A metric for the measurement of passively transparent behavior in communication chains

In this paper, we present a method for empirically measuring the extent to which social institutions actively cooperate in the provision of public information. The method described here allows researchers to collect accurate empirical data corresponding to specific items of requested information to produce presentable meta-data on the information collection process. The data are extracted from communication chains and generated by tracking each unitary item of requested information in an item chain. After describing the data collection process and how the data are indexed using a three-figure tag, we explain how the collected data can be used to produce aggregated passive transparency ratings for institutions across content topics and for content topics across institutions. The article ends with a discussion of the social value of using transparency data, and the benefits that might be derived from institutional and content-specific passive transparency ratings.

Keywords: Accountability; Communication Chains; Measurement; Metric; Passive Transparency.

Uma métrica para medir o comportamento passivamente transparente em cadeias de comunicação

Neste artigo, apresentamos um método para medir empiricamente até que ponto as instituições sociais cooperam ativamente no fornecimento de informações públicas. O método descrito aqui permite que os pesquisadores coletem dados empíricos precisos correspondentes a itens específicos das informações solicitadas para produzir metadados apresentáveis ??no processo de coleta de informações. Os dados são extraídos das cadeias de comunicação e gerados rastreando cada item unitário das informações solicitadas em uma cadeia de itens. Depois de descrever o processo de coleta de dados e como os dados são indexados usando uma tag de três dígitos, explicamos como os dados coletados podem ser usados ??para produzir classificações de transparência passiva agregada para instituições entre tópicos de conteúdo e tópicos de conteúdo entre instituições. O artigo termina com uma discussão sobre o valor social do uso de dados de transparência e os benefícios que podem ser derivados das classificações de transparência passiva institucional e específica do conteúdo.

Palavras-chave: Prestação de contas; Cadeias de comunicação; Medição; Métrica; Transparência passiva.

Oscar Quirinus Herbertus de Souza (iD)
Fontys University of Applied Sciences, Países Baixos
http://orcid.org/0000-0002-8568-301X
o.desouza@fontys.nl

Fabiano Maury Raupp (iD)
Universidade do Estado de Santa Catarina, Brasil
http://lattes.cnpq.br/5713468691984238
http://orcid.org/0000-0001-9533-2574
fabianoraupp@hotmail.com

INTRODUCTION

Active transparency can be described as the duty of public bodies to promote, to the best of their abilities and regardless of external requirements, the disclosure of any information of interest to the general public that is either produced or held for safe-keeping by the public body. Based on this duty to disclose information, Silveira (2012) has argued that public information is a collectively owned commodity that belongs to the citizen and not to the state. For this reason, the citizen has a right to request any information that is not actively made available by the public body. This understanding introduces the notion of transparency in its passive form.

With passive transparency, although information on government performance is generally available to the public, prior action is required to obtain it—for example, a verbal or written request for information must be made (BRANS et al., 2012). It is important to note that such an information request should not require a statement of reason, motivation, or clarification of intent (SILVEIRA, 2012). The idea that access to public information should be unrestricted makes passive transparency a fundamental mechanism for social control. By means of a simple request procedure, the citizen is able to access public information quickly and easily (LOPES et al., 2013). In this way, citizens can check that their government's actions remain consistent with the common interests of the electorate. However, for the state to retrieve the desired information efficiently and effectively, the description of the information required must be clear, objective, and precise, identifying the specific subject matter of the request (SILVEIRA, 2012). Because public and semi-public institutions have a responsibility to meet the passive transparency demands of citizens, information-request procedures must be incorporated into the administrative routines of civil servants (MICHENER et al., 2014).

Both active and passive forms of transparency are often associated with access-to-information laws. The mere existence of such a law, however, does not make a government transparent. For a government to be transparent, the relevant information must be accessible in a complete and timely manner (MICHENER et al., 2013). In short, active transparency is said to exist in cases where an organization discloses information to the public of its own volition and in the absence of any prior prompting. Passive transparency, in contrast, exists in cases where an organization actively and adequately cooperates in the provision of public information in response to a direct request for information from an interested member of the public. In a 2016 study, Raupp and Pinho found that, of the 79 articles with the word "transparency" in the title that were published in academic journals, none focused on transparency in the passive form; all of the articles engaged only with the active form of transparency, leading the authors to conclude that there is a gap in this area of knowledge (RAUPP et al., 2016). The present article extends the literature on passive transparency and proposes a method for both measuring and encouraging passively transparent behavior.

METHODOLOGY

Communication Chains and Item Chains

Passively transparent behavior is displayed, not displayed, or displayed to a limited extent in

processes in which public information is disclosed, not disclosed, or partly disclosed to an interested member of the general public. The method for measuring passively transparent behavior presented in this article analyzes a communication chain (CC) and can involve any form of communicative expression, such as dialogues and exchanges of written texts. CCs are transmitted and received in broad-ranging ways, including, for instance, e-mail exchanges, exchanges of correspondence by postal mail, telephone conversations and in-depth interviews. For our purposes, a CC involves an exchange of information in which a requester requests an item (or items) of information from a person whose organization is in possession of the information sought. The person from whom information has been requested can then respond to an information request in many ways.

In a single CC, it is possible to request many items of information simultaneously. It is also possible to receive varied responses to requests for different items of information requested within a single CC. Within a CC, specific chains of communication can be isolated at the *information item* level. Requests for single items of information and the corresponding responses generated from these unitary items can be tracked on a singular basis. Following the information in this way is called item chain tracking (ICT). An item chain (IC) starts with an initial request for a unitary item of information and ends when (i) the requested item of information has been provided or (ii) the requester ceases to send additional requests in pursuit of the sought-after information. Any communicative event that occurs between the initial request for information and (i) or (ii) above is tracked and analyzed at the IC level. The IC is therefore synonymous with all communicative events along this trajectory.

Figure 1 shows the events occurring in four ICs (IC1–IC4) within a single 15-event CC (E1–E15). Here, an event is defined as a communicative action or a communicative non-action. Furthermore, six event types are tracked for the purpose of measuring passively transparent behavior: requests, reminders, responses, referrals, answers, and cessations. Each IC is composed of different sequences of event types, which form the source data for our measurement of passively transparent behavior.
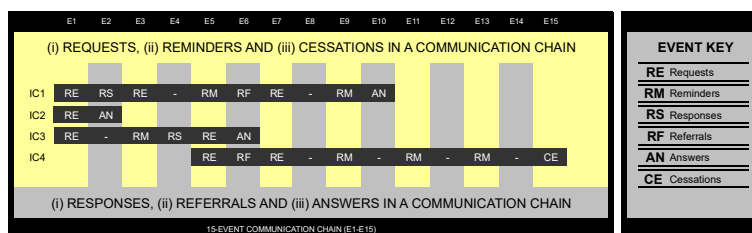

Figure 1: Four Item Chains within a Single 15-event Communication Chain. E1–E15 denote 15 events in this communication chain. The event key displays the six types of events.

