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The Contextual Benchmark Method: Benchmarking e-Government services

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ABSTRACT

This paper offers a new method for benchmarking e-Government services. Government organizations no longer doubt the need to deliver their services on line. Instead, the question that is more relevant is how well the electronic services offered by a particular organization perform in comparison with those offered by others. Benchmarking is currently a popular means of answering that question. The benchmarking of e-Government services has reached a critical stage where, as we argue, simply measuring the number of electronic services is not enough and a more sophisticated approach is needed. This paper details the development of a Contextual Benchmark Method (CBM). The value of CBM is that it is both benchmark- *and* context-driven.

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1. Introduction

Government organizations no longer doubt the need to deliver their services on line. Instead, the question that is more relevant is how well the electronic services offered perform, for instance, in comparison with those offered by other (comparable) organizations.

Benchmarking is currently a popular means for answering this question (Janssen, Rotthier, & Snijkers, 2004). The Dutch Ministry of Agriculture had the same question and wondered how to set up a solid, practical, and usable benchmarking method to benchmark e-Government services. That the method is solid means that the method should have a reliable foundation; that the method is practical and usable means that the method should be applied in practice easily. The Ministry asked us to help them set up this method to assist them in answering their question. The primary goal of the present study is to develop a benchmarking method and to illustrate this method by means of a pilot study.

Benchmarking of e-Government services appeared around the beginning of the twenty-first century (Kaylor, Deshazo, & van Eck, 2001). Bannister (2007) indicates that for the last couple of years at least three benchmark reports have been published per year, which suggests that benchmarking e-Government services has received a great deal of attention. The main goal of benchmarking for government organizations is to improve their electronic services (Aarts, van der Heide, van der Kamp, & Potten, 2005). Improving electronic services should ultimately lead to a higher satisfaction of customers (Dialogic, 2004), as illustrated by Cascadis (2007) (translated from the Dutch): "You can only improve your performance when you now where you are at". Furthermore, Aarts et al. (2005) mention that the willingness of government organizations to cooperate with one another has increased. This trend provides a positive basis for the application of benchmarking as an approach for improving the performance of services.

Janssen et al. (2004) have described the focus of e-Government benchmark studies. By analyzing 18 international studies they came to the following classification terms: information society, e-Government supply, e-Government demand, and e-Government indicators. Kunstelj and Vintar (2004) have also analyzed monitoring, evaluating, and benchmarking studies in the field of e-Government. They came to the following classification terms: e-readiness, back-office, front-office (supply and demand), and effects and impacts.

Current e-Government benchmark studies often take a quite simplistic view of government websites and services and draw sweeping conclusions about their performance. For example, benchmarking the percentage of basic public services online (Kerschot & Poté, 2001; Wauters & Kerschot, 2002). These services are benchmarked by means of identifying the level of online sophistication per service. A similar benchmarking approach can be found in the IDA benchmarking report by Johansson, Aronsson, and Andersson (2001). Kaylor et al. (2001) and Ronaghan (2002) also benchmarked the level of online sophistication in respectively municipalities and across countries. The latter also included comparing the ICT infrastructure and human capital capacity between 144 UN Member States.

While the studies presented above concentrate on the supply-side of e-Government, the benchmarking study of RAND Europe complements these studies by focusing on the demand-side of e-Government. They do so by giving attention to perceptions and barriers, in addition to the availability and usage of e-Government services (Graafland-Essers & Ettedgui, 2003). However, the measured indicators are still quite simplistic. Other e-Government benchmarks that are performed on a regular basis include: the eEurope benchmark by

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Capgemini, the e-Government leadership reports by Accenture, the Brown University global e-Government survey, and the UNPAN report by the United Nations (Bannister, 2007).

The benchmarking of e-Government services has reached a critical stage where, as we argue, simply measuring the number of electronic services is not enough and a more sophisticated approach is needed. This is mainly due to the limitations of current approaches to benchmarking. The major problems of current benchmark approaches are that they are costly and time-consuming (Bannister, 2007; Anand & Kodali, 2008), quality is poor, and benchmarking is performed as a one-size-fits-all process. In addition, comparisons can become complicated. As Bannister (2007) mentions, there are no rules for a scoring method nor for ranking scales that measure mental states, e.g. attitude to technology. This means that benchmark outcomes vary depending on the context. Bannister continues his enumeration of problems by asking whether a metric and technology are time-invariant and what happens when there is no continued availability of data. Conclusively, Bannister identifies some conceptual issues of benchmarking by stating the following three questions: what is the purpose of the benchmark exercise, what is to be measured, and what type of benchmark is it?

In this paper, we describe the Contextual Benchmark Method (CBM). The CBM is a more useful approach to these problems because it is a contextual approach. The overall requirements set for CBM are that it is:

- Context-driven — for instance, the method needs to be locally based, on-demand available and self-pacing; and
- Benchmark-driven — for instance, well-defined shared procedures, validated techniques and instruments, and reliable data for comparison are used.

