Government Information Quarterly 41 (2024) 101932

Contents lists available at ScienceDirect

Government Information Quarterly

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

Same same but different: How policies frame societal-level digital transformation

Tobias Mettler [a,*], Gianluca Miscione [b], Claus D. Jacobs [c], Ali A. Guenduez [d]

[a] University of Lausanne, IDHEAP, Rue de la Mouline 28, 1022 Chavannes-près-Renens, Switzerland
[b] University College Dublin, Ireland
[c] University of Berne, Switzerland
[d] University of St.Gallen, Switzerland

ARTICLE INFO

Keywords:
Digital transformation
IS policy research
Computational content analysis
Narratives

ABSTRACT

The digital transformation (DT) is not only forcing companies to rethink their business models but is also challenging governments to address the question of how information technology will change society today and in the future. By setting the legal boundaries and acting as an investor and promoter of the domestic digital economy, governments actively influence in which ways this transformational process takes place. The vision and objectives how DT should be realized on state level is portrayed in well-crafted DT policies. Yet, little is known how governments, as strategic actors, see their role in the DT and how they frame these documents. In this paper, we argue that policymaking about DT is isomorphic in the global context, rather than a differentiator for countries to gain a competitive edge. Using machine learning to analyze a vast text corpus of policy documents, we identify the common repertoire of narratives used by governments from all around the globe to picture their vision of the DT and show that DT policies appear to be almost context-free due to their high similarity.

1. Introduction

The concept of digital transformation (DT), originally drawn from the private sector discourse (Mergel, Edelmann, & Haug, 2019), is largely associated with a critical mandate for governments to enhance service delivery effectiveness, elevate citizen experiences, optimize operational processes, and foster innovative business paradigms (Curtis, 2019; Font-Cot, Lara-Navarra, & Serradell-Lopez, 2023; Gong, Yang, & Shi, 2020; Janowski, 2015; Luna-Reyes & Gil-Garcia, 2014). Despite elevated aspirations for DT, instances of unsuccessful transitions within public sector entities have highlighted an insufficient grasp of the complexities associated with DT and the intricate interplay between technologies, information utilization, organizational contexts, and institutional frameworks (Scupola & Mergel, 2022). According to Tabrizi, Lam, Girard, and Irvin (2019), billions of USD of investments in DT initiatives have not reached their goals, and this is no small failure because about 70% of these projects fail to deliver on their promises (Bucy, Finlayson, Kelly, & Moye, 2016).

Multiple plausible explanations can be postulated to account for this unsatisfactory outcome. For example, it can be attributed to the manner in which success/failure is conceptualized and measured as well as how this comprehension, borrowed from the private sector (and adopted by the media), aligns with the fundamental characteristics of the public sector (Hofmann, Sæbø, Braccini, & Za, 2019; Meijer, 2018) which is less focused on immediate profit maximization but on the long-term creation of public value (Cordella & Paletti, 2019; Luna-Reyes & Zhang, 2023). The public sector also grapples with an increasing complexity and need for specialization (Fleischer & Carstens, 2022; Janowski, 2015), not only to serve its internal administrative requisites but also the diverse and occasionally contradictory demands of external stakeholders (Lindgren, 2023) – on local, regional, and international level. This complexity is exemplified by instances such as the tension between safeguarding citizen privacy while also promoting the growth of a domestic data industry through extensive data sharing so as to enhance their competitiveness within the global market landscape (Mettler & Miscione, 2023), or the occurrence of counterproductive actions within the various tiers of government and parastatal organizations emanating from the prioritization of their distinct local objectives, often at the expense of considering the broader and overarching concern at hand (Kuhlmann & Heuberger, 2023; Pittaway & Montazemi, 2020). In this

* Corresponding author.
E-mail addresses: tobias.mettler@unil.ch (T. Mettler), gianluca.miscione@ucd.ie (G. Miscione), claus.jacobs@unibe.ch (C.D. Jacobs), aliasker.guenduez@unisg.ch (A.A. Guenduez).

https://doi.org/10.1016/j.giq.2024.101932
Received 1 February 2023; Received in revised form 24 August 2023; Accepted 6 April 2024
Available online 12 April 2024

sense, DT within the public sector certainly encounters challenges that are subtly distinct from those experienced in the private sector (Tangi, Janssen, Benedetti, & Noci, 2020).