RESULT

Item Chain Tracking

Again, ICT involves following the communication paths of requests for single items of information. An IC can be tracked at the individual level (within organizations) and at the organizational level. Figure 2 displays a request for three different information items. Each request for an information item is tracked and

analyzed separately.

The difference between a CC and an IC can best be described using an analogy: A CC can be compared to a rope composed of many fibers. These fibers are single strands that correspond to ICs in this analogy. Any single fiber may be far shorter than the full length of the rope-the CC in this analogy. When bundled together, the fibers form the start and end points of the rope as a whole. In the same way, single ICs can form the start and end points of the whole CC, which is woven from multiple ICs, each of which involves sequences of communicative events varying in length and complexity.

ICT involves a simple rule: A tracked IC is not permitted to transcend an institutional boundary. This can happen, for example, when a person from one institution refers the person requesting information to seek contact with a second institution (see Figure 2). ICT involves cataloguing communicative events from the initial moment when a request is made to the moment when (i) the request receives an answer or (ii) the requester gives up on the quest to access the desired information.
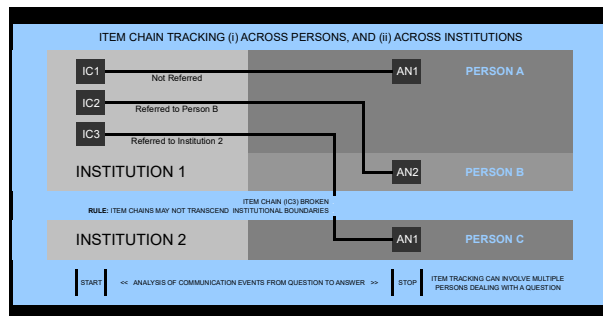

Figure 2: Request for Three Items of Information (IC1–IC3). [1]

False Referrals

Although ICT cannot track an IC that crosses an institutional boundary, in some cases, an institution may falsely refer a requester to another institution. This scenario is illustrated in Figure 3. In such cases, an IC is first broken and subsequently reconnected after it becomes apparent that the institution has made a false referral. A false referral is defined as an institution directing someone to a different institution for an answer although the sought-after information is held by the referring institution (Institution 1 in Figure 3). ICs that are broken and then reconnected in this way are considered single ICs. All events within the IC are reflected in the analysis, including events that occurred in the part of the IC that was dealt with by a different institution as a result of the false referral.
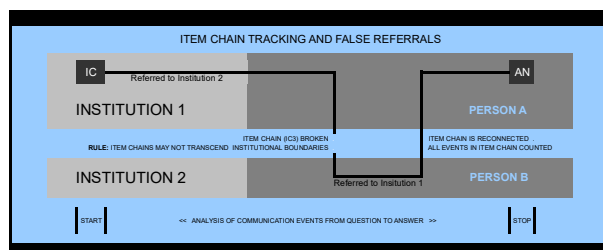
Figure 3: Item Chain Tracking and False Referrals. Here, an information request has been referred by Institution 1 to Institution 2 and is then referred back to Institution 1 again.

---

[1] IC1 is answered directly by Person A (AN1). IC2 is referred by Person A to Person B for an answer (AN2) in a different department of the same organization (Institution 1); the tracking and analysis of IC2 can continue. IC3, in contrast, is referred (by Person A) to Person C at a different organization (Institution 2), who provides an answer (AN1). The analysis of IC3 within Institution 1 is thereby invalidated. A new analysis can begin when the request from IC3 is presented to Person C at Institution 2.

Content Analysis and Event Counting

For the analysis of the tracked ICs, their constitutive communicative events are categorized and counted. Three of these categories—*information requests*, *reminders*, and *cessations*—are actions performed by the person requesting information. The remaining three categories—*responses*, *referrals*, and *answers*—are actions performed by the institution from which information is being requested.

Each occurrence of these actions is counted for each IC in a CC. Communication events performed by the person requesting information are coded as *information requests*, a category that includes valid *reminders* but excludes *cessations*. *Reminders* are also logged separately from initial *information requests* so that any invalid reminders (reminders that do not satisfy the rules of fairness) can be deducted from the total request count. *Cessations* are technically not specifically performed communication events; they are merely used to mark the end of an IC when no responses are forthcoming, signaling that the requester has given up on his or her pursuit of information. All communications received from the institution from which information has been requested are logged as *responses*. Although *referrals* and *answers* are counted separately, they are considered specifications of the type of response and are therefore also included in the *response* count. Valid *referrals* within the same institution are deducted from the *request* count and the *response* count. As mentioned above, a valid *referral* to another institution invalidates the IC as a whole. False referrals to other institutions are counted as valid *responses* and are not deducted from the *request* or *response* counts. Figure 4 shows an example of how 15 communication events are analyzed and counted in four ICs within a single CC.
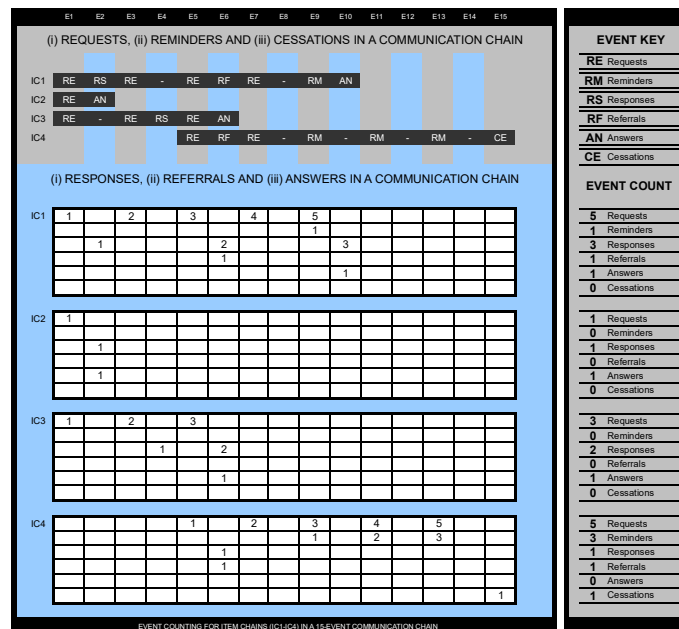
Figure 4: Event Counting for Item Chains (IC1–IC4) in a 15-event Communication Chain. Six different types of communication events (RE, RM, RS, RF, AN, and CE) are counted in IC1–IC4 in a 15-event CC.

