs and are, at the same time, transformed in the process of incorporating the technology - a type of phenomenon that has recently been considered by technology-in-practice concepts [27], in the general context of organisational theory and by technology enactment [18] in the area of research on e-government.

## 2 Network Administration

The concept of 'network administration' is closely related to the network structure identified by several authors [10][28] in order to characterise the new social morphology of the informational society, where more and more social dimensions structure their relations and activities in networks. Economic activity in general adopted this organisational form as a strategy to provide a response to the crisis of capitalism in the 1970s. Financial markets are now structured as a network of flows of information and capital that occur for the first time in history in real time and on a global scale. Companies increasingly incorporate the network model to restructure their core activities as the sole means of surviving in the context of globalisation.

Some authors have written on policy networks, network governance [24], public-sector organisational networks assessment [25] and on network organisation in the organisational science field [28][31]. In general, however, we are in accordance with Dunleavy et al [14], that the role of ICTs has been generally marginalised or simply neglected in public management theory and public administration literature. From the political science perspective, when technology is remembered, it is either as a) a simple tool available out of the shelf or b) in a deterministic way (computer impacts/effects on). From the organisational point of view, technology has been dealt with more often, but in general with the above mentioned "naïf" view, with a notable exception of Orligowski [27]. Even the usual accounts of the Weberian ideal type of bureaucracy tend to forget the essential role Max Weber attributed to the technical paper-based system of information processing used by this kind of corporations. Thus, what concerns us in this paper is to take into account the role of the intensive use of ICTs in this transformation process of public sector operations.

Castells [10][9] stresses that the phenomenon of the network structure that characterises the information and communication society is aided by, although not a simple consequence of, the intensive use of ICTs. He elaborates on how businesses and the economy in the globalised world operate nowadays, pointing out to important characteristics of this new organisational form, such as the organisation of activities around projects (of limited duration), the flexibility in reconfiguring to complete them, the internal decentralisation and cooperation with other companies (with the proliferation of alliances and connections between networks), affecting the core operations of the business activity [9]. However, the question that arises is "what about governments?"

By way of analogy, the network administration could be conceptualised as an organisational form characterised not only by the connection and level of interoperation between the information systems and the management procedures but also by a tendency to change the operation of the organisation towards more flexible management, more adaptable to changes and with relationships that are more horizontal than those which predominate in the traditional administration. Finally, it could be associated with the concept of modern governance [23], which refers to a more distributed and relational manner of governing than that found in the old hierarchical model [28], involving the direct cooperation between public

and private actors in the public networks. However, our objective is not, and we believe this would not be a very useful approach, to elaborate on detailed characteristics of an ideal type of network administration and verify its existence in governments, but yet to seek understanding about whether these kind of transformations are occurring, particularly with the intensive use of ICTs, and what forms they take.

Finally, we might ask why “measure” whether governments are transitioning towards a new form of organisation with the innovative use of ICTs. ICT implementation in governments does not necessarily represent an immediate vast reduction in costs running the government, as this requires investment in major projects, which often experience substantial cost overruns [8]; also, studies in the private sector show that ICTs not necessarily increase productivity of office work [26]. But at the organisational level, the picture might look different, as research demonstrates that the intensive use of ICT is positively linked to firm performance and results; case studies show that some organisations have been able to derive benefits through IT (e.g. Wal-Mart, Dell Computers, Charles Schwab) [26]. There are obviously contextual differences that shapes the way ICTs are managed and embedded in the public and the private sectors, but we find essential to question if similar transformations are taking place and to what extent in public administrations.