Clearly, with the CBM we aim to combine the demands of a benchmark with the advantages of research driven by local context. The following sections elaborate on the benchmark and contextual analysis concepts, and present the CBM and explain how it works. The paper ends with a discussion and some conclusions.

2. Benchmarking

Decision-makers in most service organizations want to improve the quality of their services. As stated, benchmarking aims to improve this quality. Therefore, benchmarking increasingly receives attention in service organizations (Dattakumar & Jagadeesh, 2003). The first question to answer is: what is benchmarking?

The following is a widely adopted definition of benchmarking that was originally postulated by Camp (1989, cited in Anand & Kodali, 2008): “Benchmarking is the search for the best industry practices which will lead to exceptional performance through the implementation of these best practices” (p. 258). Anand and Kodali (2008) came up with their own definition of benchmarking, based on an extensive literature study:

> benchmarking is a continuous analysis of strategies, functions, processes, products or services, performance, etc. compared within or between best-in-class organizations by obtaining information through appropriate data collection methods, with the intention of assessing an organization's current standards and thereby carrying out self-improvement by implementing changes to scale or exceeding those standards (p. 259).

One characteristic mentioned in these definitions is that benchmarks need to be performed between similar organizations. Fong, Cheng, and Ho (1998) express some doubts about this claim. On the other hand, these definitions lack the explicit focus of learning from one another, an issue that is stressed by Aarts et al. (2005).

In our studies into the quality of electronic government studies we stress the need for learning as the focus of benchmarks and the need for benchmarking similar delivered services instead of similar organizations. Therefore, another definition is needed. Inspired by Aarts et al. (2005), we define benchmarking as: a systematic comparison of the performance of (parts of) organizations and their similar services, processes and routines, on the basis of predetermined indicators, with the goal that organizations can improve their performance by learning from one another.

The rationales for the type of data that are collected during a benchmarking exercise and learning from one another are the most important aspects of benchmarking. Furthermore, we reject the idea that the purpose of benchmarking is to report comparisons of organizations, as many e-Government benchmark studies have done in the past. Rather, we contend that the purpose of benchmarking is to serve as a means by which organizations can compare themselves in pursuit of better performance. In other words, comparison is not a purpose in itself, but a means towards an end, which is learning from each other in order to improve. In order to effectively learn from one another, organizations should perform benchmarks on a regular basis, e.g. once a year. Benchmarking should be a continuous learning process.

Moreover, benchmarking is a method that can be used to achieve one or more goals. Aarts et al. (2005) mention that, besides the learning aspect, benchmarking could also be used for organizations to become more transparent to their environment, to justify actions (to specific organizations) and to identify strengths and weaknesses in the organization. When weaknesses are identified, they may lead to a sound basis for improvement projects. When a particular benchmarking exercise is repeated, it becomes possible to measure if the actions taken to achieve improvements have been effective.

3. Contextual analysis

CBM enables an organization to analyze aspects of electronic services, for instance the use and effects, in context. The context of the organization determines the scope, methods, and timeframe. Contextual analysis focuses further on organizational change and stresses the need for longitudinal empirical field research to make tacit knowledge explicit. Based on Pettigrew (1990), two aspects of longitudinal field research on change have been incorporated in CBM.

The first aspect is called *multilevel analysis*. A multilevel analysis examines “the interdependences between higher or lower levels of analysis upon phenomena to be explained at some further level; for example, the impact of a changing socioeconomic context on features of intraorganizational context and interest-group behavior” (Pettigrew, 1990, p. 269). The second aspect is related to time and is known as *processual analysis*. Processual analysis examines “the sequential interconnectedness among phenomena in historical, present and future time” (Pettigrew, 1990, p. 269). In summary, CBM aims to study change in the context of interconnected levels of analysis and locates change in the past, present and future. By incorporating multilevel- and processual analysis, CBM facilitates organizational adaptation and change by using/exposing actual events that are of immediate relevance to users and suppliers of public services.

4. Contextual Benchmark Method

A method is “a standard that describes the characteristics of the orderly processes or procedure used in the engineering of a product or performing a service” (IEEE, 1990, p. 47). CBM is based on Essink's (1988) Modeling Approach for Designing Information Systems framework (MADIS), which is used in Lemmen and Punter's approach (1994a,b) to design information systems. The underlying idea of this conceptual approach is that the modeling of information systems always takes place at different levels of abstraction and that the same

modeling aspects appear at each level. By mapping both situation- and method components onto MADIS, a contextual method can be constructed (Lemmen & Punter, 1994a,b). An important reason for this is that each problem is unique and a generally applicable method does not exist.

According to Lemmen and Punter (1994a), as MADIS is based on experiences accumulated in a variety of design projects, it is very compact and complete. We have adopted and simplified MADIS in order to apply it to the design of benchmark studies (see Fig. 1).

The core of this approach is the framework for modeling benchmark studies, namely CBM. This framework is a level/aspect matrix (Lemmen & Punter, 1994a,b). Before CBM will be explained (see Fig. 2) we elaborate on the MADIS approach.

