

A Critical Insight into the Evaluation of e-Government Policies: Reflections on the Concept of Public Interest

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Abstract—The concept of e-government was expected to support the development of the new public sector paradigm and the emerging socio-political trends, endorsing efforts for deliberative and democratic decision-making processes, and advocating the effective, accountable and transparent management of public affairs. In reality, very little of the above-mentioned was achieved, indicating that the current policy-making in the e-government field is inadequate, whereas lacking comprehensive and objective evaluation methodologies consequently results in poor quality planning and implementation of e-government policies. Despite the growing research interest in the last decade or so, the existing evaluation methodologies have been often only marginally and superficially targeting and evaluating the notion of the public interest articulated and addressed by the e-government policies. Moreover, the evaluation of the public interest dimensions is frequently rendered particularly with the evaluation of financial benefits of the e-government policies, additionally reducing the applicability of the evaluation methodologies and undermining the legitimacy of the evaluation results used for strategic planning. Paper provides an analysis of more than 50 methodologies for the evaluation of e-government policies, exploring their capacity and extent to which they facilitate the evaluation of the public interest implemented by the e-government policies. Analysis offers an insight into the current evaluation practice enabling detection of its deficiencies, and could facilitate a significant contribution to the inclusion of the public interest concept in the future design of the evaluation methodologies and provide support to more evidence-based policy-making in the e-government field.

Keywords—e-government policy; evaluation methodology; analysis; evaluation levels; public interest

I. INTRODUCTION

The paper is an extended version of the conference paper entitled “Evaluation of e-Government Policies: Overlooked Aspect of Public Interest” presented at the SOTICS 2012: The Second International Conference on Social Eco-Informatics, October 21 - 26, 2012 - Venice, Italy [1]. In this extended version, we provide a substantially revised paper including a review of the recent developments in the

e-government research field, more elaborate description of the public interest concept, and a comprehensive analysis of the methodologies for the evaluation of e-government policies regarding their maturity, evaluation focus and ultimately the extent to which they facilitate the evaluation of the public interest concept implemented by the e-government policies. The paper at hand additionally features a discussion of the research results and future trends in the design and implementation of e-government policies.

The research of the e-government phenomenon, being generically defined as the continuous redefinition of the government operations based on the use of Information and Communication Technology (ICT) and other internet-related applications in its everyday internal and external transactions, has expanded heavily in the short development era. In the field of business informatics, the attention of researchers has moved from purely technological solutions and perspectives, to business processes, organizational and economic viewpoints of ICT integration, and the similar shift can be noticed in the case of e-government. Namely, until the first half of the previous decade, technological aspects of e-government research have been prevalent. However, later on, the attention has started moving rapidly towards questions related to usability and usage of e-government services, and in the last years, issues related to successful planning and implementation of e-government policies on different levels (national, regional, local) and in different sectors (e-health, e-education, e-social affairs, etc.) are becoming increasingly important. This shift in research focus is understandable; since various studies indicate that further e-government development is one of the most important factors of public sector rationalization [2][3][4], as well as faster countries' development [5][6][7]. Despite considerable investments in e-government in recent years (European Union (EU) countries are investing approximately 2.2% of Gross Domestic Product (GDP) in ICT in the field of public sector [8][9][10]) the expected effects in terms of reducing costs and increasing the effectiveness of public sector are still rather ambiguous, while user acceptance of e-government services is far below government anticipations. Disclosed issues and present

public finance situation along with increasingly stringent austerity measures require careful direction of further e-government investments, particularly focusing on the proficient evaluation of e-government policies and their effects – be it on national, local or sectoral level.

Past experience in the field necessitates the development of the methodologies for the evaluation of e-government policies (the collective term “methodologies” will be used hereinafter, denoting different approaches, indicator models, benchmarking measurements, assessment frameworks and similar undertakings for the evaluation of e-government policies), which could enable e-government decision-makers to conduct more qualified and quantified preparation, execution and evaluation of e-government policies including their broader societal implications. Considering e-government development so far, we have been witnessing a big gap between supply and demand of public e-services in most countries, which can be prevalently attributed to “politically driven” development rather than “evidence based” evaluation and selection of e-government policies [11][12][13]. Earlier research has shown that some countries [14][15][16] have been accomplishing much better results in evaluation and implementation of e-government policies compared to several other countries with much higher investments. Past experience in the field and public finance trends evidently require the development of the methodologies for the evaluation of e-government policies which could enable e-government decision-makers to conduct more qualified and quantified preparation, execution and evaluation of e-government policies – be it before or after their implementation (ex-ante or ex-post).

The existing methodologies for the evaluation of e-government policies lack a unified and clear theoretical framework [13], implying they are mostly arbitrarily designed, and aimed at specific evaluation needs and objectives. The latter arise from various reasons: different (EU, UN, Brown University, Economist Intelligence Unit, etc.) and heterogeneous promoters (international, national, consulting, research institutions, etc.), diverse environments, various rationales and contextual background as well as the number and selection of indicators. Significant differences between the evaluation methodologies are reflected within their main evaluation focus and evolving stage. Namely, the evaluation methodologies vary widely depending on the evaluation levels within e-government policies they are predominantly focused on (infrastructural level, project level, organizational level, etc.), and the development levels they achieved, describing the degree of their application in practice (conceptual framework, pilot application, practical application).

Notwithstanding the increasing number of the different evaluation methodologies emerging in the last years [14][15][16], some aspects of the evaluation of e-government policies have been largely disregarded, particularly public interest, as one of the foundations of public policy-making. This rather unsatisfactory state of affairs has led to growing calls for a reassessment and rebalancing of the rationalizations in the evaluation of e-

government policies, and in particular for a greater weight to be given to the public interest [17].

