Government Information Quarterly xxx (2012) xxx–xxx

Contents lists available at SciVerse ScienceDirect

Government Information Quarterly

journal homepage: www.elsevier.com/locate/govinf

Measurement and benchmarking foundations: Providing support to organizations in their development and growth using dashboards

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ARTICLE INFO

Available online xxxx

Keywords:
Measuring
Benchmarking
Stage models
Stages of growth
Maturity
Improvement
Dashboard

ABSTRACT

Growth and stage models often lack a sound empirical and theoretical base and do not provide any help for organizations to improve. Measuring and benchmarking (M&B) is necessary for understanding an organization's position and identifying growth opportunities. Yet M&B methods are often not based on generalizations of practice and measure only what is directly visible. They are missing relevant elements that can help further development. In this paper, we propose a multi-level measurement framework utilizing a mix of measurement methods to look deep inside organizations. Whereas benchmarking is often based on a single number, deep insight is given by showing the performance in a broad range of areas and views using a dashboard. Guidance for improvement is created by identifying those elements that need improvements. The illustration of the framework in a case study shows that the process of measuring deep inside organizations might be more important than the actual outcomes and that per area different maturity levels might be possible. We provide seven principles that can serve as a foundation for developing M&B and stage models.

1. Introduction

Measurement and benchmarking (M&B) of public organizations is becoming increasingly important for governments and organizations to help them in their development and to take advantage of the newest developments. Benchmarking is the measurement of some elements and the comparison of the outcomes to a certain norm, the benchmark. Whereas the focus of benchmarking is on mutual learning, practice often shows a narrow focus on numbers (Bannister, 2007), most models are developed for certain situations (Coursey & Norris, 2008), and success has been limited so far (Ojo, Janowski, & Estevez, 2011). Measuring is aimed at determining the performance based on some kind of criterion, whereas benchmarking is the activity to compare the resulting scores with some kind of norm. Norms are often derived based on measuring results of other organizations. This type of comparison requires that similar measures can be used among organizations. The results of M&B activities should result in organizational improvement and stimulate organizational learning. Yet many M&B methods do not provide any learning and there is much criticism (see for example Bannister, 2007; Janssen, Rotthier, & Snijkers, 2004; Peters, Janssen, & Engers, 2004). Despite the criticisms, limited attention has been given to develop foundations and guidance for developing improved methods.

Stages-of-growth models are often used to represent the current status e-government (Peters et al., 2004). Often stages are modeled with sequential steps showing the growth, whereas many models are incongruent with each other (Lee, 2010; Siau & Long, 2005). The position within a certain stage is ideally determined using measures and the benchmarking norms are determined by measuring other organizations. Whereas a sound measurement model might be thought as the basis of stage models, often this is not the case. Stage-of-growth models are often based on intuitive appealing models without providing any guidance to determine in which stage an organization is. Often the focus of measurement is on a generic level at the expense of detailed insights (Bannister, 2007; Kunstelj & Vintar, 2004). This difficulty might result in the adverse effects that benchmarks might have limited practical meaning, but might have a huge impact on political decision-making (Bannister, 2007). The measurement is mainly based on the outcome of the past events, is often rather abstract and hardly takes the size, scope, and complexity of the government organizations into account (Bannister, 2007; Gupta & Jana, 2003). This makes it hard to understand the position of an organization and to identify opportunities for improvement. In conclusion, M&B and stages-of-growth models provide hardly any support for organizational development. They can only be used as a start for organizations by giving a global idea about the current position, but leave a void which actually can and should be done and what specific areas are those that need to be improved.

The *goal* of this paper is to develop a M&B method that provides organizations guidance in their development to a higher maturity.

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0740-624X/$ – see front matter © 2012 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.giq.2012.11.002

Current measurement models provide either high-level views or are focused on the particular aspects and provide limited support for organizational development. This paper extends the framework of the paper of Maheshwari, Janssen, and Veenstra (2011) published at the ICEGOV2011 conference by including analyses of practical and theoretical challenges and introducing seven principles for architecting stages-of-growth and M&B models. In Section 2 literature is reviewed and existing M&B models are evaluated. In Section 3 the research method is presented. The multi-level measurement framework and constructs are presented in Section 4. In Section 5, the framework is illustrated in a case study at the Inland Revenue (IR) Karachi, Pakistan. Finally, in Section 6 we propose foundations for M&B and draw conclusions and recommendations.

2. Challenges in measuring and benchmarking

In literature, all kinds of criticism on M&B and stage models can be found, but there is no systematic overview available. Although there are various overviews of stage models (Kunstelj & Vintar, 2004; Lee, 2010; Siau & Long, 2005), there is no analysis of the difference in approaches they take and how they are dealing with shortcomings. We create an overview of criticism and how these are addressed in existing models by reviewing the literature and providing an overview of M&B challenges, and then use these challenges to evaluate existing models. This analysis will show that a lot of models copy each other's methods, but hardly address the criticism and challenges. They merely apply the same concepts to other areas without developing new insights.