First, MADIS is used to analyze and describe design methodologies, in the context of this article method components for the conceptual design of benchmarking studies. The assumption is that methods include the use of at least a number of techniques, tools, and indicators. These can be seen as components that can also be used without applying the whole method. The result of the analysis is a representation of a method component base.

The framework can subsequently be used to analyze and describe typical design problems, resulting in a representation of this problem in a detailed set of sub-problems that fit into the framework. Next, the representation of a design problem and of the method component base can be matched in order produce a contextual approach.

We will now elaborate on the core of this approach. CBM is designed around a level–aspect matrix (see Fig. 2), which is based on MADIS. First, as described earlier, the matrix is used to analyze and describe methods, techniques, and instruments, all of which are relevant for the analysis of electronic services. A relevant method is, for instance, the E-S-QUAL method of Parasuraman, Zeithaml, and Malthora (2005). Two possible techniques that can be used in the analysis of electronic services include an online survey and laddering. Instruments include, for example, reliability and assurance scales. These methods, techniques, and tools can be seen as components that can be used individually or can be applied with other methods. The result of the analysis is a representation of a method component base.

CBM can be subsequently used to analyze and describe a typical electronic service or benchmarking problem. The result is a representation of the problem and a detailed set of sub-problems that fit into the framework. The representation of a problem and of the method component base can then be matched, in order to define an approach for analyzing the particular class of electronic services.

CBM is piloted during a benchmarking exercise for the Dutch Ministry of Agriculture. In this context, three levels and five aspects have been identified. The first level is the group of benchmark-partners, in other words the collective of organizations involved in the benchmarking exercise. The second level is organization, in other words an individual organization that is involved in the benchmarking exercise. The third level is service, in other words the electronic government services that are analyzed.

In addition to the three levels, five aspects (views) have been identified: goal, respondents, (service) indicators, methods, and infrastructure. Following MADIS, these same modeling aspects appear at each level.

- A *goal view* implies that CBM is an organized set of elements and relationships between them, focused on achieving a set of organizational goals.
- A *respondents' view* involves the people (electronic service users) who evaluate an electronic service using indicators (by completing a questionnaire with items to measure the indicators).
- An *indicator view* encapsulates the idea that there are several indicators that should be measured in a benchmarking exercise.
- A *method view* indicates that different methods could or need to be used in order to produce the knowledge which is needed.
- An *infrastructure view* implies the availability of, and constraints imposed by, hardware and software.

When studying other types of organization, levels and aspects may be changed or added. Examples of other levels may be departments within a government organization, e-Government programs or international government organizations.

5. How does CBM work?

The recommendations and benefits of the CBM method that follow below are mixed with generic benefits of benchmarking. And, while the use of CBM is thus not completely new, it does make the design process of the benchmarking exercise easier and more valid.

The use of CBM is illustrated with a case study of the Dutch Ministry of Agriculture. The Ministry wanted to benchmark itself with six government organizations, mainly administrative bodies,

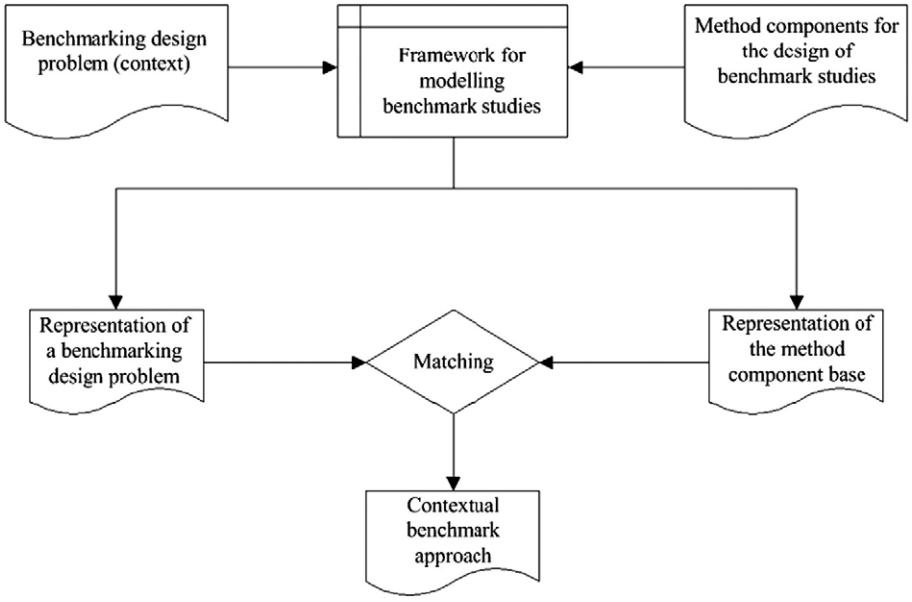

Fig. 1. Contextual model-based development of benchmarking studies.