The paper discusses the main features of the existing methodologies for the evaluation of e-government policies and analyzes their evaluation foci trying to establish the extent to which the existing methodologies facilitate the evaluation of the public interest. Deriving from the aforementioned research objectives, the paper is focusing primarily on the following interrelated research questions:

- 1) Overview and study of the existing methodologies for the evaluation of e-government policies and summary of their characteristics.
- 2) Analysis of the existing methodologies for the evaluation of e-government policies regarding the aspect of public interest.

From the methodological point of view, research represents an in-depth analysis, while research activities are embedded in two-phase incremental methodological framework. Combining different techniques of qualitative research methods [18], the initial part of the study has focused on the analysis of primary and secondary sources, whereas deriving from obtained research results, the conclusive part of the research is striving to integrate theoretical and practical aspects regarding the research subject. Selection of research methods was adapted to the research field [18][19] given the complexity of e-government evaluation initiatives.

Following the introduction, the second section of the paper presents the concept of public interest and an overview of the relevant literature while outlining various directions in the evaluation of e-government policies, key evaluation levels within the existing evaluation practice, and related issues and barriers. The third section provides an analysis of the existing methodologies for the evaluation of e-government policies and summary of their general characteristics. The fourth section explores the presence of the public interest aspect and sketches the research findings regarding the representation of the public interest dimensions in the existing evaluation methodologies. The discussion of the research results emphasizing the future trends in conceptualization and implementation of e-government policies is contained in the fifth section. The last section outlines the limitations and applications of the proposed research, and subsequently submits the final arguments and observations regarding the research results and future work.

II. CONCEPT OF PUBLIC INTEREST AND METHODOLOGIES FOR THE EVALUATION OF E-GOVERNMENT POLICIES – STATE OF THE ART

The public interest is not a unitary concept: different public interests are relevant in different scenarios and need to be weighted differently depending on the circumstances [16]. Public policy makers, expert public and citizens have to find the appropriate balance of the numerous public interests that may exist in any given situation. Finding this balance will not only involve comparing the relative importance of one public interest to another but also involve the contemplation of the interconnection of public interests

and considering the broader impact that these may have in turn on other public interest networks [20].

Although there are different conceptions of public interest inaugurating different research perspectives, most frequently, public interest is viewed as a set of substantive ideals against which all policy proposals should be judged. The concept is thus recognized as a symbol to which all agree (few people are opposed to the public interest) and to which special interests appeal in order to rationalize their policy desires [21]. Regarding the contextual platform consisted of political and cultural framework of a particular society and the economic resources at its disposal, the public interest is defined as the aggregate of the fundamental goals that the society seeks to achieve for all of its members – not for a majority of its members or for any large and powerful group, but for all of the people within the society. Considered separately, a society's goals are often in conflict with one another, and in that case there must be a balancing. Thus, the art of government consists of achieving a harmonious rather than a destructive balance among conflicting goals [22]. Some authors have studied the public interest concept from the aspect of substantive truths or principles. These truths or principals are not formal tests that any public policy must meet; however, general they may be and however, much skill may be required to apply them in particular cases, they provide substantive guidance to the proper content of public policy [23]. While others consider public interest and its dimensions primarily as a process of public action, primarily bargaining and competition between different interest groups, resulting in the overall social consensus [24]. Summarizing numerous and occasionally complex definitions of the public interest concept, it can be generally regarded as a set of commonly agreed goals arising from the inclusive and transparent deliberating procedure, based on compromise and shared values of well-defined social community.

Despite its complexity and diversity of research approaches and perspectives, the public interest concept is elaborated relatively well in theory, whereas it has failed to gain significant attention in the majority of e-government evaluation undertakings. Consideration of the public interest concept in methodologies for the evaluation of e-government policies is often inadequate and superficial covering prevalently financial factors and omitting all other societal aspects while reducing the potential of the evaluation process for objective and comprehensive evaluation.

A. Methodologies for the evaluation of e-government policies

In parallel to e-government development, there have emerged numerous methodologies, trying to evaluate its development and effects on different parameters of government operation. According to their characteristics and subject of the evaluation, these methodologies could be classified in typical groups presented below.

1) Front-office maturity and readiness

The most known benchmark measurements on the EU level have been conducted by Capgemini [8][9][10], while

the most renowned benchmark measurements on the global scale have been carried out by the UN [15][25], Accenture [26] and Brown University [27]. While focusing primarily on the web site analysis, these methodologies used completely different indicators (from measuring 20 specific e-government services to web-based analysis of national portals, particular ministry portal, etc.). Indicators from these methodologies are not precise enough to ensure the comprehensive evaluation and validation of e-government policies on the national level (see critical analysis of such benchmark measurements from [13][28][29], etc.). On the other hand, some important benchmark measurements dealing with e-readiness or so-called e-government readiness, which could form the basis for planning of the necessary infrastructure for e-government development are: The Global Information Technology Report [16], Digital economy rankings [30] and United Nations e-Government Survey [15][25]. These benchmark measurements deploy different sets of indicators for benchmarking e-readiness and information society in general. Being predominantly focused on front-office change and infrastructural requirements during the conceptualization and implementation of e-government policies, these rather extensive methodologies are hardly providing the evaluation of the public interest, incapacitating its incorporation in the process of further e-government development.

2) Effects and impacts of e-government policies

Within a number of methodologies focusing on ex-ante and ex-post evaluation of e-government policies we could highlight: MAREVA [31], eGEP [32], WiBe 4.0 [33] and Australian AGIMO [34]. MAREVA and accompanying tools are dealing with the ex-ante and ex-post evaluations of e-government policies on the basis of parameters such as profitability, risks, benefits to external users and civil servants, services and project necessity; similar aspects are evaluated by WiBe 4.0. Main purpose of eGEP is to identify and analyze costs of establishment, provision and maintenance of e-government services on the EU level, as well as to develop methodology for the evaluation of their performance, and conduct an economic analysis of e-government impacts. AGIMO has additionally developed the demand and value assessment methodology. In general, we could find these methodologies very exhaustive in terms of the large number of indicators; however, they rarely address the concept of public interest comprehensively, while particular narrow dimensions of public interest are normally amalgamated with financial benefits.