Passive Transparency Metrics

Passive Transparency Metrics (PTMs) involve the measurement of human communicative behavior. The source data used for PTM is extracted from responses to requests for information in ICs, which are extracted from broader chains of communication, as detailed above. PTM is composed of a three-digit

number, separated by two decimals and enclosed in parentheses (0.0.0):

(i) The first integer of the PTM indicates whether or not the requested piece of information was ultimately provided (i.e. whether the IC question is answered). A value of 1 indicates that the information was provided; a value of 0 indicates that it was not. In cases where a requested piece of information is only partially provided, a value of 0 is applied. In principle, all PTMs should start with 1 in cases where a public institution is legally obliged to provide the requested item of information.

(ii) The second integer shows the number of information requests, including reminders, sent to gain access to the piece of information. If the first number is 0, then the second number shows the number of information requests that were sent before the requester gives up.

(iii) The third integer shows the number of responses that the requester received in his/her pursuit of the information item. If the value of the third number is lower than that of the second number, the difference shows the number of reminders the requester sent before receiving a response to the request. It is also possible that there will be no response to the request. The difference between the second and third integer is used as a measure of non-responsive behavior.

For example, a PTM of (1.7.3) shows that a piece of information was provided after sending seven requests and receiving three responses. The information item that was requested was provided in the third response. A PTM of (0.4.0) indicates that the information item was not provided, that the attempt to gain access to the information item was suspended after four attempts, and that no response was given to the initial information request or to any of the three subsequent reminders. The compact form of the PTM allows a great deal of meta-data to be tagged within the body of a text. This can be highly significant when reporting and interpreting the content and provision of public information (see Figures 8 and 9).

Referral Cleansing

When analyzing the data in an IC, one must bear in mind that, in some cases, an information request may involve one or more referrals. This could be because the requester has an insufficient understanding of the structure of the organization, because the person contacted is not authorized to disclose the requested item of information, or because the question itself involves a high level of complexity. For this reason, the total number of referrals from the analysis is deducted from the values of both the second and the third digits of the PTM. This process is referred to as referral cleansing and must be carried out before a PTM can be used for reporting or further analysis.

For example, a PTM of (1.7.5) represents an IC in which seven requests were sent and five responses were received before a requested item of information was provided. However, before referral cleansing, some of the responses may be valid referrals. For example, if there were two valid referrals in which an employee directed the requester to another person or department within the same institution, in the process of referral cleansing, these two referrals would be deducted from the second and third values to produce a PTM of (1.5.3).

Rules on Fairness

It is important that the collection of PTM data is fair and that the data collection method is standardized for all researchers who wish to use the collected data from their ICs. By standardizing the data collection method, data from many researchers can be synthesized to produce information on a wide variety of institutions and content topics (see Figure 7). It is therefore necessary to establish a normative standard for the maximum number of consecutive reminders that may be counted within an IC and the minimum allowable time interval between sending consecutive reminders. In the absence of such rules, it would be possible for a researcher to send a potentially unlimited series of consecutive reminders, affecting the values of the PTM. A third fairness rule, concerning the tracking of ICs, has already been mentioned. More specifically, the rules on fairness that must be implemented can be stated as follows:

RULE 1 Item chains can be tracked across multiple respondents within single institutions but not across multiple institutions. In other words, when an item chain transcends an institutional boundary, the communication events that precede the referral to another institution are invalidated and cannot be counted.

RULE 2 No more than three consecutive reminders can be counted within an item chain. The restriction applies only to consecutive reminders sent one after the other, when no response has been received from the previous reminders.

RULE 3 Counted consecutive reminders must be separated by at least five working days. Reminders that do not satisfy this criterion are not included in the reminder count.

As an example, an institution ceases to cooperate in the provision of requested information in an IC, the requester then sends a total of eight reminders. Four of these reminders are consecutive reminders, without a response separating them. The time span between each of these four reminders exceeds five working days. Three of the four reminders are counted and included in the second digit of the PTM; the remaining reminder in the sequence cannot be counted, as that would contravene Rule 2. In this example, the remaining four reminders are not connected in a single running sequence. Two were sent consecutively, and two were sent nonconsecutively. The second of the consecutive reminders was sent three days after the first, so only one of these reminders can be counted, because the second consecutive reminder contravenes Rule 3. Both of the other two (nonconsecutive) reminders can be counted in the PTM. In total, six of the eight reminders can be counted and two of the reminders cannot.

Because some—if not most—information requests involve simultaneous requests for multiple pieces of information, the counting process stops at the moment a specific requested item of information is provided at the end of an IC. For example, in a communication exchange involving a request for three separate items of information, two items of information are provided in the first response received. After three subsequent reminders, the third item of requested information is still not given. This exchange would generate one PTM per IC as follows: requested item one (1.1.1), requested item two (1.1.1), and requested item three (0.4.1). From this example, one can see that although communication exchanges can involve

lengthy ongoing processes, the measurement of passively transparent behavior always tracks individual items of requested information in an IC.

Process Summary

In summary, the production of a clean and usable PTM for a specific item of requested information involves a seven-step process: (i) assigning a value of 1 or 0 to indicate whether the requested item of information has been provided; (ii) counting the number of information request communications sent within an IC until a requested item of information is provided or the researcher ceases to send further requests; (iii) counting the number of response communications within an IC until a requested item of information is provided or the researcher ceases to send further requests; (iv) counting the number of referrals within an IC up to the point that a requested item of information is provided or the researcher ceases to send further requests; (v) deducting the number of referrals in (iv) from the number of communications sent in (ii); (vi) deducting the number of referrals in (iv) from the number of response communications in (iii); and (vii) deducting any invalid reminders that contravene the consecutive reminder rules (Rules 2 and 3) from the number of communications sent in (ii).

Figure 5 shows how the data needed for this process can be managed very easily in an Excel spreadsheet. The processes of referral cleansing, deducting invalid reminders, and calculating usable PTM values have been fully automated using an Excel formula in column C8.