Although there are obvious differences between DT in the private and public sectors, there are also similarities, one of which is understanding DT as a strategic task (Gong et al., 2020; Mergel et al., 2019), on the basis of which the mentioned diverse and often conflicting internal and external exigencies are set out and subsequent priorities defined. In fact, little is known about how governments, as strategic actors, frame DT policies (Mergel et al., 2019). On the one hand, and if we posit that all governments globally contend with analogous IT-related challenges –such as protecting a nation's cyber-physical infrastructure (Chatfield & Reddick, 2019), closing the digital divide between demographics and regions (Reggi & Gil-Garcia, 2021), or responding to crises (Eom & Lee, 2022) – it follows that policy documents as manifestation and launching pad for operationalizing the DT, irrespective of the specific national and local contexts or digital readiness (UN Department of Economic and Social Affairs, 2022), may share akin narratives. We call this the *isomorphism hypothesis* in public sector's DT policymaking.

On the other hand, and remaining closer to its original thought, DT policies function as instruments through which governments strive to attain a competitive advantage over other countries by means of differentiation (Clemons, 2019; Mithas, Tafti, & Mitchell, 2013). Given the success stories such as California's Silicon Valley, it is plausible that governments across the globe wish to engage in a competition to attract capital and talents (Sandoval-Almazán, Luna-Reyes, Luna-Reyes, Gil-Garcia, & Picazo-Vela, 2017). Here, DT policies function as mechanisms to provide businesses and investors with distinct directives (or absence thereof) concerning anticipated governmental intervention with respect to regulatory oversight, infrastructure development, or taxation (to mention just a few). If everyone offers the same, no one will gain a competitive edge, or as Kay (1993) puts it in business terms "*successful strategy is rarely copycat strategy*". Consequently, an alternative perspective could be advanced, positing that governments are motivated to craft their DT policies with the utmost differentiation in comparison to other countries. We call this the *differentiation hypothesis* in public sector's DT policymaking.

Against the background introduced so far, the primary aim of this study is to discern and enhance comprehension of the narratives and rhetoric underpinning the discourse surrounding societal-level DT. In an endeavor to begin comprehending how DT manifests within this overarching scope, and due to lack of practical alternatives for studying policymaking on global scale and over time, it is empirically factual to study the products of strategizing, that are, the country-wide policies in more detail (Hanna, 2018). The ensuing research questions form the focal point of our inquiry:

- What narratives are used in national DT policies to frame societal-level digital transformation?
- Do these narratives rather differ across countries (differentiation hypothesis) or converge (isomorphism hypothesis)?

In pursuit of addressing the research questions, our approach involved a comprehensive review of national DT policies from 27 countries from different parts of the globe and with different digital capability levels as reported by the United Nations *E*-Government Development Index (EGDI). Given the substantial volume of available data – our textual corpus encompassed approximately 350,000 words – we adopted a machine learning (ML) based technique. This enabled a large-scale analysis of pertinent DT policy documents, offering an advantage over manual methodologies, which might be more limited and often introduce more potential for errors. Our analysis revealed the existence of 8 prevailing narratives pertaining to societal-level DT that are commonly shared across various countries, indicating a stronger inclination toward isomorphic behavior than seeking differentiation with policy documents.

In order to explain how we arrived at this result, we will first provide some more background on the digital transformation and 'strategy-as-practice' literature (Section 2). This is followed by an in-depth account of our methodology (Section 3) and a detailed description of our findings (Section 4). The paper concludes by situating the results within the practical and theoretical context, and by discussing the study's limitations along with prospects for future research endeavors (Section 5).

2. Background

2.1. Governments as strategic actors shaping the trajectory of digital transformation

DT is framed by governments as parts of strategic actions to leverage digital technologies to extend current business models as much as create new ones, with all that these imply in terms of internal processes and stakeholder relationships (Brown, Fishenden, & Thompson, 2014; Falk, Römmele, & Silverman, 2017). Interestingly, even when public service is not explicitly addressed in a nation's DT policy document, the public sector is for a variety of functions discussed later in this paper. The fast pace and unpredictability of digital innovation have often been related to disruptive innovation (Wiesböck & Hess, 2020) which, since its initial conceptualization, was illustrated and celebrated by means of different capabilities and applications of IT (Li, Su, Zhang, & Mao, 2018), such as platforms, social media or mobile computing (Cordella & Paletti, 2019; Yuan et al., 2023). The constant threat of digital disruption (Scott & Orlikowski, 2022) – or the fear of missing out on the next big thing – has been pushing DT on all organizations' agendas (Vial, 2019), including governments and parastatal organizations, allegedly less prone to innovate than their private counterparts (Goh & Arenas, 2020; Venkateswaran & Jyotishi, 2017).