Implementation of e-government policies significantly affects public sector organizations. Focusing on different organizational dimensions Klievink and Janssen [35] analyze joined-up e-government model, Fleur van Veenstra et al. [36] explore organizational changes in the direction of network government, Schedler and Schmidt [37] analyze management, organizational culture and external factors, which affect e-government development, Scholl [38][39] studies business process change, information management capacity and organizational capabilities, while Leitner and Kreuzeder [40] highlight organizational culture aspect as being the one most affected by the e-government initiatives.

An overview of related methodologies reveals there is no clear consensus on organizational changes caused by e-government implementation, and consequently no comprehensible methodology to measure significant implications of transformed public sector organizations for the various social aspects and implementation of public interest.

3) National-level development

External factors have very significant impact on e-government development; surveys often highlight political and sociological factors as the most important external factors. This aspect is partially discussed in United Nations e-Government Survey [15][25] through indicators such as e-participation, e-inclusion, e-consultations, e-decision-making. Study of Martin and Byrne [41] focused on critical factors of information society development and analyzed components of this concept. Their survey provides a set of political and sociological indicators for the evaluation of e-government such as accessibility, digital divide, north-south divide, human rights, social welfare, social inclusion, economic sustainability and life-long learning. However, we can see that such indicators are very general and it is hard to incorporate them in a national context and determine their actual impact and correlation with e-government development. Activities on national economic level could significantly affect e-government development in individual country [12], so national economic factors must not be neglected. Bavec and Vintar [42] developed a model in their study, which aimed to identify relationships between national economic indicators and e-government indicators on the national level and on the EU level. National economic indicators surveyed in presented study comprised: GDP per capita, competitiveness, economic performance, government efficiency, use of ICT in the private sector, innovation index and internet access. The study above is one of the few trying to define correlation between national economic indicators and e-government development indicators. Research work in this field is rather limited; Kim [12] and Singh et al. [43] are partially dealing with national economic indicators and their implications for e-government within their research work. The aspect of public interest within outlined methodologies is poorly elaborated and thus inadequately evaluated, while it appears that identification and formulation of vaguely indicated long-term public goals is hardly reached by public consensus.

4) Evaluation of e-government policies – issues and barriers

Evaluation of e-government policies is generally difficult [7][9][28][29], given the numerous obstacles to the evaluation (Table 1) [44], complexity of the public interest and frequent lack of clarity of objectives owing to the different and often competing views held by different stakeholders. In addition, overlapping initiatives and policies and their continuous fine-tuning related to volatile public opinion complicate monitoring and evaluation. The fact that e-government is relatively new is probably the main reason for fewer models and actual outcome experiences that can be used for benchmarking [44] and inclusion of public interest dimension. Problems addressed

become aggravated trying to evaluate particular e-government projects. ICT projects are hard to evaluate because of the pervasive nature of ICTs, the integration of ICT goals with public policy goals and the organizational changes that necessarily accompany e-government initiatives. In addition, evaluators are often faced with a lack of data caused by the piecemeal management of the project documentation. Although materially incomplete and discrepant to the actual data, the project documentation is usually tailored to the financial reporting standards, which additionally distorts the real picture and consequently prevents quality evaluation process.

TABLE I. OBSTACLES TO E-GOVERNMENT EVALUATION

Obstacle	Example
Lack of clarity of objectives - stated goals may not have associated measures of progress; there may be multiple objectives	Hard to measure "quality of life".
Hard to define success	If people are spending more time online, is that good or bad?
Easy to be too ambitious	Several countries have set targets of "all services online" by specific dates. But not all services are appropriate to put online.
Information paradox	The benefits of ICT investment may not be visible for some time.
Question of who are the clients; multiple clients	Should one evaluate benefits for the users, the employees, the government at large, partners, etc.?
Hard to measure shared benefits	Shared infrastructure, multiple projects benefiting from shared portal, etc.
Private sector tools may not work for governments	Governments place importance on social values that are not incorporated into private sector tools and objectives.
Available indicators may not be the good ones	Current indicators (such as number of employees with internet connections) are helpful, but have limits.
Government definitions and methodologies vary from one country to the next	Collecting data is easier at the local level, but at that level administrations are highly decentralized.
Incentives to misstate evaluation results	If an organization succeeds in saving money, telling others may result in their losing that money.
Challenge of sharing results	Hard to get organizations to report unsatisfactory results.
What you measure may become focus of organization	If you measure number of services online, but not service quality, priority will be on putting services online but not on service quality.

The effective evaluation including the aspect of public interest requires good metrics, regular monitoring and reporting, disciplined and professional use of the robust evaluation frameworks, and use of the long-term evaluation practices. These qualities depend on a government's overall evaluation culture [44]. E-government project failures could have been mitigated by appropriate and comprehensive evaluation in the course of their conceptualization and planning [13][45][46]. The identification and elimination of the main obstacles to e-government evaluation, which obviously extend to several areas, such as: institutional, political, social, and cultural area, will require a broad consensus and strong commitment of all stakeholders

B. Key evaluation levels within e-government policies

Besides categorization according to the subject of evaluation, overview of the existing evaluation methodologies reveals they can be applied on the different evaluation levels within e-government policies. Majority of the methodologies mentioned so far are partial and mostly focused on the particular evaluation level within e-government policy. These evaluation levels are not explicitly defined, although a detailed analysis of the current evaluation practice facilitates the extraction and synthesis of the relatively stable and constant evaluation levels, which are covered by the existing evaluation methodologies. These evaluation levels are illustrated in Figure 1, and outlined below:



Figure 1. Evaluation levels within e-government policies.