C1	C2	C3	C4	C5	C6	C7	C8
ITEM CHAIN NO.	INFORMATION REQUESTS	ANSWERED	SENT IN ITEM CHAIN	RECEIVED IN ITEM CHAIN	ITEM CHAIN REFERRALS	INVALID REMINDERS	PTM
000	How much money has been awarded in subsidies in 2015?	1	3	3	0	0	(1.3.3)
001	How many research projects have been funded in 2015?	1	7	3	1	1	(1.5.2)-D
002	Who owns the IP rights over subsidised projects?	0	3	0	0	0	(0.3.0)
003	What is your policy on the transfer of IP rights?	0	4	0	0	0	(0.4.0)
004	How many jobs have been created in 2015?	1	9	4	2	1	(1.6.2)-D
005	Are you a transparent organisation?	1	1	1	0	0	(1.1.1)
C1	C2	C3	C4	C5	C6	C7	C8

Figure 5: Example of a Spreadsheet Used to Calculate Passive Transparency Metrics (PTMs). [2]

The Annotation of Method Disclosures

Disclosing the use of PTM may be a factor that encourages institutions to respond to requests for information. In cases where the use of PTM has been disclosed, the letter D is added to the PTM as follows: (1.6.2)-D. Awareness on the part of the institutional staff members that passive transparency is being measured empirically is likely to have a significant effect on the results. For this reason, the use of PTM should only be disclosed in cases where the researcher is eager to gain access to public information. After the use of PTM has been disclosed, any subsequent requests for information will retain the -D marker to show that

---

[2] The contents of the columns from left to right are as follows: (C1) item chain number, (C2) information request, (C3) answered question (1 = answered, 0 = not answered), (C4) number of information requests sent within the item chain, (C5) number of responses received within the item chain, (C6) number of referral responses within the item chain, (C7) number of reminders that violate Rule 1 or Rule 2 within the item chain, (C8) PTM per requested item, and (C9) disclosures on the use of the PTM. Columns C2–C7 contain raw source data extracted from item chain analyses. Column C8 contains usable synthesized data (PTM) for in-text references of transparency scores. The PTM is clean data in which all referrals and invalid reminders have been removed. Note that a disclosure marker (D) is added for PTMs including any post-disclosure responses.

the PTM includes one or more post-disclosure responses.

This is because knowledge of the rating system will be present from the moment the disclosure is made, and this knowledge is likely to have a positive impact on any future behavior triggered by additional requests for information. E-mail disclosures of the rating system are included in the e-mail count. For the analysis of results, ratings with the -D marker should never be mixed with ratings without the marker; they form two distinct classes of data that should not be combined. A potential weakness in this method is that affiliated institutions may send warning messages to each other, disclosing the use of the PTM rating system. Although there is no way to prevent this, the effect of such behavior would lead to higher levels of passively transparent behavior and would not disadvantage the institutions whose passive transparency is being measured.

Passive Transparency Ratings

Passive Transparency Ratings (PTRs) are derived mathematically from cleaned PTMs. The PTM forms the basis for three values needed for calculating the PTR: effective transparency, non-responsive behavior, and request intensity. The calculation for PTR subtracts the calculated penalties for non-responsive behavior and request intensity from the effective transparency, expressed as a percentage:

$$PTR = E\,(100\%) - N - R \quad ,$$

where E is the effective transparency, N is the non-responsive behavior penalty, and R is the request intensity penalty. The calculation of each of these three components is explained below.

Effective Transparency

Effective transparency is a dichotomous variable taking the value of 1 or 0. If the requested information was provided, the effective transparency is 1. If the information was not provided, effective transparency is 0. This is the first value used in the calculation of the PTR. An effective transparency of 0 will almost always result in a negative PTR.

Non-responsive Behavior

Non-responsive behavior is quantified by deducting the number of responses (the third digit of the PTM) from the number of requests sent (the second digit of the PTM). Every additional one-unit difference in value results in a penalty factor of 5% being deducted from the PTR. If the number of requests equals the number of responses, there is no penalty applied for non-responsive behavior. As an example with a non-responsive behavior penalty, a PTM of (1.7.3) would produce a 20% penalty for non-responsive behavior: 7 (requests) – 3 (responses) = 4 non-responsivity points; 4 x 5% = 20% non-responsive behavior penalty. To transform a PTR of 100% to a PTR of 0%, all else being equal, an institution would need to ignore a total of 20 requests for information within a single IC.

Request intensity

Request intensity is a factor that is quantified as a count of all requests sent after the initial

information request (i.e., the second digit of the PTM minus one). A 2% deduction is then applied for each additional request. For example, a PTM of (1.1.1) indicates that one request was made (second digit) and one response was received (third digit). In this example, there would be no penalty: 1 (total requests) – 1 (initial request) = 0 request intensity. As an example of a PTM with a request intensity penalty, a PTM of (1.14.9) would produce a request intensity penalty of 26% when calculating the corresponding PTR (14 total requests – 1 initial request = 13 request intensity points; 13 x 2% = a request intensity penalty of 26%). To transform a PTR of 100% to a PTR of 0%, a requester would need to send a total of 51 requests for information within a single IC.

The calculation processes for the three variables described above allow each PTM to be expressed as a PTR percentage. Figure 6 provides two full examples of PTR calculations for different PTMs. The first is a PTM that generates a PTR with a positive percentage value; the second is a PTM that generates a PTR with a negative percentage value.
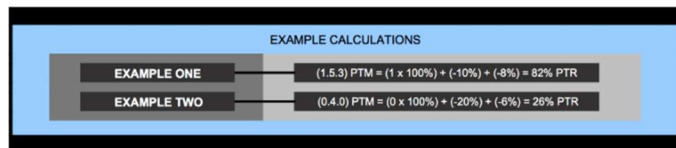

EXAMPLE CALCULATIONS	
EXAMPLE ONE	(1.5.3) PTM = (1 x 100%) + (-10%) + (-8%) = 82% PTR
EXAMPLE TWO	(0.4.0) PTM = (0 x 100%) + (-20%) + (-6%) = 26% PTR

Figure 6: Example Passive Transparency Rating (PTR) Calculations. These two examples show how Passive Transparency Metrics (PTMs) can be transformed into PTRs by applying a simple calculation based on Effective Transparency, Non-responsive Behavior, and Request Intensity.

Figure 7 shows the transformation of PTMs into PTRs using two calculation columns in which penalty points are accrued for non-responsive behavior and request intensity. Columns C12 and C13 separate the PTRs into two distinct types: PTRs that include responses received after the disclosure that the metric is being used (PTM-D), and PTRs containing only disclosure-free responses (PTR). This distinction is important for the later use of PTMs and PTRs in consolidated averages.