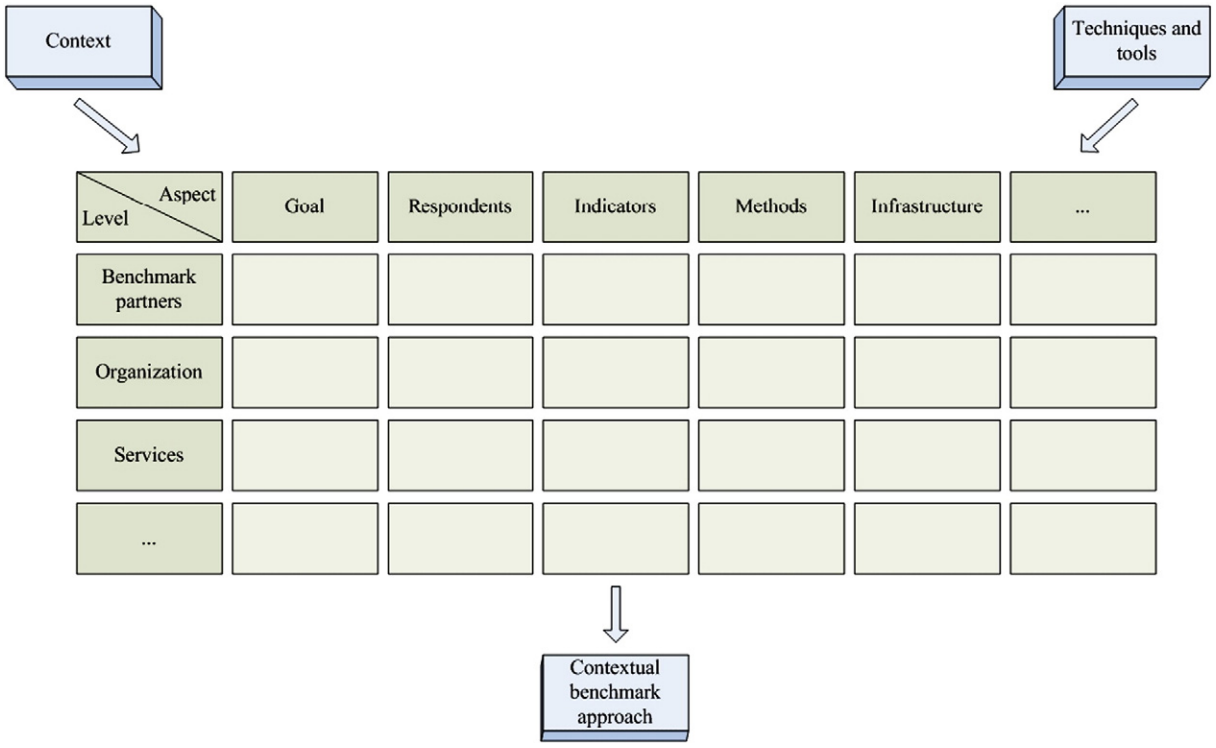

Fig. 2. The Contextual Benchmark Method (CBM).

including the national Tax and Customs Administration, which was the leading government organization in the Netherlands to introduce electronic public services. The Ministry was mainly interested in the perceived quality of their electronic forms.

The reason for initiating the benchmark was the Ministry's need to compare itself with others. Fong et al. (1998) make a critical note about the initiation of a benchmark. They state that when an individual organization initiates a benchmark, the benchmark will be competitive, whereas when a respected third-party organization initiates the benchmark, the benchmark will be more cooperative. However, we think that it is also feasible that, when letting a benchmark study be performed by a third party, the benchmark will be competitive as well. Furthermore, it seems to us that when an individual organization initiates a benchmark, its purpose is cooperative. It wants to know how to do something better and needs a cooperative benchmarking partner to do that. Perhaps this issue is context-specific. We talk about government organizations whereas Fong et al. talk about the private sector. Therefore, when the benchmark needs to promote learning by organizations, a spirit of cooperation must be created.

First of all, relevant benchmark levels need to be identified. The first level is that of the benchmark-partners, in this case the Tax and Customs Administration and the other government organizations, including the Ministry. The second level is that of the individual organizations. The third and final level is that of the actual service, in this case using electronic forms.

Why modeling at different levels? To begin with, the goals of a benchmarking exercise may differ on each level and have to be established at the organizational and service level by each individual organization. For example, the goal of the ministry is to identify how its target users rate their electronic forms, while the Tax and Customs Administration wants to improve its electronic services in general. Of course, the benchmark goals could also be applied to individual services, as the ministry does with its forms. In order to prepare for the benchmark, a shared goal needs to be agreed with all partners. Otherwise, various organizations, or departments within an organization, might refuse to participate in the benchmarking exercise. In this case, the goal of the benchmark-partners could be to compare the perceived quality of their electronic services, from a user's perspective, and to learn from one another. Consequently, the different levels help identifying and closing the gaps between individual organizations during the preparation phase.

Although we have not presented the process in detail, once the goals have been identified, the same process could be followed to identify the other aspects of CBM: respondents (e.g. citizens, businesses and government organizations), indicators (e.g. service quality and acceptance indicators), methods (e.g. online questionnaires and case studies), and infrastructure (e.g. hardware and software).