- Evaluation of infrastructure investments: costs of ICT infrastructure, data infrastructure, human resources, legal framework (infrastructural level);
- Evaluation of inputs, processes, services, operational and maintenance costs, outputs and outcomes of e-government projects (project level);
- Evaluation of transformational effects: changes in back-office, the reduction of hierarchical levels, business process reengineering, outsourcing,

reduction of administrative barriers, costs and burdens, etc. (organizational level);

- Evaluation of political and sociological effects: transparency, openness, corruption, user satisfaction, democratization, participation (political-sociological level);
- Evaluation of economic impacts: costs, public benefits, effects on GDP, competitiveness index, economic growth, sustainable development (national level).

1) Infrastructural level

Infrastructural level primarily refers to maturity or environmental readiness for e-government and e-commerce. Research in this area is focused either on the internal or external aspect of e-government. The internal aspect research is primarily engaged in [47][48]: strategies, policies and action plans for development of e-government, the legal frameworks for e-business, policies for ICT usage, the existence and use of appropriate information infrastructure, training of human resources for e-government, knowledge management about the benefits and pitfalls of e-business, financial issues, motives and obstacles for the development of e-government. Research on the external aspect of the environment maturity is particularly concerned with [47][48]: ownership, user interest and degree of ICT infrastructure usage (including the digital divide), the obstacles and reasons for lack of e-government services usage and opinions related to the development of e-government in general. Most studies of the environment maturity do not treat internal and external aspects separately.

2) Project level

Project level consists of the research primarily engaged in: 1) ex-ante evaluations of projects aiming to establish priorities for further development, 2) ex-post evaluations of projects aiming to evaluate the effects of projects, 3) decisions on the external and / or internal implementation of projects (in/outsourcing). Regarding the first two points, a review of research shows that methodologies of this type often underestimate public benefits (public value) and so-called intangible (hidden) costs such as costs of organizational change. The third point notes significant advantages in outsourcing of ICT projects, however, outsourcing initiatives must be carefully scrutinized, while the impact of the short-term cost-effectiveness and its potential implications on the achievement of long-term goals of public sector organizations must be elaborated and evaluated. Studies [49][50][51] often reveal the hidden costs, vendor-lock in as well as loss of control and competencies as the most problematic segments of outsourcing. On the other hand, research is rarely dealing with the other negative consequences of outsourcing, which may pose a potential threat [52][53][54].

3) Organizational level

E-government implementation initiates changes at the organizational and inter-organizational level. Previous research dealing with this field is primarily focused on: changes in the organizational structure, business process

reengineering and changes in organizational culture and human resources. Studies dealing with changes in the organizational structure are focusing on the reduction of hierarchical levels, decentralization of activities, standardization of procedures, coordination, control and transformation of the existing relations inside and outside the organization [35][55][56]. Research dealing with the business process reengineering is analyzing horizontal implementation of processes (integration of functions and services), vertical implementation of processes (integration of organizations), speed of information exchange, changes in process definition rules and changes in time and place of operation [38][57][58]. Research exploring the change in organizational culture is primarily dealing with: changes in the philosophy of employees and leaders, strengthening the sense of affiliation to the organization and enhancing confidence in organizations [37][59]. Changes in human resources refer to the new skills and knowledge that employees need to comprehend due to e-government implementation, while managers should be able to combine knowledge of ICT and understand the process dimension of the organization [40]. However, most of the studies address all of these organizational dimensions at least indirectly, suggesting that the analysis and evaluation of organizational changes when introducing e-government should be multi-dimensional and requires a comprehensive strategic approach.

4) *Political-sociological level*

Proliferation of advanced ICT solutions and development of e-government have changed the social structure and political-sociological paradigm of the country as the widest social community [15][60]. Political-sociological effects of ICT and e-government on the society in general are very complex. They have a significant impact on changes of the social environment, they are affecting old and creating new forms of work and mindsets, they are changing perception of the world and social relations [61][62][63][64]. Accordingly, the existing methodologies are converging on the following aspects of e-government evaluation: accessibility [5][25][59], citizens' trust and confidence [26][65][66], digital divide [5][44][60][67], social stratification and cohesion, citizens' rights and democratic participation [6][16][41], openness, transparency and corruption [10][15][25]. Notwithstanding that reliable and adequate evaluation of wide-ranging e-government impacts could provide key information to policy makers needed for steering the development of e-government and e-services to the right direction [7][10], integrated methodologies covering comprehensively political-sociological aspects of evaluating e-government policies, are rather scarce.

5) *National level*

Research on national level is focusing on a clear difference in the efficiency and effectiveness of different countries regarding the implementation of e-government policies and the evaluation of national economic indicators and their impacts on e-government policy. Namely, economic activities on the national level are significantly affecting the level of e-government development in each

country. Up to date research considers the basic and most important economic indicator on the national level, affecting the development of e-government, to be GDP per capita [42][43]. Sing et al. [43] assume that GDP plays a crucial role in the development of e-government via three influential factors (technological infrastructure, human capital and management index). Other prospective indicators at national economic level are: competitiveness, economic performance, government efficiency, use of ICT in the private sector, innovation index [42], education and urbanization [12]. National level indicators are obviously overlapping with the political-sociological level indicators through political institutions, legal environment, tradition of governance, political culture, socio-cultural environment and civil liberties [68][69].

Numerous difficulties were encountered trying to delineate the above itemized evaluation levels covered by particular methodology, since the contained indicators are not clearly defined, enabling their speculative use on the different evaluation levels. Moreover, associated indicators are appearing in dozens of different methodologies, including a large number of overlapping. Definitions of the indicators vary widely, while the evaluations are carried out on completely different methodological basis. Consequently the results of the evaluations, even if they are methodologically quite objectively conducted, are very difficult to compare.