### 3 E-government Evaluation

The issue of e-government evaluation has developed almost concomitantly with the development of the concept of e-government, which has been broadly defined as the extensive use of information and communication technologies by public sector organizations applied to a full range of government functions [20][22][17]. The use of ICTs in government structures is not new, but the concept of e-government became widely used in late 1990s when it became a policy strategy that focused on improving service delivery. Evaluation studies on the issue have been largely focused, although not exclusively, on the availability of web portals offering online services and their sophistication. Broadly speaking, we can identify in existing research and evaluation reports on e-government four clusters of topics [15][20]: e-readiness (technological and human infrastructure, political support), supply-side (front office: number, types and sophistication of services available online; back office), demand side (take-up, user satisfaction) and impacts (financial and non-financial benefits). First studies asked whether services were online and, later, their level of sophistication [12][3][2][1]. In the last years, some evaluators have shifted their concern from the simplistic availability of web portals and services, while still evaluating them, to other issues, such as cost-effectiveness of online services and the generation of public value [2][1][15]. More recently some attention has been given to the demand side: what is the actual use of the existing online services? Are “customers” needs being met? [1]. Heeks [20] points out that we are supposedly entering the phase of evaluating outcomes and impacts. In parallel, the UN [30], exploring the interlinkages

between e-government and development, has been looking at the readiness of a country to take advantages of the potential of the implementation of ICTs in the government as well as each government's willingness to promote participation and include its population in the network society.

Some researchers, however, agree that the existing eGovernment evaluation and benchmarking methodologies do not support a comprehensive and policy relevant assessment of eGovernment [22][20], as they have been too narrowly focused on services delivery and very little attention has been given to the relationship between back-office of processes and organisational structure and the intensive use of ICTs. Current e-government research and evaluation methodologies do not easily capture transitional processes towards a network administration because they mostly focus on the availability of the structure (e.g. availability of online services and forums) of a digital government, and not on its dynamics. An exclusive look at front-office results may cause a kind of theoretical mirage: analysing brand-new virtual agencies may give the false impression that the rest of the organisation has already undergone a deep transformation process. The question is - are departments working towards a more collaboratively, relational, networked model of government, moving away from the "silo-like" model? And to what extent is this trend based on ICT innovative uses?

The use of ICTs in all spheres of government may be the (late and slow) development of the operational structure characteristic of the network society inside the public sector. Therefore, the idea of e-government developed in this paper embraces more than e-service delivery, e-democracy, and all the other "e"s. Web analysis is useful, but not comprehensive if we are to verify whether public administrations are being transformed in the direction of a new model of government.

## 4 The Missing Network Government Indicators

In this section we aim to identify on selected e-government research and assessment reports their understanding of e-government and whether there are indicators of transformations towards a network government. It is not within the scope of this paper to analyse all published research on the issue: we have chosen five for their importance in terms of perceived policy making influence and for representing perspectives from varied sectors. We do not intend to have a statistically significant sample, but yet - as we understand that there is lack of analysis of transformations in public administrations with the innovative use of ICTs - to indicate a different perspective to analyse the existent research and evaluation methods, and search for indicators that aim at understanding and measuring these transformations. Further research needs to be carried out if we are to form a more solid framework for network government "measurement".

It is important to remark that none of the studied reports claims to be all comprehensive about e-government - but they also rarely clearly define what exactly they are evaluating, each using the term "e-government" as a general

self-explanatory concept that usually involves the use of portals for online service delivery.

**The University of Brown’s “Global e-Government 2006 Report”** [32], widely cited in Latin America together with UN’s eGovernment readiness report, have been ranking for the last six years 198 nations on eGovernment development based on website analysis. National websites are evaluated for the presence of various features dealing with information availability, service delivery, and public access [32]. Among those features are online database, non-native languages translation, user payments, disability access, number of public services fully online, website personalisation and others. In terms of “security and privacy”, for example, what is analysed is only the online information given about them, not their actual structure and characteristics. The analysis of “public outreach” follows the same pattern, where binary (yes/no) evaluation lies on the tools available for citizen’s participation, e.g.: e-mail addresses, comments area (message boards, chat rooms, etc), but no investigation is done on the uptake or the outcomes stemming from the availability of these tools.