		C8	C9	C10	C11	C12	C13
		PTM	POST DISCLOSURE TAG	NON-RESPONSIVITY	REQUEST INTENSITY	PTR-D	PTR
		(1.3.3)		0	2		96%
		(1.5.2)-D	D	4	6	68% (D)	
		(0.3.0)		3	2		-19%
		(0.4.0)		4	3		-26%
		(1.6.2)-D	D	5	8	59% (D)	
		(1.1.1)		0	0		100%
		C8	C9	C10	C11	C12	C13

Figure 7: Transformation of Passive Transparency Metrics (PTM) into Passive Transparency Ratings (PTRs). [3]

Data Synthesis

After the raw data of a PTM has been transformed into a PTR using the three calculations described above, the PTR can be synthesized in many ways to produce multiple kinds of useful statistics. Figure 8 shows

---

[3] The contents of the columns from left to right are as follows: (C8) PTM per information request item, (C9) disclosure on the use of the PTM, (C10) non-responsivity points, (C11) request intensity points, (C12) PTR post-disclosure of PTM, and (C13) PTR without PTM disclosure. Columns C8, C10, and C11 contain usable synthesized data for describing passively transparent behavior (PTM), and for quantifying passively transparent behavior under conditions of disclosure (PTR-D) or non-disclosure (PTR) of the methodology. A disclosure marker is added to any PTM or PTR that contains a post-disclosure response.

three examples of average PTRs that have been calculated by synthesizing data from 22 ICs (IC01–IC22) collected from three CCs (for institutions 1, 2, and 3). The first example shows an average institutional PTR of 30% for a single topic (topic C). The second example shows an average PTR of −22% for a single topic (topic B) across all three institutions. The average in this example excludes any data that were gathered post-disclosure, so IC14 and IC16 have been excluded from the consolidated PTR average. The presentation of separate post-disclosure averages and the inclusion of post-disclosure data within combined PTR averages are further synthesis options. The third example shows an average PTR of 44% for a single institution across all topics (topics A, B, and C). As a result of decimalization, the averaging of PTMs would lead to six-figure PTM tags (0.0.0.0.0.0). For this reason, PTMs are not used for synthesizing consolidated averages. PTRs, expressed as non-decimalized percentages, are more suited to data synthesis than are PTMs.
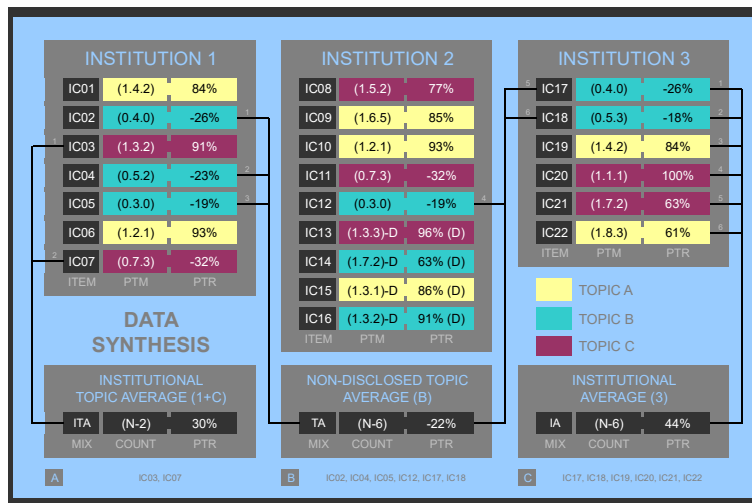

Figure 8: Three Examples Calculations of Average PTRs Synthesized across Institutions and Topics. [4]

Qualitative Labeling for Passive Transparency Ratings

PTR value ranges can also be expressed as incremental descriptive labels under which the behaviors of institutions can be categorized along a *transparency–opacity* scale (Figure 9). The advantage of using such labels over using numeric PTR percentages alone is that the labels can be used as qualifying adjectives. Figure 9 displays five adverb–adjective qualifiers and their corresponding PTR ranges. These terms can be used to describe institutions based on the synthesized results of the empirical PTM measurements.
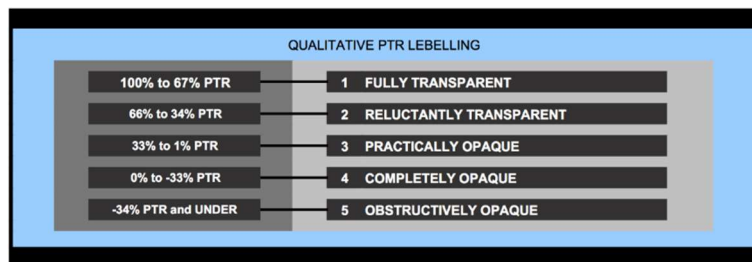

Figure 9: Qualitative Labels and Associated Passive Transparency Metric (PTR) Values.

---

[4] The figure depicts three communication chains (IC01–IC07, IC08–IC16, and IC17–IC22) from three institutions. The Passive Transparency Ratings (PTRs) from all of the relevant information chains are used to produce average PTR ratings A, B and C. The average PTR in Example 1 is an institutional topic average in which IC03 and IC07 are synthesized. The average PTR in Example 2 is a non-disclosed topic average across all institutions in which IC02, IC04, IC05, IC12, IC17, and IC18 are synthesized. The average PTR in Example 3 is an institutional average across all topic areas in which IC17–IC22 are synthesized.

Rich Data Applications of Passive Transparency Metrics

The method of collecting communication data described in this article facilitates (a) the production of quantified PTRs; (b) comparisons of passively transparent behavior across public and semi-public institutions; and (c) insightful comparisons amongst particular types of information requests that tend to generate unusually high or unusually low average levels of passively transparent behavior. High average levels of passively transparent behavior are derived from low numbers of requests in combination with low numbers of responses. Low average levels of passively transparent behavior are derived from the combination of high numbers of requests and low numbers of responses. A low average PTR suggests that the information being requested may concern a sensitive topic that an institution may not wish to disclose publicly.

PTM allows a great deal of empirical data to be presented in a highly compact manner. This approach can be seen as a form of meta-research whereby the research process itself becomes the subject matter for further analysis. When reporting research results, PTM data can be included alongside these results in the report. In this way, a researcher can disclose the level of transparent behavior encountered while collecting data from public and semi-public institutions. The richness of raw PTM data and synthesized PTR data is demonstrated in the example texts below (Figures 10 and 11).

Although it remains unclear who has the right of ownership over IP stemming from publicly subsidised projects (0.3.0), or what the policy is concerning the transfer of IP rights to third parties for commercial exploitation (0.4.0), in 2015, no less than 12 subsidised research projects (1.5.2)-D generated 78 FTE's (1.6.2)-D thereby boosting local employment opportunities. The cost of these subsidies was estimated at € 7,200,000.00 (1.3.3). Before disclosure of the transparency rating method, the average PTR of institution XYZ was 17% (N-3). The PTR-D rose to 63.5% (D) post disclosure (N-2), a 46.5% increase in passively transparent behaviour, a transition from a *practically opaque* to a *reluctantly transparent* institutional rating. When disclosures are discounted, the consolidated average of PTRs and PTR-Ds is 35.6% (N-5).