Development of a comprehensive and practically applicable methodology for the evaluation of e-government policies is obviously a difficult task. Namely, the majority of methodologies, which have tried to cover several evaluation levels within e-government policies, are developed only up to the conceptual framework or maximum pilot application. The latter shows that covering larger number of evaluation levels usually means that the evaluation methodology has achieved a lower degree of sophistication, which consequently reduces the potential of the methodology for its practical application. This is not unexpected, since the focus on several evaluation levels means more complex methodology structure and a larger number of indicators, which exacerbates the transparency and complicates the use of the methodology itself. Research results indicate that achievement of the highest degree of sophistication and practical application of the methodologies for the evaluation of e-government policies is largely dependent on the number of evaluation levels the methodology is focused on, and vice versa, meaning that the comprehensiveness of the evaluation methodologies is to a large extent conversely related to their degree of sophistication.

III. ANALYSIS OF THE EXISTING METHODOLOGIES FOR THE EVALUATION OF E-GOVERNMENT POLICIES

The review and meta-analysis of the existing methodologies and various alternative approaches for the evaluation of e-government policies was conducted in the second half of 2011. During that time we conducted an analysis of primary and secondary online resources, policy papers, reports, books, strategic documents, action plans and

other documents containing e-government related research. Due to the nature of the research problems, the inquiry included the sources that are freely available online as well as the sources, which are indexed in subscribable bibliographic databases such as Web of Science, Scopus and ScienceDirect. In the initial phase of the review, we used keywords of evaluation, assessment, measurement, monitoring, indicator models, e-government projects, e-government policies and effects (impacts) of e-government policies (including the logical coordinating conjunctions “and”, “or” when appropriate). Using the specialized search engine we subsequently identified and retrieved 380 related references in total (Fig. 2).

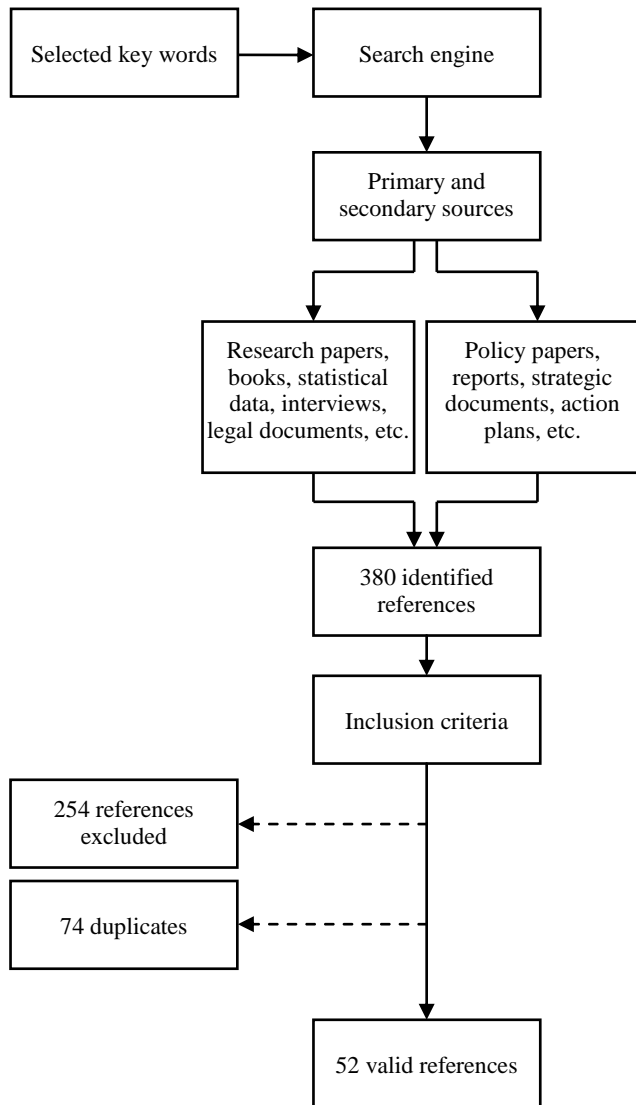


Figure 2. Literature research sequence diagram.

The frequency of references is becoming much higher in the second half of the last decade, proving the field is evolving rapidly and the interest of both the research community as well as policy makers on national and

international level is increasing. In the second phase of the review, the identified references were tested by the inclusion into the research framework containing two criteria, namely 1) identified reference must be completed project where the evaluation of e-government policies is clearly outlined as the main research objective and 2) the reference must contain explicit indicators or benchmarks for the evaluation of e-government policies. Duplicated references and references, which did not comply with both criteria as set out in the research framework, were eliminated. After substantive verification and filtration, the vast majority of the items were excluded, leaving only 52 valid references (Fig. 2). The identified methodologies and their publication types are catalogued in Table 2.

TABLE II. IDENTIFIED METHODOLOGIES FOR THE EVALUATION OF E-GOVERNMENT POLICIES

Author(s) – Year	Publication type
[31] [32] [33] [34] [70] [71] [72] [73]	Handbook / Tool
[10] [15] [25] [44] [74] [75] [76]	Policy paper
[12] [35] [36] [37] [39] [40] [41] [42] [43] [55] [56] [57] [58] [59] [60] [65] [66] [68] [77] [78] [79] [80] [81] [82] [83] [84] [85] [86] [87] [88]	Academic paper / Book
[14] [16] [89] [90] [91] [92] [93]	Report

Conducting our review we have identified basically three types of references dealing with our subject of discourse. Taking into account their development level we categorized the identified methodologies into three groups: 1) purely theoretical papers aiming to develop some kind of conceptual framework for the evaluation of e-government policies, 2) research efforts developed up to the degree of pilot application, and 3) methodologies developed in the practice (practical application).