Once these steps have been completed, a questionnaire needs to be constructed or adopted, consisting of psychometric scales to measure the indicators used in the benchmark. After a pilot study has been completed, data for the benchmark are collected in order to identify problems with the content or administration of the questionnaire. This could be done in several ways, but we prefer to use online questionnaires because the data can then be easily gathered and stored in a database. The benchmark-partners need to agree the timeframe of data collection and sample size in advance. The types of respondent chosen depend on the benchmark goals of the benchmark-partners.

Data analysis follows data collection. The data from single organizations on individual scale items within each scale are combined to determine the scores on the different indicators. Then the scores of individual organizations are compared with those of the benchmark-partners. The analysis reveals which organizations score better and which score worse on the different indicators.

Individual organizations then ought to determine from which particular better-performing benchmark-partner organizations they would like to learn, in other words, the organizations that have scored better on particular indicators. As part of the process of learning, organizations might discuss the way they organize and run particular services in relation to the indicators that represent the performance of

each organization. Opportunities for improvement may then be identified. Depending on the willingness to share information, methods to achieve the improvements within organizations could be discussed. When methods for improvement have been implemented they need to be evaluated in terms of their effectiveness at some stage. This evaluation could take place through another benchmarking exercise.

CBM's procedure is graphically presented in Fig. 3. Our step-by-step approach is inspired by Aarts et al.'s (2005) three-phase procedure, consisting of Preparation (Steps 1 to 8), Comparison (Steps 9 to 11) and Improvement (Steps 12 to 14).

It is recommended that, when organizations agree to benchmark, a baseline benchmark is established. This allows a database to be created and saved that includes benchmark-indicator data of the collaborating organizations. The clear advantage to doing this is that organizations can then perform benchmarks on their own. For example, when organization X has measured the perceived quality of electronic services by its users and the results are stored in the database, organization Y could benchmark itself with X when conducting the same benchmark study. Another advantage is that a baseline for current performance standards would be created.

A benefit of performing benchmarks within a short timeframe is that they can be timely. This means that the data gathered from the benchmark directly demonstrate which indicators show good performance and which show poor performance. Other studies, such as customer-satisfaction studies, are often more retrospective in nature and, therefore, when it is found that an indicator shows poor current performance the result is based on data that are out of date. When staff who are responsible for a particular service know that an indicator shows poor *current* performance they may be motivated to act directly.

One of the strengths of CBM is that it could be applied to different kinds of benchmarking goals. CBM could be used for benchmarking procedures, processes, and services, and could do so both from an organization- and a user-perspective. The user-perspective is important here, because users have often been neglected in e-Government benchmarking exercises; their perceptions and experiences have not been explicitly addressed. However, users of these services are important stakeholders in the electronic service delivery of government organizations.

In addition, CBM supports various units of analysis. The method could be used to compare similar kinds of organization, for example municipalities, both on national or international levels. This is the way in which benchmarks are often performed. Moreover, we believe that government organizations from different 'sectors' could be benchmarked. For example, the Ministry of Agriculture may have different legislation issues and products from the Tax and Customs Administration. However, their services and processes, regardless of their content, might be the same, e.g. filling in electronic forms. A side-by-side comparison of processes and services can be very useful. Nowadays, organizations tend to benchmark themselves only with the most advanced organizations from the same sector. Comparing organizations from different sectors can foster innovations and accelerate processes of change (Thomassen, 2007).

In order to enable organizations to use CBM, specific instrumentation is needed for support. Without specific instrumentation (e.g. proof of concept), CBM loses much, if not all, of its significance. The instrumentation we use is *Servicetrack* (www.servicetrack.eu). *Servicetrack*, the