Yet, our understanding of how governments, operating as strategic actors (Hood, 2000), formulate and structure DT policies remains limited and insufficient. A substantial portion of scholarly investigation has (and still is) centered on the provision of succinct clarifications aimed at delineating the concept of DT (e.g., Gong et al., 2020; Janowski, 2015; Mergel et al., 2019). Apart from a multitude of conceptual papers and case studies focused on finding success factors or estimating the impacts of DT on governmental structures or their constituents (e.g., Escobar, Almeida, & Varajão, 2023; Irani, Abril, Weerakkody, Omar, & Sivarajah, 2022; Scupola & Mergel, 2022), there exists a noticeable dearth of scholarly emphasis on the inquiry into the modus operandi through which governmental bodies employ policymaking to exert strategic influence over societal shifts brought about by DT. In most instances, when arguing about their broader role pertaining to DT, governments are portraited as large consumers whose spending power has a direct influence on digital products and services (Avgerou & Bonina, 2020; Bretschneider & Wittmer, 1993; Choudrie & Lee, 2004). Nonetheless, governments can also be construed as regulatory and policy-formulating entities delineating both the imperatives and constraints guiding investments within the public and private domains (Mazzucato, 2011; Scholl & Bolívar, 2019). As such, they wield the capacity to either advance or impede the trajectory and velocity of DT, as exemplified through mechanisms such as data privacy laws, intellectual property laws, or freedom of information laws. It is within this contextual framework that we have conducted this study.

2.2. If governments are strategic actors, what can be learned from strategy research?

Strategy research has been segmented broadly into three related but distinct intellectual orientations: strategy content (Chen, Mocker, Preston, & Teubner, 2010; Rumelt, Schendel, & Teece, 1991), strategy process (Chanias, Myers, & Hess, 2019; Hutzschenreuter & Kleindienst, 2006), and strategy-as-practice (Hughes & McDonagh, 2021; Vaara &

Whittington, 2012). Strategy content scholars have been mainly concerned with sources of competitive advantage and antecedents of firm performance, including but not limited to internationalization (Qian, Khoury, Peng, & Qian, 2010), diversification (Miller, 2006), or merger and acquisitions (Siegel & Simons, 2010). Rather concerned with the dynamics and procedures of formulating and implementing strategy, strategy process scholars focus on the analytical and planning activities as well as their success factors (Floyd & Wooldridge, 2000). The practice-based view of strategy, on the other hand, strives to understand strategy as a trans-organizational social practice, general institutionalized patterns of strategic action as well as in terms of intra-organizational, idiosyncratic micro-activities of strategy work in organizations (Vaara & Whittington, 2012). It is through this latter perspective that we undertook this study.

Adopting this lens, one important institutionalized pattern of strategizing consists in the formulation of statements that comprise "*the fundamental goals that the organization seeks, which typically draw on the organization's stated mission, vision and objectives; the scope or domain of the organization's activities; and the particular advantages or capabilities it has to deliver all of these*" (Whittington, Regnér, Angwin, Johnson, & Scholes, 2020). Strategy documents, including policies and action plans more broadly, are the artifacts of strategy (Abdallah & Langley, 2014). Rather than mere predetermined blueprints awaiting subsequent execution, they are perceived to be essential constituents within the dynamic process of strategizing from which the transformation of goals into operational actions is initiated.

Despite their significance, the way in which these documents are formulated and conveyed, although occasionally overlooked, holds particular importance for their eventual implementation (Kaplan, 2008; Vaara, Kleymann, & Seristö, 2004). Notably, scholars have shown specific attention to the communicative aspects of strategy work (Balogun, Jacobs, Jarzabkowski, Mantere, & Vaara, 2014). Within the array of linguistic approaches to strategic discourse, the practice of framing, as outlined by Kaplan (2008), has garnered much scholarly interest, out of which narrative analysis stands out to be particularly prominent (Barry & Elmes, 1997; Boje, 1991; Fenton & Langley, 2011).

2.3. Narratives as a means to explain the present and construct the future of digital transformation

Narratives can be understood as metaphor-rich discursive constructions that strategic actors use to shape their own and others' understanding (Sonenshein, 2010). Narratives are mobilized in strategic framing to project a sense of expected, intended courses of actions (Uprichard, 2011), including expected prominent actors and potential obstacles they will have to overcome to achieve the strategic goals (Guenduez & Mettler, 2023).