Analyzing the diverse variety of the evaluation methodologies identified in this area, certain general characteristics were identified and summarized below:

- The majority of the identified methodologies (30) for the evaluation of e-government policies are presented in scholarly papers and books.
- Certain methodologies are rather abstract containing speculatively selected indicators often encompassing non evidence-based theoretical platforms, while their utilization does not facilitate the acquirement of quantifiable evaluation results.
- Accredited methodologies are to a large extent narrowly focused assessing predominantly one of the various evaluation aspects.
- More mature methodologies are consisted of a large number of indicators, which are normally aligned for the evaluation of e-government policies in the originating countries.

- The majority of the identified methodologies are not providing a comprehensive evaluation of complex e-government policies impacts and their potential long-term outcomes.

After general characterization of the identified evaluation methodologies we focused more closely on the most prominent ones, such as MAREVA [31], WiBe 4.0 [33] and AGIMO [34], which have been most extensively used in everyday evaluation practice.

MAREVA methodology was launched in 2005 by the French eGovernment Agency (ADAE) and has already been applied in hundreds of e-government initiatives in various ministries and public sector organizations all over the country. MAREVA methodology was devised for ex-ante and ex-post evaluation of ICT projects, as well as monitoring of their progress. Whereas the evaluation methodologies in the field tend to be rather complicated and complex, MAREVA methodology has managed to keep the evaluation process relatively simple, by providing common and standard evaluation criteria, and generating the evaluation summary reports easily understandable by all actors in the ICT project (from decision-makers to project leaders and executives). MAREVA methodology provides the evaluation of ICT projects through 5 analysis grids and restores the value on a five-axis radar graph, containing the following dimensions: 1) state financial value (Net Present Value, Internal Rate of Return, break-even point), 2) public service social & operational value (state employees valorization, improvement in public services efficiency, help the decentralization implementation, additional financial value – public services without state), 3) direct customer value (number of users impacted, saved time/money, improvement in service quality, promotion of the information society, impact of an intermediary), 4) project necessity (necessity for other ICT projects, legal or political obligation, state's policies efficiency), and 5) risk (project risk, technical risk, legal risk, and deployment risk). Deriving from the evaluation objectives, MAREVA methodology is expected to facilitate prioritization of e-government initiatives by evaluating and comparing different projects, early identification of project risks and pitfalls and adoption of appropriate measures, informed decision-making and knowledge building, evaluation of the project value by integrating financial categories and impacts, and monitoring of different stages of the project life cycle. MAREVA methodology has influenced many evaluation initiatives in France and other countries and has been acclaimed as an example of good practice.

WiBe 4.0 methodology was introduced in 1992 by the German Federal Ministry of the Interior, and has been regularly tested, and extensively used and updated since. WiBe 4.0 methodology is focusing on four dimensions of the evaluation: 1) economic efficiency in a monetary sense – profitability, 2) urgency of the ICT measure, 3) qualitative and strategic importance of the ICT measure, and 4) external effects of the ICT measure. Each dimension represents a wide-ranging set of indicators, too exhaustive for inclusion in the text (see [33]). Pursuant to the general administrative regulation in Germany, the application of WIBE 4.0

methodology is mandatory in all administrative organizations on the federal level, federal states, and municipal organizations when making budget planning and facing complex investment decisions on large-scale ICT projects. Although designed primarily for ex-ante evaluation and focused predominantly on the economic efficiency of the ICT investments, evaluation of monetary aspects, project costs and benefits (internal and external), and simulation of budget-relevant outcomes, WiBe 4.0 methodology also facilitates qualitative evaluation of designated non-monetary aspects and benefits analysis, reflecting the long-term effects of planned ICT investments. In addition, the technical concept of WiBe 4.0 methodology itself is transferable and usable in other public policy areas as well. On the other hand, WiBe 4.0 methodology does not contain a specific category of indicators for the evaluation of the potential risks and threats, which represent an important decision-making factor, especially in the context of larger and long-term oriented e-government projects.

AGIMO methodology was introduced in 2004 and is derived from a number of previous documents of Australian government relating to the effective implementation and evaluation of e-government policies and projects. It has been widely used in Australian public sector and is considered one of the most comprehensive evaluation methodologies in the e-government field. AGIMO methodology [34] consists of five steps: 1) outline the business case (program identification: objectives, scope, outcomes, outputs, when/who applies), 2) define the business need (demand assessment: sources of demand, demand context, demand measurement, scope), 3) estimate the value (value assessment: social value, user financial value, governance value), 4) conduct a cost & benefit analysis (costs: agency financial value, capital expenditure, operating expenses, benefits, cash flow & ROI, summary charts; benefits: agency values/worth, strategic value, program summary), and 5) assess risk and review (impacts, likelihood & consequence of risk: risk assessment, strategy/alignment, architecture/integration, delivery capability, benefits and value). In accordance with an extensive range of indicators (listed are only the first level indicators) AGIMO methodology provides a framework for measuring social and financial benefits and cost, and a platform for the evaluation of project value, risks assessment, and related decision-making. Adequate application of the AGIMO methodology should allow for articulation of the drivers of benefits and costs, comparison and ranking of alternative ICT projects, and alignment of individual public sector organization objectives with broader government strategies.

All three methodologies are based on relatively simple software platform, which on the one hand simplifies their use and increases transparency, while on the other hand, it considerably limits a wide range of functionality such as simulation, visualization and sensitivity analysis, which could significantly assist decision-makers in adopting more sound decision. Analyzed methodologies are based on national characteristics of the administrative system and include material, procedural, legislative and other specifics of the public sector from which they originate. They are

extremely detailed and extensive, containing a large number of indicators, which are specifically tailored for the evaluation of adequately documented e-government policies from the well-structured and organized administrative environment. These and similar particularities substantially restrain their transfer and application in environments such as Slovenia, where the evaluation efforts are still in the early stage, and similar projects are rather poorly documented, preventing the collection of necessary data for the detailed list of indicators, as required by the aforementioned methodologies.