Clearly, it is a report that roughly evaluates the quality of the website and the number of services online, but not concerned with any indicators of uptake, impacts, outcomes, or any internal and external transformation of the administration. However, although it offers nothing more than a very static evaluation of government’s portal, it is a widely cited and influential report in some developing countries, which only reinforces our concern about the need for developing research and indicators about real transformations in the public administration with the use of ICTs. Or else, we will continue to see “fully available online services”, however designed to be nearly as complex as their paper-based analogues [16], showing a simple transfer from the offline disorganised logic to the web.

**Cap Gemini’s 2006 “Online Availability of Public Services: How is Europe Progressing?”** shows more sophistication and concern about transformational issues, but ultimately it is a web based survey on electronic public services. It is the 6th benchmarking exercise on the progress of online public services in Europe. “[T]he main objective of the study (...) is enabling participating countries to analyse progress in the field of eGovernment and to compare performance within and between countries” [12].

The report ranks 28 European countries according to the number of services available online and the online sophistication of 20 basic public services, ranging from “basic” information provision over one-way and two-way interaction to “full” electronic case handling. The results are grouped in terms of target groups (citizens and businesses) and also combined in clusters: income-generating cluster (i.e. taxes and social contribution), registration cluster, returns cluster (public services given to citizens and business in return of taxes and contributions, e.g.: health related services, job search services) and permits and licenses cluster. Those services scoring stage 4 or full transactional level were also qualitatively assessed (“best practices”) on aspects like multi-channel delivery, mediation and support, proactivity, service integration, tracking and tracing and accessibility, which indicate some transformations towards a networked government. For ex-

ample, the case of tax declaration in Sweden - where most taxpayers receive a pre-filled and pre-calculated version of their tax return, which can be filled online or simply confirmed by using the Tax Board's telephone service or via SMS [12] - demonstrate a concern about transformations enabled by ICTs towards a flexible, innovative and efficient administration. However, these good practices are not translated into indicators and thus are not taken into account for the final score.

Although advancing in the analysis of online availability of services and exploring some best cases, it is in fact a report that analyses only the structure of the public administration on the web, not the "performance" as it is stated in their objectives, nor any transformations within the public administration. Cap Gemini partially acknowledges that, stating that this measurement framework was developed at a time when implementing e-government was still primarily about bringing public services online, and pointing out to other commissioned studies for the i2010 European Commission Action Plan that tackle take up and impact issues, such as LOT2, that tries to extract some common indicators concerning accessibility and user centricity from existing national standards and guidelines, and eGEP's indicators of impact on supply, organisational and use indicators.

**Accenture's eGovernment "league tables"** are one of the most cited in the world [1]. The last year a ranking was presented was 2005, the reason being that there has not being much progress in the last 3 years. Thus in 2006 they opted for interviewing senior executives of the highest ranked administrations in the previous report in order to extract best practices in "leadership"; the rankings will resume in 2007.

Accenture uses two measures to determine the e-government "maturity" (and ranking) of the 22 countries in the research: "service maturity" and "customer relationship management", where 50% of weighting is allocated to service maturity and 50% to customer relationship management [2]. Service maturity is the product of service maturity breadth (number of services available) and service maturity depth, categorised in three increasing levels - publish, interact and transact - whereas customer relationship management refers to the extent to which government agencies manage interactions with their "customers" and deliver service in an integrated way. Customer relationship management in the 2005 Accenture model evaluates citizen-centred interactions (levels: program-centric customer experience, customer group segmentation, individual segmentation and intelligent interaction), cross-government service interaction (basic interaction, intra-agency interaction, cross-agency interaction and cross-government interaction), multi-channel service delivery (basic access, multi-channel experience and citizen data capture, channel synchronisation and case management and seamless service delivery) and proactive communication and education about available services (program offerings, proactive service offerings, targeted offerings and mutual value offerings). In 2004, they introduced a new survey component to the assessment of number and maturity of services, a quantitative survey of



citizens' attitudes and practices related to eGovernment in 12 countries. However the results were not taken into consideration for the ranking.