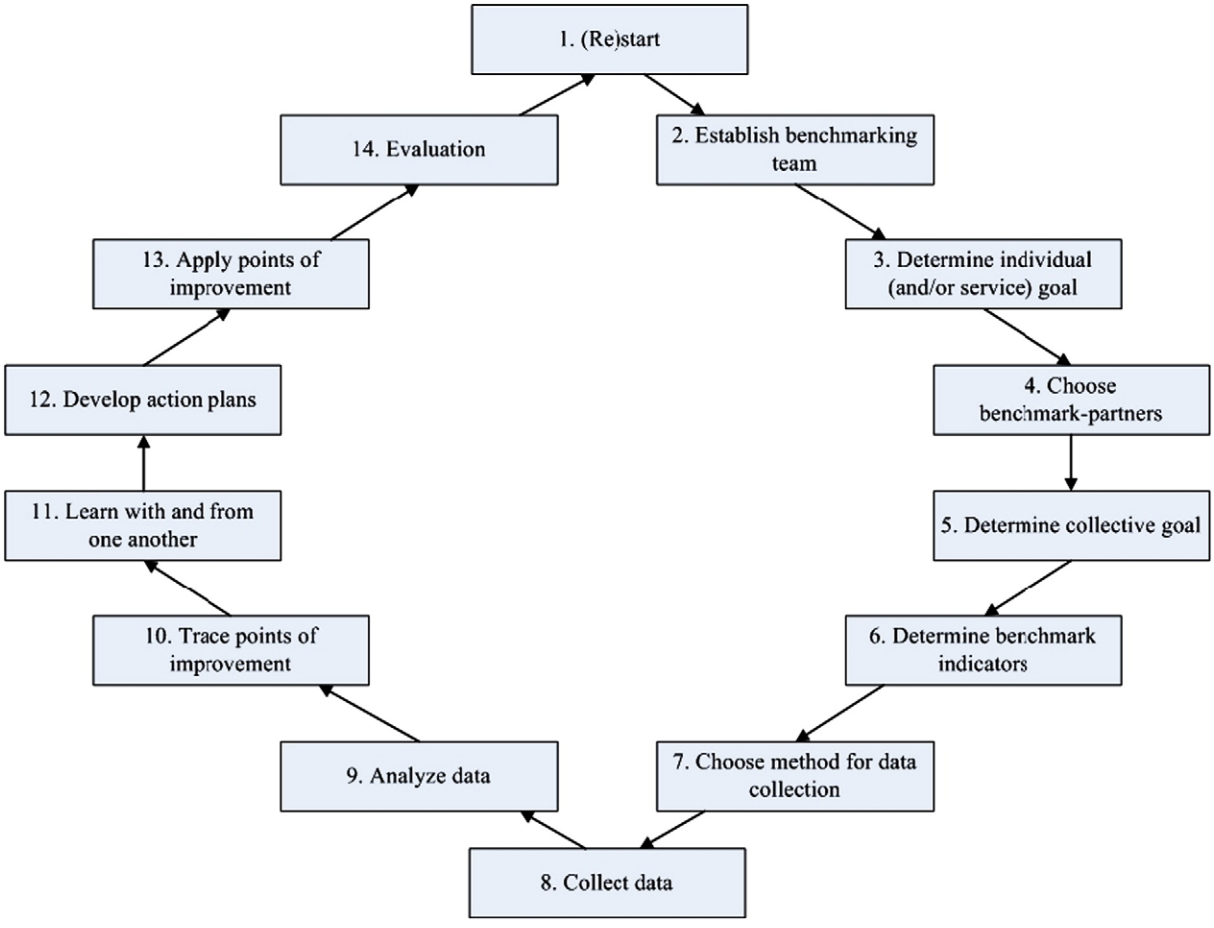

Fig. 3. Benchmark procedure.

instrumentation designed for the Contextual Benchmark Method, is an electronic online environment which is used for research on various critical elements of electronic service delivery, including service quality and service usage. Benchmarking e-Government services is the next stage in the development of *Servicetrack*.

Servicetrack's homepage gives access to projects and, through these projects, *Servicetrack* modules. Members of *Servicetrack* have access to the *Research Community* and *Servicetrack* services. The *Servicetrack* community is the 'R & D platform' for continuing development and sharing of knowledge and insights about online service quality improvement. The community offers a range of services through *Servicetrack*. Researchers can set up or join research projects. They can share their experiences and they can use a forum to help them solve problems quickly.

Servicetrack's *Projects* is a collection of research projects. These provide access to the *Instrument Editor*, the *Data Collector* and the *Data Analyzer*. The *Instrument Editor* allows researchers to develop their online or offline instruments for data collection and, if they wish, add these to the collection of available instruments. The *Data Collector* offers functionality for the online gathering of data. The *Data Analyzer* offers functionality for online data analysis and data export facilities to, for instance, *SPSS*™. One of the main features of *Servicetrack* is that it includes a repository of service quality scales stored in the *Database*. Scales are managed and can be re-used in *Projects*. The properties of scales are monitored and researchers can select a validated set of scales. *Servicetrack* records the history of the maintenance and use of items and scales in the *Database*. Researchers can re-use existing scales or items in their projects and, at different project stages, examine trends in the use of services. Researchers can also use scales (for example, a service quality perception scale) and benchmark their findings with those of other researchers using the same scales.

6. Discussion

In this paper we set out to define a method for contextual benchmarking, which can be used for benchmarking that is quick to perform, can be performed asynchronously, produces high-quality results, and is flexible to adapt to local needs. Although we believe that CBM meets this aim and we are eager to implement this with government organizations, the following points demand further consideration.

- Data needs that are to be made available and exchanged;
- Drawbacks of online surveys;
- The negative effect of customization on generalization and technical performance;
- Time and costs issues; and
- The conceptual nature of CBM.

In order to be able to quickly conduct a benchmark, the first criterion of CBM, a database filled with data, needs to be available. Once this condition has been met, government organizations can benchmark themselves quickly. However, in order to meet this condition, government organizations need to be willing to invest time in CBM activities. Because of the flexible approach of CBM to meet local needs, it is realistic to expect it might take at least a year before the database is filled with data on all the different indicators. In order to solve this problem we recommend conducting a baseline benchmark, which will produce a complete data set, using all indicators and constructs. However, some barriers may exist. We expect that the main barrier to implementation is the unwillingness to exchange data, because of possible differences of interest within and between organizations. The second barrier is that the measurement is done through online surveys. We expect that we need new ways of measuring perceptions in order to be able to assess the real situation.