All of the above-mentioned methodologies are undoubtedly applicable to the certain extent and can improve the quality of decision-making processes in the e-government field, however, they reveal important limitations and deficiencies, and consequently fail to facilitate the evaluation of e-government policies in an all-encompassing manner. Although all of the outlined methodologies have achieved a high level of maturity, some crucial aspects of the public policy evaluation, such as the public interest, are unreasonably understated and marginalized. Depending on the nature of public policies and their declared purpose, one would expect that evaluation of the public interest implementation, should take a more central place in all evaluation experiments, and given the current situation in the field, try to compel the policy-makers to reconsider the strategies for future development of e-government.

IV. PRESENCE OF THE PUBLIC INTEREST ASPECT IN THE EXISTING EVALUATION METHODOLOGIES

The concept of public interest, or public value as it is also referred to, is gradually becoming the innovative driver in modern e-government endeavors [94][95]. Regardless of their perception of e-government, the increasing number of authors [96][97] argue that the conceptualization and ensuing implementation of the public interest is one of the e-government explicit priorities. ICT-induced reform of the public sector organizations [98] should aim at producing public value for citizens [97], facilitation of their empowerment [99], and promote the use of e-government to increase the odds of the public interest implementation [96].

Nevertheless, e-government is often described as simply the means of automation, without any broader societal considerations. Simultaneously and somewhat surprisingly, an up-to-date evaluation practice in the field has failed to provide compelling evidence of benefit that is required to make a real impact on mainstream policy debates. It is for these reasons that the use of the concept of public value in relation to e-government has much to commend it. As an analytical framework referring to the value created for citizens by government, public value can be used to aid decision making, to assess performance and, in the e-government context, to provide a bridge between the technology and wider policy communities [98].

Quest for protection of the public interest, as presented in the theory [17][23][24], should be at the heart of every e-government policy-making process, while its various dimensions should be comprehensively covered in the setting of the long-term public goals. The latter assumption

requires accountability of public policy makers and evidence-based decision making, which must be based on comprehensive and balanced methodologies facilitating the evaluation of various aspects of the designated e-government policy, its effects and the potential far-reaching consequences. Deliberation between public stakeholders [69], transparent policy-making process and definitive public consensus will increase the viability of high investments in e-government and facilitate positive response to the e-government policy, and more beneficial acceptance of new e-services while allowing the pursuit of public interest and overall social development.

Growing number of the evaluation methodologies and their substantial diversity regarding the evaluation focus and the degree of sophistication significantly complicate the establishment of a theoretical framework that would allow a detailed analysis of the public interest concept and its representation within the addressed evaluation attempts. As has been stated earlier, despite the importance of adequate evaluation of e-government policies and their impacts [7][10], integrated methodologies covering the aspect of public interest comprehensively, are rather scarce. Findings regarding the public interest aspect contained within the existing methodologies are categorized below:

- The aspect of public interest is assigned a peripheral role in most of the existing methodologies for the evaluation of e-government policies.
- The concept of public interest is not clearly elaborated and categorized in the existing methodologies, preventing its comprehensive inclusion in the actual evaluation undertakings.
- Methodologies are applying large number of indicators when focusing on the evaluation of the costs, benefits and risks (the most segments of public interest aspect are usually incorporated with benefits). However, the aspect of public interest in its individual form is usually allocated a very small number of indicators.
- Covering public interest in the existing methodologies is particularized, usually including arbitrarily selected dimension of public interest.
- Aspect of the public interest presented in the methodologies is often inadequate and superficial focusing predominantly on financial benefits and omitting all other societal aspects while reducing the potential of the evaluation process for objective and comprehensive evaluation.
- The existing examples of the integration of public interest aspect in the methodologies are speculative, since the segments of the public interest within the methodology were developed by policy makers without appropriate deliberation procedure and public consensus.

Accordingly, inclusion of the public interest concept into the comprehensive methodology for the evaluation of e-government policies should encompass the following activities:

- Analyze the overall evaluation field and define the particular aspects of the evaluation within e-government policy (e.g., infrastructural aspect, organizational aspect, political aspect, etc.).
- Define and clearly structure the notion of public interest and associated components. Constructs should not be too abstract, because it could prevent the acquisition of the required data, establishment of the indicators and their measurement in practice, decreasing the overall evaluation success.
- Concept of the public interest should constitute a relatively autonomous category, preventing the dissipation of its components between other aspects of the evaluation, which could significantly diminish its importance.
- Delineate the aspects of the evaluation as much as possible and prevent overlapping and transition of the indicators from different aspects of the evaluation.
- Conceptualize adequate and measurable indicators containing precisely specified object and unit of measurement, structure, context, etc.
- Indicators should be specifically focused on the evaluation of the long-term public interest and goals that have been set out in the designated e-government policy. Evaluation of the public interest concept should be multidimensional including the demand side of e-government services (user preferences, needs and satisfaction, etc.), general value of e-government policy for all social groups, its contribution to sustainable and inclusive social development, human rights and liberties, development of democratic values, etc.
- Assign appropriate weight to the concept of public interest and its components in the final aggregation of the evaluation results.

When trying to integrate the concept of public interest into the comprehensive methodology for the evaluation of e-government policies, we need to consider that besides formal activities some other important substantive issues have to be catered for as well. Namely, the specificity of the public interest concept requires the utilization of the creative and applicable indicators, which must be focused on three important sources, which generate the public value, such as [98]: 1) quality of services, since the perceptions of services are driven by a series of factors such as their availability, the satisfaction of users, the perceived importance of the service and the fairness of its provision and finally its cost, 2) achievement of outcomes that are seen as desirable by the public such as improvements in health, reduced poverty or environmental improvements, and 3) trust in public institutions is an important source of public value, making citizens more likely both to accept government action and to feel a sense of association with it.