Figure 10: Example Text Showing the Richness of Passive Transparency Metric (PTM) and Passive Transparency Rating (PTR) Data When Presenting Information. The example shows individual PTMs per item chain (in yellow) as well as averaged PTRs, PTR-Ds, and consolidated PTR/PTR-D values (in blue).

A content analysis of PTR / PTR-D consolidated averages by question topics reveals a significant difference in the sensitivity of subject matter. Questions relating to IP ownership and transfer, for example, produced a negative PTR / PTR-D average of -22.5% (N-2). Questions concerning research funding, by contrast, produced a positive PTR / PTR-D average of 82% (N-2). This represents a 104.5% deviation in passively transparent behaviour across these content topics within the same institution. From this one might conclude that the subject of IP rights may be a contentious issue for institution XYZ.

Figure 11: Example Text Showing How Passive Transparency Metrics (PTMs) and Passive Transparency Ratings (PTRs) Can be Used to Create Different Kinds of Statistical Information by Combining Categories of Item Chain Content.

In the example in Figure 11, the content analysis was limited to responses collected from a single institution. It is also possible to produce similar results on specific content topics where the PTMs from multiple institutions are combined (see Figure 7).

The Normativity of Passive Transparency Metrics

As with any metric, the initial definition of the scale of measurement is somewhat arbitrary. Here, a PTM of (1.1.1) is equivalent to a 100% PTR, and a PTM of (0.1.1) is equivalent to a 0% PTR. These values seem logical given that the requested information is provided in the first instance (1.1.1) and not in the second

instance (0.1.1). However, the 5% penalty for non-responsive behavior and the 2% penalty for request intensity that is applied to other PTMs were not derived empirically. Although these penalty values were assigned because they seem reasonable, the criterion of *reasonableness* is certainly less objective than the measure used for the calculation of effective transparency. The idea here is that the normative force of the metric will gain strength as more and more passive transparency data are produced. The normative authority of the metric will be systematically augmented by the process of PTR averaging over time. As more data are collected and synthesized from ICs, the average PTR values become increasingly representative and useful as a means of benchmarking. The process of averaging itself contains a normative aspect; it is only by comparing relative PTR values across topics and institutions that transparency norms can be identified. Nevertheless, for institutions with a legal obligation to disclose information to the general public, one certainly ought to expect a positive PTR value and a value of 1 for effective transparency (based on the first digit of the PTM). This is a more fixed and concrete standard than any norm derived from the synthesized statistical averages. Thus, the second and third digits of the PTM serve only to give a finer nuance to the rating of the behavior encountered.

The Reliability of Passive Transparency Metrics

The reliability of PTM for the measurement of passively transparent behavior will be borne out if different researchers, under identical circumstances, produce identical PTM values. Although the rules within the method and the strict protocols for event counting have been defined with great precision, there may be some variation within the method because of differences in question formulation and irregularities when interpreting the responses. Although linguistic problems of this kind fall beyond the scope of this article, one should bear in mind that the reliability of the metric depends on the skill and integrity of the researcher who is formulating the questions and interpreting the responses. For this reason, we recommend including the question formulations for each IC in appendices to any report or article using the metrics proposed here. Figure 12 shows how IC questions (column C2) and the subsequent collection of corresponding data (C2–C7, C9) can be presented in charts within appendices. For research that may involve contentious issues and the potential for litigation, we further recommend that all responses are included in the appendices as full (anonymized) transcripts of complete CCs. The IC number (column C1) can be used in combination with event codes to tag ICs within verbatim transcripts for this purpose.

C1 ITEM CHAIN NO.	C2 INFORMATION REQUESTS	C3 ANSWERED	C4 SENT IN ITEM CHAIN	C5 RECEIVED IN ITEM CHAIN	C6 ITEM CHAIN REFERRALS	C7 INVALID REMINDERS	C8 PTM	C9 POST DISCLOSURE TAG	C10 NON-RESPONSIVITY	C11 REQUEST INTENSITY	C12 PTR-D	C13 PTR
000	How much money has been awarded in subsidies in 2015?	1	3	3	0	0	(1.3.3)		0	2		96%
001	How many research projects have been funded in 2015?	1	7	3	1	1	(1.5.2)-D	D	4	6	68% (D)	-19%
002	Who owns the IP rights over subsidised projects?	0	3	0	0	0	(0.3.0)		3	2		-19%
003	What is your policy on the transfer of IP rights?	0	4	0	0	0	(0.4.0)		4	3		-26%
004	How many jobs have been created in 2015?	1	9	4	2	1	(1.6.2)-D	D	5	8	59% (D)	
005	Are you a transparent organisation?	1	1	1	0	0	(1.1.1)		0	0		100%

Figure 12: The Presentation of Information Chain Questions Corresponding Data. [5]

---

[5] The contents of the columns from left to right are as follows: (C1) item chain number, (C2) information request, (C3) number of answered questions, (C4) number of

Time-bound Transparency Monitoring

By adding a date to the PTM, it is possible to monitor the passively transparent behaviors of important social institutions over time. Cleaned PTMs with attached time signatures and post-disclosure markers could be kept in a database to monitor and track the transparency measurements associated with particular social topics and social institutions. Researchers could upload their PTM data in a suitable format (as suggested in Figure 10). An independent body could then check the data before entering it into the database. The social value of such a system of monitoring could be significant. Database queries could check transparency ratings on institutional and topic levels. Low transparency ratings would be an indicator that policies involve contentious issues or that the policies are not yet clearly defined. These data and the questions from which the data are derived could be a valuable resource for prioritizing the revision of social policies.

DISCUSSION

Although the effect of government transparency on citizens' trust is strongly debated, the theoretical and empirical understanding of this relationship is still limited. Governments around the world are seeking to increase transparency by providing various types of information on government activities and performance on public sites (GRIMMELIKHUIJSEN et al., 2014).

Understanding the evolution of transparency as a norm that governs the disclosure of information by political actors involves issues of power and persuasion in an inherently political context. Although some forms of transparency do not involve the voluntary disclosure of information by public actors, transparency is always related to legitimacy and can contribute to the public acceptance of institutional structures. According to political theory, transparency can provide citizens with the possibility of following policy formulation and examining its results, thereby enhancing the legitimacy of institutional structures. The Internet plays an important role in building the transparency of governments, therefore enhancing their legitimacy (CURTIN et al., 2006; LICHT, 2014).

Zuccolotto et al. (2015) argue that the term transparency has been taken as a synonym for a solution to many problems existing in a democratic order. Transparency is central to the exercise of accountability between a state and its citizens. A transparent government is one that promotes the openness of the system of governance through clear processes and procedures that allow citizens to gain easy access to public information. Transparency stimulates ethical awareness in the public services because those who hold public office are expected—and are often legally required—to share their information with the public. This requirement ensures a level of accountability for the performance of organizations and for the actions of individuals who are responsible for the spending of finite public resources (KIM et al., 2005).