With CBM, customization is king. When benchmarks are tailor-made to an individual organization within its own specific context, the question may arise whether CBM could be generalized to cases other than the one presented in this paper. We believe that this is possible. In an ideal situation, the data that are gathered in benchmarking exercises are stored in one particular database. Having one accessible database is beneficial. When setting up a benchmark, the organization can choose from a set of predetermined indicators, measured by psychometric items which are stored in the same database, in order to assess the constructs representing their needs. When this approach is adapted, the scale items that measure the indicators are fixed. The data that will be collected as part of a benchmarking exercise are comparable to the data of other organizations which have used the same set of scales, or a subset of these scales, over extended periods of time. The quality of the benchmark will thus be maintained, both in terms of reliability and validity. However, some technical challenges lie ahead. The database needs to be adjusted to the preferences of the organizations participating in a benchmark. Some may want to add items and others may want to use different scales. Comparisons over time or between organizations would then become more difficult, but comparison could still be made using the common items used by different organizations.

The main problem in comparing government organizations on local, national, and international levels is the diversity in administrative structure and culture. Different government organizations store different data in different IT systems, and these systems often cannot communicate with other IT systems. They also store data in different ways. For example, different questionnaire items and measurement scales are stored in a variety of IT systems. We believe that using one particular database is a practical solution to this problem.

The previous discussion also highlights the unit of analysis. As stated earlier, CBM comprises various units of analysis. However, when international benchmarks are conducted it is difficult to compare organizations that are functioning in a totally different sector, for instance comparing the Dutch Ministry of Agriculture with the United Kingdom's Tax and Customs Administration. It would seem that comparing organizations from different sectors is only valid on a national level. However, this really depends on the level of analysis. As noted earlier, a comparison of processes need not be so context-bound that an organization in one country could not learn from one in another.

Although a shared database would be very useful, it is not necessarily required. Moreover, there are major challenges to creating and maintaining one. Furthermore, the framework that has been created in the form of CBM has value in and of itself. An argument for government organizations not to adopt CBM might be that data collected from their organization are stored in a database that is not owned by the organizations themselves. Some organizations want to be able store their own data and not depend on other organizations. Therefore, the feasibility of CBM is called into question. A solution might be though to allow organizations to make copies of the data from their own organization, but not those of other organizations, on their own systems.

The costs are also a point of consideration, especially the start-up costs. However, when the data in the database are accessible, a lot of money will be saved on hiring expensive external research institutes or consultancies. Time will also be saved because of the ease of comparing data. In order to gain the most of what CBM has to offer, benchmark-partners need to provide each other with more than data. Ideally, they should also cooperate with each other in opening up their contexts, processes, and policies to each other so the learning process can take place. This is another form of cost that organizations may not be willing or able to bear.

To conclude, a general point of discussion is that the proposed CBM is highly conceptual and still needs to be validated, although it

is supported by specific instrumentation (*Servicetrack*). Validation studies of CBM will be conducted as discussed in this paper.

7. Conclusion

As stated previously, CBM is both benchmark-driven *and* context-driven. CBM allows organizations to initiate a benchmarking exercise without the 'immediate' need for reaching a collaborative agreement with potential benchmark-partners. Using CBM, benchmarking could also be done asynchronously. As the database is filled continuously, organizations could conduct a benchmarking exercise when they feel the need for it. All in all, CBM gives the opportunity for organizations to benchmark themselves continuously.

CBM can produce *high-quality results*, because of the predetermined indicators are used. The indicators have all been validated in various academic research studies (e.g. Carter & Bélanger, 2005; Parasuraman et al., 2005; and Wang, Lo, & Yang, 2004). Without the use of CBM, benchmarking exercises often need to be performed hastily without proper thought about which indicators to use. CBM's *flexibility allows it to be adapted to local needs*. When the CBM database is filled, organizations could not only benchmark asynchronously, they could also benchmark on particular aspects of electronic service delivery for their own purposes.

Furthermore, in order to actually learn, current performance needs to be benchmarked with past performance. The database used in CBM facilitates this benchmarking over time. Another advantage is that, when the database is populated, organizations could use CBM to conduct other analyses, for instance trend analysis, within a single organization.

CBM is already used at the University of Twente in several courses. The feasibility of using CBM is also being explored with a group of local government organizations, consulting firms and our research departments. This innovation group would serve as a platform to use, test, and improve CBM. Because local governments in the Netherlands are starting to implement e-Government services and may want to benchmark their services to continually improve these services there are opportunities to do so. We believe that, by using CBM in different settings, a robust model will be produced for the benchmarking of e-Government services.