V. DISCUSSION

While the study of public policy began almost 100 years ago [100][101], the researchers are still trying to unravel the

defining characteristics of this phenomenon and erect a theoretical framework for understanding the intricate effects and mechanisms of public policies. The general understanding of the public interest and especially the design of the public policies have undergone various stages during this period, while recently it is possible to identify the presumably three key factors that will determine the future trajectory of public policy-making: 1) progress in the field of social sciences and the development of policy analysis as an emerging social science discipline, which uses multiple research methods in order to generate the simulation and (ex-ante and/or ex-post) evaluation of the effects of public policies, and provide policy-makers with relevant and applicably clustered information, pertinent for decision-making in the designated field, 2) trends of democratization, growing public engagement of citizens and participation in decision-making on public issues, increasingly proactive role of the civil associations and non-governmental organizations in policy-making processes and protection of the public interest in all phases of the policy-making cycle, and 3) redefinition of socio-political priorities and conceptualization of public policies, which address the public issues as part of a comprehensive and long-term strategy, taking into account the requirements for protection of the public interest, on one hand, and budgetary capabilities in providing the conditions for balanced economic and sustainable development, on the other. Despite the conceptual divisions and differences in the perception of public policy notion, the definition and articulation of public interest issues, and transparent public policy-making procedures continue to be vital in addressing social concerns.

Stemming from the general premises concerning the future trends in the field of public policy-making, which summarize the critical success factors and frame the boundaries of the public policy concept itself, trends in the development of e-government policies and services have been declaratively diverging in two directions: 1) transformation of the public sector organizations in terms of increased efficiency, effectiveness and provision of more user-oriented services, through business process reengineering and integration and reorganization of back-office operations, transparent and accountable management of material and immaterial resources, extensive integration of data repositories and ensuring the interoperability of fragmented information systems, and 2) reconceptualization of e-government in terms of redefinition of content and delivery channels of e-services, increased focus on demand, rather than supply side, promotion of user acceptance and accessibility, reduction of administrative burdens and barriers (temporal and financial losses), improved performance and integration of customized e-services, citizen empowerment and inclusion of underprivileged groups, open access to information, and stimulation of the penetration and adoption of e-government services in the different spheres of society (health care, social welfare, environmental issues, education, justice, entrepreneurship, etc.).

However, the current state of affairs concerning the improved conceptualization and implementation of e-government policies is rather discouraging, as more and more evidence indicates a considerable gap between the declarative positions of e-government policies and everyday practice. According to many authors in the field, the concept of e-government has fallen short in an area where we expected the most, namely in promoting, implementing and protecting the public interest. There are many reasons for the present situation, which evidently depends on the complex socio-political dynamics in modern societies. However, all the facts suggest that one of the main reasons for the discrepancies between expectations and actual experiences (reality) is the inadequacy of current approaches used for the evaluation of e-government policies and related decision-making. Lacking formal procedures and reliable methodologies for the evaluation of e-government policies and their long-term effects consequently results in poor quality conceptualization, planning and implementation of e-government policies. While focusing on recent developments in the field and the analysis of identified methodologies for the evaluation of e-government policies, literature overview revealed a multitude of topic-related approaches, which have been used in previous research studies and the evaluation endeavors in this area, but still, their utilization in the process of the comprehensive evaluation of e-government policies is only conditionally exploitable.

Given the existing political debate, focusing predominantly on economic issues and rigorous budgetary restrictions, and disregarding the support for the development of more applicable evaluation methodologies in the field, the current e-government situation is likely to remain unchanged for some time. Irrespective of the fact that renewed and complemented evaluation methodologies could assist policy-makers in all three steps of the public policy-making process, namely: agenda-setting, option-formulation, and implementation. Alarming socio-economic situation in Slovenia could jeopardize the latest reform efforts and compel the government to concentrate on predominantly short-term economic issues and lower the investments for development of e-government in general, which could result in far-reaching implications for the public sector. Determination to resolve the pertaining problems with e-government development and implementation, enable better exploitation of ICT in the public sector organizations and eventually provide tangible benefits for providers and users, will therefore require the mobilization of all stakeholders and experts in the field, construction of the comprehensive and applicable analysis and evaluation tools, and a broad consensus about the priority areas within the e-government domain.

VI. CONCLUSION AND FUTURE WORK

Analysis of the methodologies for the evaluation of e-government policies has emerged as a very challenging mission. Despite limitations, seen mainly in the large diversity of the evaluation methodologies and absence of a unified and clear theoretical framework, conducted analysis

provides a valuable insight into the current e-government evaluation practice and facilitates exposure of inadequately evaluated public interest areas in the domain of e-government policies. Present public finance situation along with increasingly stringent austerity measures require careful direction of further e-government investments, particularly focusing on the proficient development of suitable ICT-supported solutions, which could enable enhanced policy-making procedures and optimization of the public sector in general. The analysis results represent an advance in research of the evaluation metrics and may eventually provide a solid platform for the establishment of a comprehensive methodology for the evaluation of e-government policies including the public interest aspect. This could enable e-government decision-makers to conduct more qualified and quantified planning, implementation and evaluation of e-government policies – be it before or after their execution (ex-ante or ex-post), which should consequently initiate more user oriented, cost effective and performance-based development of e-government and enhance its overall harmonization with the public interest.

It is evident that problems in the development of e-government are strongly interrelated with the low quality and underdeveloped methodologies for the evaluation of e-government policies and their public effects. A wide range of research and the existing evaluation methodologies reveal that the past development of e-government, and particularly e-services was based primarily on political preferences and only exceptionally on professionally verifiable and measurable impacts of these services. Addressed shortcomings will have to be resolved, in order to ensure quality evaluation and disclosure of objective situation in the field, which could ultimately initiate the broader inclusion of the public interest dimensions into the e-government policy-making procedures, and accelerate the overall development of e-government policies and appropriate e-services with added value for all stakeholders.

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