2.1. Criticism on M&B and stage models

There are various comparisons of e-government measurement models and methods in the literature. These comparisons include the e-government models developed in practice as well as in research by academics, practitioners, governments, and international organizations. Ojo, Janowski, and Estevez (2005) compared three different surveys, those by the United Nations (UN), Accenture and Brown University to distil out a 'core' set of indicators. Janssen et al. (2004) identified 18 benchmarks in four areas e.g. supply studies, demand studies, information society studies and e-government indicator studies. Kunstelj and Vintar (2004) compared a large number of e-government measurement models used in different countries to show the diversity of these approaches. They analyzed 41 different measurement models focusing on 4 broad e-government aspects i.e. e-readiness, front-office, back-office, and effects and impacts. These broad aspects are further classified into sub-categories i.e. the aspect front-office is classified into demand and supply and the aspect e-readiness into government and citizens and businesses. Each model focuses on certain different aspects and their sub-categories. They found that the central focus of these approaches is the technical aspects with partial annexation of organizational and social aspects which are often much harder to measure as they concern 'soft' aspects. In a similar vein there exist a variety of interoperability measurement models with pre-dominant bias towards technical aspects while hardly including any organizational or social aspects (Group, 1998; Turnitsa, 2005; van der Veer & Wiles, 2008).

Bannister (2007) found that majority of measurement challenges are due to the lack of theoretical foundation, absence of methodological approach, adverse effects of high costs, absurd benchmarking based on end results with no process evaluation, and unstructured implementation methods. He described that the inadequate design and development of M&B methods pledge falsifying the government policies and have adverse cost effects. Coursey and Norris (2008) criticize the majority of e-government models for having weak empirical foundations. They argue that the models clearly lack methodological guidelines and remain intuitive, presumptive and speculative. The origin and development of these measurement models come primarily from practice, and they are derived without employing structured and systematic research methods. These models are incongruent with each other as these are based on different perspectives and use somewhat different metaphors (Lee, 2010). Based on literature review of these measurement approaches and their critiques, we classified the criticism using categories of challenges in Table 1. We make a distinction between theoretical and practical challenges, as these elements should be solved differently. Theoretical challenges should be tackled by developing new knowledge and insight, whereas practical challenges need to be dealt within the actual M&B activities.

Although M&B is given a lot of attention in e-government, there are other areas in which models can be found including quality models (EFQM, 2003; Mayor, 2003; Nabitz & Klazinga, 1999), enterprise architecture maturity models (Schekkerman, 2006), capability maturity model (Paulk, Curtis, Chrissis, & Weber, 1993, 2002), and interoperability maturity models (Clark & Jones, 1999; van der Veer & Wiles, 2008). Although the design and development of these models vary from each other, it is striking that they face relatively similar measurement problems.

2.2. Evaluating e-government stages-of-growth models for M&B challenges

Despite the criticism, stages-of-growth models are still very popular, accepted in various areas and are adapted and used by a wide variety of stakeholders. The literature about criticism is often rather general and does not refer to specific models. Hence, we evaluated the stage models based on the theoretical and practical challenges as shown in Table 1. This should advance our insight if and how stage models have been adapted to the criticism. The selection of stage models is based on a number of citations, diversity and application. Table 2 shows the evaluation selected stage-of-growth models developed between 2000 and 2012. The M (main) indicates that one element is captured and discussed and S (supplemental) indicates that it was mentioned but not given any in-depth analysis or explanation. The characteristic measurement focus in Table 2 shows that the majority of models predominantly focus on the front-office with limited attention towards the back-office and incorporating social aspects. The overview shows that West (2004) and Andersen and Henriksen (2006) models focus mainly on front-office aspects, whereas the Wescott (2001) and Klievink and Janssen (2009) models on the back-office aspects. Although the latter focus on the organizational capabilities, the stages dominantly reflect back-office characteristics. The majority of the surveyed stage models have limited M&B and have a weak theoretical foundation. Most models that measure focus on technology, functionality and features that are visible, but do not include more social aspects like capacity, capabilities, readiness, commitment, user satisfaction and so on. The models merely measure what is there and do not look a step deeper in the organization.

The table also shows that almost all models do not have any empirical or theoretical underpinning. Notable exceptions are Ojo et al. (2011), Janssen and Veenstra (2005), Klievink and Janssen (2009) which use theoretical notions to derive the stages and Siau and Long (2005) and Lee (2010) who conducted a meta-synthesis of existing models. There is often no systematic approach to derive the models and the models seem to pop up at a certain moment in time. The comparison of the stage models reveals that the majority of stage models designed and developed at different time intervals share similar characteristics without any significant advancements being made by addressing the challenges and building knowledge. Finally, Table 2 shows that the stages-of-growth models hardly focus on the organizational level, but remain rather general. As such they provide little help for organizations to develop further. The models do not measure organizational details and do not capture

Please cite this article as: Maheshwari, D., & Janssen, M., Measurement and benchmarking foundations: Providing support to organizations in their development and growth using dashboards, *Government Information Quarterly* (2012), http://dx.doi.org/10.1016/j.giq.2012.11.002