If evaluating online "service maturity" reproduces the same evaluation scheme of only looking at the structure of a digitalised government, "customer relationship management" does try to take one step further in understanding some aspects of the transformations of public administration. However, it does so indirectly, as it evaluates issues as horizontal and vertical integration only superficially through web analysis. As transformations in public administration, rather than occurring at "internet speed", seem to change much slowly, which is significantly attributable to the complexities of government bureaucracies and their tasks as well to the importance of related governance questions, it is not strange that Accenture has not seen much improvement in service delivery in recent years, as it looks mainly at front office applications and services availability, and ultimately neglects any process of transformation by which systems come to be embedded in administrations [16].

The UN "**Global e-Government Readiness Report 2005 - From e-Government to e-Inclusion**" [30] explores fields not mentioned above, such as a country's infrastructure and human capital readiness for absorbing the potentials of electronic government, aiming at exploring the interlinkages between e-Government and development. It presents an assessment and two rankings of the 191 member states of the UN according to their state of e-Government readiness and the extent of eParticipation.

The readiness assessment measures the capacity and willingness of countries to use e-Government for ICT-led development. It is a weighted average composite index based on website assessment of services (quantity and sophistication), telecommunication infrastructure (society's, not government's) and human resource endowment (educational levels). The eParticipation index is a qualitative assessment of the websites based on the relevancy of participatory and democratic services available. It may be biased, as they in fact acknowledge, and it does neither evaluate participation, nor impacts and outcomes.

Some interesting points in UN's methodology should be noted. It also uses web analysis as its main tool for assessing e-government but it also adds useful indicators to its evaluation methodology. Besides website assessment - that serves to measure, as they put it, the readiness of governments to offer online services - it also focus on society's readiness to take full advantage of the potentials brought by the introduction of ICTs in public administrations, by measuring society's ICT infrastructure and educational levels. However it does not look at the dynamic transformations stemming from the interaction of the availability of infrastructure (both society's and businesses), human capital endowment, and online services. Are these actors working in a network? What are the outcomes in terms of flexibility, innovation, responsiveness, transparency, accountability, participation in decision making? That would be a very instigating follow up to this research. However we do notice some concern towards these issues, as seen, for example, in the last stage of service maturity - "networked presence"; it goes beyond the level of "online transaction" and it is characterised by the

web integration of G2G, G2C and C2G (and reverse) interaction. Nevertheless, as with what we noted regarding the customer relationship maturity in Accenture’s model, UN’s model at stage five of service delivery - “networked presence” - only indirectly assesses, and implicitly assumes, integration of public sector agencies with full cooperation. This is indeed one good indicator of the willingness of a public administration to work in network, but does not in fact measure it, nor it is a direct account of its impacts and outcomes.

Last in this selection comes the eGovernment Economics Project (eGEP) [15]. The project developed a measurement framework based on existing impact measurement models (Danish “eGovernment Signposts”, French “Mareva” Methodology, German “Wibi 4.0” Guidelines, UK “Business Case” Methodology and UK Criminal Justice IT Methodology), aggregating in its final full template 92 indicators built around three value drivers: efficiency, democracy and effectiveness. These value drivers stand for:

- Efficiency (Financial and Organisational Value): cashable financial gains, better empowered employees, better organisational and IT architectures.
- Democracy (Political Value): openness, transparency and accountability, participation.
- Effectiveness (Constituency Value): reduced administrative burden, increased user value and satisfaction, more inclusive public services.

eGEP takes a different and more fruitful approach, focusing on performance, impacts and outcomes. It sees the troubles with measuring only online services as “e-Government is not simply a service delivery channel but also a catalyst for organisational innovation and rationalisation, as well as for human resources revitalisation and empowerment. Besides increasing speed and accuracy, it contributes to radically change how governments go about their business as usual, including long ingrained cultural attitudes toward service delivery.” [15]. It presents still a very instrumental and “salvationist” view of e-Government and ICTs, but in contrast with the other methodologies, it states the aims and values of e-government and tries to build a framework of indicators that do not automatically assume that outcomes will occur (e.g.: accountability, efficiency) only from the presence of online services.