---

information requests sent within the item chain, (C5) responses received within the item chain, (C6) number of referral responses within the item chain, (C7) number of reminders that violate Rule 1 or Rule 2 in the item chain, (C8) Passive Transparency Metric (PTM) per information request item, (C9) disclosure of PTM methodology, (C10) Passive Transparency Rating (PTR) with method disclosure, and (C11) PTR without method disclosure. Columns C2–C7 and column C9 contain raw source data from the item chain analyses. Columns C8, C10, and C11 contain usable synthesized data for describing passively transparent behavior (PTM) and for quantifying passively transparent behavior under conditions of disclosure (PTR-D) and non-disclosure (PTR).

Optimists regarding transparency argue that showing citizens the results of government policies through clear goals and performance indicators can lead to a greater reliance on government. Pessimists argue that transparency can lead to a policy of scandal and even the 'delegitimization' of the government. The main argument is that the complexity of government policies and the democratic process do not lend themselves to being easily communicated to the public through a set of performance indicators (GRIMMELIKHUIJSEN et al., 2014).

For Welch et al. (2005), public management is currently focused on the dissemination of information. However, simply exposing the information does not in itself guarantee the engagement of citizens in the discussion, debate, and decision-making process. In this same previous work, the authors verified that government website use is positively associated with e-government satisfaction and website satisfaction and that e-government satisfaction is positively associated with trust in government. Although citizens are generally satisfied with the electronic provision of information (transparency), there is some dissatisfaction with the transaction and interactivity of websites. Electronic government strategies—transaction, transparency, and interactivity—are important factors that directly affect e-government satisfaction and indirectly affect trust. Individuals who use government websites are not only critical consumers but also demanding citizens (WELCH et al., 2005).

Transparency is generally defined as the principle of allowing the citizen to be able to obtain information about the operations and structures of particular public institutions. This concept is often considered synonymous with openness and disclosure (ETZIONI, 2010). At the core of transparency is the effective communication of the results of services that are provided by the public power directly to the citizen, and openness with regard to the consequences of public policies for a broad range of stakeholders (FRANCO et al., 2014). Scenarios in which the histories of political choices are unknown or the electorate remains insufficiently informed to punish politicians involved in corruption or other forms of illegal conduct have generated concerns that prompt discussions about transparency in public management (FOX, 2007).

Transparent public management extends well beyond the mere dissemination of legal instruments. It must include conditions and structures that actively promote accountability to enable citizens to monitor and participate effectively in the acts of public administration (CRUZ et al., 2012). To Filgueiras (2011), the concept of transparency emerges as a fundamental value of contemporary public management; the realization of transparency means broadening a society's information about the actions carried out by public agents, and thereby raising levels of accountability. The ability to measure passively transparent behavior empirically within social institutions may be instrumental as a means of encouraging public agents to share their information more readily with the general public.

Transparency dissipates opacity. The latter is considered to be a cloaking factor that encourages corruption, inefficiency, and incompetence (MICHENER, 2011). The objective of transparency is to guarantee that all citizens have access to information that adequately explains actions to be performed by the government, actions that are currently in progress, and actions that have been carried out under previous periods and administrations. Transparency should include the wide dissemination of information, including

disclosure through electronic channels and by means of public hearings. The content of disclosures should reveal budgetary plans, budget guidelines, and periodic reports of actual spending. Policies concerning fiscal management, the results of independent auditors, and the opinions of accounts issued by the courts all involve information that belongs in the public domain. Transparency should not only be based on present facts, but should also guarantee the release of information from previous periods, as this allows evolutionary and comparative studies on the performance of managers (SILVA, 2008).

Casado (2013) notes that public managers must face and overcome the opacity that traditionally covers administrative actions, that this will require a great change in the mentality of public managers, and that such a change is to be effected by nurturing a strong commitment to transparency. Despite the truth of this claim, it begs the question of how such a shift in mentality can ever be fully realized. One might take it as self-evident that there is, always has been, and always will be a significant number of public administrators whose sense of civic duty remains subordinate to their personal interests. It is therefore unlikely that the mere knowledge of the importance of transparency will be sufficient to effect a significant change. If one accepts this as a self-evident fact, one must conclude that opacity must be fought from outside the bastions of public office. It may be unrealistic to believe that sufficient change can be brought about by merely encouraging a strong internal commitment to the political importance of transparency.

In this context, the value of PTM might be described as follows. This approach allows external stakeholders to closely monitor levels of passive transparency encountered in public offices. When faced with opaque forms of governance, stakeholders are able to base their appeals on objective empirical fact. This is a stronger basis when compared with an appeal that rests on an unsupported claim regarding a general lack of cooperative behavior. The rich data format in which PTMs can be presented within a body of text (see Figures 8 and 9), combined with the straightforward way in which consolidated PTM data can be transformed into PTRs or qualitative labels, may be a potent tool for confronting opaque institutions with the inadequacy of their communicative behavior. The ability to measure and synthesize data by content topic (see Figure 7) allows additional inferences to be made in support of an appeal for greater transparency.

It is logical to conclude that public managers with a genuine commitment to transparency will have no reason to object to the use of passive transparency metrics. Conversely, for public managers who lack a commitment to transparency, the metric can be used as an extrinsic stimulus to encourage appropriate behavior. In cases where intrinsic motivation is lacking, it is important to remember that it may be easier for an external party to ask critical questions concerning issues of governance than it would be for a civil servant working within a specific public institution. Whereas external stakeholders are completely free to ask relevant questions to public managers, civil servants may be exposed to the risk of internal repercussions.

For a public manager to claim that he or she has acted transparently, all that is minimally required is the scheduling of a single moment when interested parties are given the opportunity to ask questions. Irrespective of whether or not critical questions are forthcoming, the claim that a public manager has acted with a degree of transparency is minimally justified by the mere scheduling of such an opportunity. However, in cases where a public manager wishes to minimally comply with a legal transparency requirement while

also limiting the spread of information, the careful scheduling of such a moment, combined with a strategy of minimal communication about the question opportunity, may be an effective means of preventing the wide dissemination of public information.