In conclusion, we have endeavored to address the continuous demand of online service quality improvement by government organizations. We also strive for quality development and trust that we contribute to this by the development of CBM.

References

Aarts, H., van der Heide, A., van der Kamp, B. & Potten, M. (2005). Door leren beter presteren [Better performance through learning]. *TPC (December 2005)*, 12–17. Retrieved October 15, 2007, from http://www.rbb-groep.nl/artikelen/door_leren_beter_presteren.pdf.

Anand, G., & Kodali, R. (2008). Benchmarking the benchmarking models. *Benchmarking: An International Journal*, *15*(3), 257—291.

Bannister, F. (2007). The curse of the benchmark: An assessment of the validity and value of e-Government comparisons. *International Review of Administrative Sciences*, *73*(2), 171—188.

Camp, R. C. (1989). *Benchmarking: The search for industry best practices that lead to superior performance.* Milwaukee, WI: ASQS Quality Press.

Carter, L., & Bélanger, F. (2005). The utilization of e-Government services. Citizen trust, innovation and acceptance factors. *Info Systems Journal*, *15*, 5—25.

Cascadis (2007). *Benchmark Dutch local councils in electronic government in 2007.* Apeldoorn: Ron Zwetsloot. Retrieved November 12, 2007, from http://www.webdata.net/cascadis/doc/CAS_BenchmarkNLgemeentenindeELOanno2007.pdf.

Dattakumar, R., & Jagadeesh, R. (2003). A review of literature on benchmarking. *Benchmarking: An International Journal*, *10*(3), 176—209.

Dialogic (2004). *Citizens have their say: Electronic government service from the demand perspective.* Utrecht: Frank Bongers, Christiaan Holland, Karianne Vermaas & Rens Vandeberg. Retrieved November 12, 2007, from http://www.minbzk.nl/aspx/download.aspx?file=/contents/pages/10072/dialogic-burgersaanbod-definitief.pdf.

Essink, L. J. B. (1988). A conceptual framework for information systems development. In T. W. Olle, H. G. Sol, & A. A. Verrijn-Stuart (Eds.), *Information systems design methodologies: Improving the practice*. Amsterdam: North Holland IFIP WG 8.1.

Fong, S. W., Cheng, E. W. L., & Ho, D. C. K. (1998). Benchmarking: A general reading for management practitioners. *Management Decision*, *36*(6), 407—418.

Graafland-Essers, I., & Ettedgui, E. (2003). *Benchmarking e-Government in Europe and the US.* Santa Monica: Rand Europe.

IEEE (1990). *IEEE standard glossary of software engineering terminology.* Retrieved July 30, 2009, from http://www.idi.ntnu.no/grupper/su/publ/ese/ieee-se-glossary-610.12-1990.pdf.

Janssen, D., Rotthier, S., & Snijkers, K. (2004). If you measure it they will score: An assessment of international eGovernment benchmarking. *Information Polity*, *9*, 121—130.

Johansson, K., Aronsson, U., & Andersson, K. -E. (2001). *Benchmarking of electronic service delivery in the public sector: Executive report.* Gothenburg: TietoEnator Trigon AB.

Kaylor, C., Deshazo, R., & van Eck, D. (2001). Gauging e-Government: A report on implementing services among American cities. *Government Information Quarterly*, *18*, 293—307.

Kerschot, H. & Poté, K. (2001). *Summary report web-based survey on electronic public services: Results of the first measurement*. European Commission, DG Information Society, Cap Gemini Ernst & Young.

Kunstelj, M., & Vintar, M. (2004). Evaluating the progress of e-Government development: A critical analysis. *Information Polity*, *9*, 131—148.

Lemmen, K., & Punter (1994). Het aanpakmodel (1). Methodology engineering met het MADIS raamwerk [The systematic problems-solving approach model (1). Methodology engineering with the MADIS framework]. *Informatie*, *36*(5), 318—323.

Lemmen, K., & Punter (1994). Het aanpakmodel (2). Methodology engineering met het MADIS raamwerk [The systematic problems-solving approach model (2). Methodology engineering with the MADIS framework]. *Informatie*, *36*(6), 368—374.

Parasuraman, A., Zeithaml, V. A., & Malthora, A. (2005). E-S-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research*, *7*(3), 213—233.

Pettigrew, A. M. (1990). Longitudinal field research on change: Theory and practice. *Organization Science*, *1*(3), 267—292.

Ronaghan, S. A. (2002). *Benchmarking e-Government a global perspective: Assessing the progress of the UN Member States.* New York: United Nations – DPEPA.

Thomassen, J. -P. (2007). *De klantgerichte overheid [Client-centred government].* Deventer: Kluwer.

Wang, Y., Lo, H., & Yang, Y. (2004). An integrated framework for service quality, customer value, satisfaction: Evidence from China's Telecommunication industry. *Information Systems Frontiers*, *6*(4), 325—340.

Wauters, P. & Kerschot, H. (2002). *Summary report web-based survey on electronic public services: Results of the second measurement*. European Commission, DG Information Society, Cap Gemini Ernst & Young.

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