As this is an economics-based model, the indicators of financial efficiency are given prominence, which are indeed more direct and measurable, while indicators for democracy and effectiveness are mostly self-assessment and do not truly analyse transformations (e.g.: under “democracy” indicators, one indicator of participation is the availability of online channels for citizen interaction, which does not in fact verify transformations towards more participatory decision-making).

This framework shows concern about understanding the transformations in the direction of a new form of government, for instance, that is more efficient through the use of ICTs: indicators such as the “percentage change of case handled per processing full time equivalent”, the “percentage change in the number of transactions performed online” and the “percentage change in volume of document exchange digitally within public private partnerships” indicate monetised

and time economies and integration with other non-public actors of society. However, looking deeper at the nature of these indicators, we notice transformations that may not be captured or perhaps even hidden by them: at first sight, having more transactions performed online, or more digital transactions with partners, is a good indicator of more efficiency in terms of paper used, time spent by citizens queuing, etc., but on the other hand, it may hide the very fact that if reengineering of processes and working methods were to take place, such transactions might be considered redundant and fully ceased to exist. We give this example to point out that ICTs simply attached and enforced into an old traditional and hierarchical model of government may in fact cause more burden and increase complexities, therefore research of the transformations governments might be undergoing should also take this into account.

## 5 Conclusions

The old bureaucratic model of government is seen as increasingly ill fit to deal with the emerging complexities that contemporary public administrations have been facing. In the current scenario, where the Weberian hierarchical organisational model and the New Public Management policies have failed to fulfil their expectations, there have been high expectations towards the incorporation of ICTs to resolve some of those problems. Thus, there is a clear need to explore the extent to which public administrations are undergoing a process of transformation towards network governance linked to the systematic incorporation of ICTs in their basic activities.

The issue of e-Government research and assessment has had increased importance in the last five years as governments had to justify their spending in ICTs and verify whether improvements have indeed been made. However assessment have been mainly reflecting the instrumental view of e-government as a “policy strategy” for improved public service delivery; therefore they have largely focused, although not exclusively, on the availability and sophistication of web portals and online services. The question we ask is “are public administrations only transferring the offline bureaucratic model to the web or, are they really experiencing a transition towards a new form of government?”

Through the critical review of four e-government assessment reports and one evaluation framework we sought to indicate a different perspective of analysis and look for indicators concerned at understanding and measuring the transformations governments might be undergoing with the intensive use of ICTs. We hold the view, corroborated by the above mentioned analysis, that ICTs have been largely neglected in public administration and public management, and when mentioned, they are often considered as a simple tool that can be taken out of the shelf, or else seen in a deterministic fashion. These views extend to e-government assessment: attention falls mostly into front office applications and the availability of online services, which cannot fully capture the essence of the possible transformations towards a network-like organisation. Furthermore, the availability of a digital structure for government delivery of services is taken

for outcomes of e-government; whether public administrations are more flexible, more responsive, more accountable or permeable to citizen's participation can be hardly inferred from the existing indicators.

Although predominately focused on the analysis of government portals, some concern is shown regarding a network form of governance emerging from the embedeness of ICTs in public administrations, as seen by the indicators of "customer relationship management" (Accenture) and "networked presence" (UN). However, they assume that processes and work organisation are vertically, horizontally and externally integrated only by analysing web portals, and do not develop direct indicators of such integration. eGep's is the most fruitful approach towards analysing the transformations public administrations are undergoing with the incorporation of ICTs, building a framework for evaluation that emphasises the need for indicators on efficiency and generation of public value. However, it builds its indicators based on the comparison between offline and the online counterpart transactions, missing the possible transformations in the structure and the dynamics of public administrations.

Further and more in-depth research needs to be carried out if we are to build a solid assessment framework based on network-like organisation characteristics. A suggestions for future research could be the construction of indicators of interactivity and relationship strength - relating them to the use of ICTs - involved in the completion of specific processes - e.g. opening a new business or enrolling someone in school. Understanding how governments are transforming their operations, and to what extent, is essential to comprehend the effects on performance and the general improvement of public sector functions.

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