This reveals a certain ambiguity regarding the achievement of transparency. Has transparency been achieved if an opportunity to ask questions about public policies and the performance of public managers has been minimally provided, or has transparency been achieved only when the questions raised by stakeholders have been satisfactorily answered? Effective transparency demands that all questions are adequately answered; the strategic scheduling of a question-and-answer opportunity may not always satisfy the practical demands of transparency. The normative question that is raised by this distinction—the legal satisfaction of a transparency requirement, on the one hand, and the achievement of effective transparency, on the other—might be formulated as follows: Should compliance with a transparency norm be measured by the satisfaction of a bare legal requirement, or by the extent to which questions from stakeholders are effectively and adequately answered? As a measure of effective transparency, PTMs aim to provide an objective measure for the latter interpretation of the transparency norm, as supported by Michener et al. (2013).

An inherent weakness of PTMs has been discussed in the sections on normativity and reliability. Another potential weakness of the method has not yet been addressed, namely, the amount of effort involved in the careful analysis of CCs, and the subsequent processing of the collected data. The authors believe that, despite the effort required to produce reliable PTMs and PTRs, there will be many contexts in which the social goods at stake warrant the level of scrutiny and effort that the method requires. Furthermore, two important facts should be noted about the method proposed here as a tool for researchers. First, the method is an instrument of empowerment that can be used to encourage cooperative behavior when faced with opaque institutions. Second, the output of the method means that both successful and unsuccessful research efforts are of value. It can be frustrating for researchers when their questions go unanswered. The application of PTMs means that the effort of the researcher never goes to waste; opaque and non-responsive behaviors also lead to potentially valuable research results in the form of behaviors measured through PTM (see Figure 8).

CONCLUSIONS

We conclude this paper with a hypothesis and an invitation to researchers. First, we predict that the use of PTM data will increase public accountability by causing an increase in measured levels of passively transparent behavior in public institutions. Second, we invite researchers to test this hypothesis by comparing PTRs synthesized from pre-disclosure information requests with PTR-Ds synthesized from post-disclosure requests. The efficacy of PTMs as an instrument for increasing public accountability can be expressed as the deviation between the consolidated values of pre-disclosure PTRs and post-disclosure PTR-Ds. One could make finer efficacy measurements by comparing a broad range of consolidated PTR and PTR-D values synthesized at topic and institutional levels. Again, this would involve comparing the average of pre-

disclosure ratings to averaged post-disclosure ratings to ascertain the percentage of positive deviance in the PTR-Ds vs. the PTRs.

The efficacy of PTMs as an instrument for benchmarking levels of passive transparency encountered in public institutions can be measured by blind-testing the prescriptive force of the methodology. This can be done by using a number of test researchers to conduct a series of independent content analyses for an identical test set of CCs. If the prescriptive force of the metric is completely rigorous, identical PTM and PTR values can be expected from the independent analyses of the two researchers. If there are discrepancies between researchers in the PTM and PTR values, it possible to quantify a margin of error that can be expected when applying PTMs as a benchmarking tool.

REFERENCES

BRANS, M.; PETERS, B. G.; VERBELEN, B.. Rewards at the top: cross-country comparisons across offices and over time. In: BRANS, M.; PETERS, B. G.. **Rewards of High Public Office in Europe and North America**. New York: Routledge, 2012.

CASADO, L. C.. El acceso a la información ambiental en España: Luces y Sombras. **Derecho PUCP**, v.70, p.241-78, 2013.

CRUZ, C. F.; FERREIRA, A. C. S.; SILVA, L. M.; MACEDO, M. Á. S.. Transparência da gestão pública municipal: um estudo a partir dos portais eletrônicos dos maiores municípios brasileiros. **Revista de Administração Pública**, v.46, n.1, p.153-76, 2012.

CURTIN, D.; MEIJER, A. J.. Does transparency strengthen legitimacy?. **Information Polity**, v.11, n.2, p.109-22, 2006.

ETZIONI, A.. Is transparency the best disinfectant?. **The Journal of Political Philosophy**, v.18, n.3, p.389-404, 2010.

FILGUEIRAS, F.. Além da transparência: accountability e política da publicidade. **Lua Nova**, v.84, p.65-94, 2011.

LICHT, J. F.. Policy area as a potential moderator of transparency effects: an experiment. **Public Administration Review**, v.74, n.3, p.361-71, 2014.

FOX, J.. Government transparency and policymaking. **Public Choice**, v.131, n.1, p.23-44, 2007.

FRANCO, L. M. G.; REZENDE, D. A.; FIGUEIREDO, F. C.; NASCIMENTO, C.. Nível de divulgação eletrônica da contabilidade pública dos municípios do Paraná no ambiente da internet. **Revista de Ciências da Administração**, v.16, n.38, p.140-53, 2014.

GRIMMELIKHUIJSEN, S. G.; MEIJER, A. J.. The effects of transparency on the perceived trustworthiness of a government organization: evidence from an online experiment. **Journal of Public Administration Theory and Research**, v.24, n.1, p.137-57, 2014.

MICHENER, G.. Conceptualizing the quality of transparency. In: GLOBAL CONFERENCE ON TRANSPARENCY, 1. **Anais.** Newark, 2011.

MICHENER, G.; BERSCH, K.. Identifying transparency. **Information Polity**, v.18, n.3, p.233-42, 2013.

MICHENER, G.; MONCAU, L. F. M.; VELASCO, R.. **Estado brasileiro e transparência**: avaliando a aplicação da Lei de Acesso à Informação. Rio de Janeiro: FGV; Open Society Foundations, 2014.

RAUPP, F. M.; PINHO, J. A. G.. A Lei, ora a lei: um balanço da (in)transparência passiva em câmaras municipais brasileiras. In: ENCONTRO DE ADMINISTRAÇÃO DA INFORMAÇÃO. **Anais.** Rio de Janeiro: ANPAD, 2015.

SILVA, L. M.. **Contabilidade governamental**: um enfoque administrative. São Paulo: Atlas, 2008.

SILVEIRA, M. A. K.. Lei de Acesso à Informações Públicas (Lei Nº 12.527/2011): democracia, república e transparência no Estado Constitucional. **Revista da Procuradoria Geral do Estado**, v.33, n.69, p.231-60, 2012.

KIM, P. S.; HALLIGAN, J.; CHO, N.; OH, C. H.; EIKENBERRY, A. M.. Toward participatory and transparent governance: report on the sixth global forum on reinventing government. **Public Administration Review**, v.65, n.6, p.646-54, 2005.

WELCH, E. W.; HINNANT, C. C.; MOON, M. J.. Linking citizen satisfaction with e-government and trust in government. **Journal of Public Administration Research and Theory**, v.15, n.3, p.371-91, 2005.

ZUCCOLOTTO, R.; TEIXEIRA, M. A. C.; RICCIO, E. L.. Transparência: reposicionando o debate. **Revista Contemporânea de Contabilidade**, v.12, n.25, p.137-58, 2015.