In the context of this paper, for instance, narratives may clarify the fundamental reasons why governments command and administer substantive, ever-rising investments into IT in general and in DT in particular (Goasduff, 2023). They may highlight the current (and possible future) challenges that a government faces which – as we already mentioned – often transcend national boundaries and consequently lead to analogous patterns of behavior (isomorphism hypothesis). Alternatively, narratives may delineate a government's intended engagement with corporate entities and the population, explaining how the state, operating as a as facilitator and regulator, could strategically employ DT in a manner that is not readily replicable. This distinct utilization of DT could confer a competitive advantage in the global competition between countries for attracting talent and turning them into residents and taxpayers (differentiation hypothesis).

To sum, narratives play a pivotal role in aiding governments to construct and clarify their aspirations pertaining to DT (Melin & Wihlborg, 2018). In this endeavor, narratives assume paramount significance in deciphering the underlying values and ramifications for society at large. In the following, we will now explain how we identified and analyzed these narratives using a ML based technique, called Latent Dirichlet Allocation (LDA).

3. Method

LDA is a computational content analysis technique for exploring the hidden thematic structure of text collections (Blei, Ng, & Jordan, 2003) and which follows the notion that *[…] statistical patterns of human word usage can be used to figure out what people mean*" (Turney & Pantel, 2010, p. 141). Rather than simply counting frequencies of words in a given text corpus, LDA draws on an abstract probabilistic process and uses the extant text corpus for estimating the distribution of underlying, latent topics (Griffiths & Steyvers, 2004). LDA uses two matrices to define this hidden thematic structure (Maier et al., 2018): the word-topic assignment matrix φ and the document-topic assignment matrix θ. The word-topic assignment matrix φ has two dimensions, K and V, in which K is a numerical value defining the number of proposed topics in the model, and V is the total number of words in the vocabulary of the corpus. LDA requires the researcher to determine a fixed set of topics K a priori (Blei et al., 2003). The algorithm then allocates the observed words in each document to the topics and assigns for each topic a probability to the words from the vocabulary (DiMaggio, Nag, & Blei, 2013). Accordingly, any value of $\varphi_{w,k}$ represents the probability with which the word $w = 1\ldots V$ is likely to occur in topic $k = 1\ldots K$. Likewise, each value of $\theta_{d,k}$ represents the probability with which a topic k is likely to occur in a given document $d = 1\ \ldots D$. The initial state of term probabilities to topics φ and initial state of the topic probabilities to documents θ is designated at random (Blei, 2012). The algorithm then tries to maximize joint likelihood by iteratively adapting values of the word-topic distribution matrix φ and document-topic distribution matrix θ. Similarity of documents can then be determined by comparing word vectors or word embeddings (Stein, Jaques, & Valiati, 2019), which are multi-dimensional meaning representations of a word. Blei et al. (2003) argue that by inspecting both φ and θ, researchers may be able to identify the most salient and characteristic terms defining a topic and get a grasp on the semantic similarity of documents.

A major advantage of using LDA as opposed to purely qualitative methods of text analysis or simple quantitative co-occurrence analysis is that the resulting topic models can reveal semantic connections between words, […] *even if they never actually occurred in a document together*" (Maier et al., 2018, p. 96). Given that topics are inferred from estimating probability distributions over the vocabulary of a corpus rather than direct observation and pattern matching in the text, it reduces coding bias to the extent that subjective assessment is required in the very last step only.

3.1. Corpus development and text processing procedure

Our corpus is composed of 27 official governmental DT policies, or approximately 350,000 words, constituting the diverse meanings, connotations, and strategic priorities of these countries regarding DT. The process of policy sampling has been purposive, encompassing all documents authored in the English language and directly pertinent to the domain of DT, which have been disseminated by federal or central state agencies between 2012 and 2019. While acknowledging the potential value and significance of expanding the sample by encompassing multiple languages, we must address theoretical concerns pertaining to the potential influence of automatic translations on empirical data, especially because natural language processing (NLP) libraries are differently advanced in their maturity and handling of texts. However, the rationale behind this decision was not solely driven by programming challenges; pragmatic considerations surrounding the cleaning and processing of pertinent textual sources (i.e., how to work with texts in the absence of semantic comprehension) have also guided our decision to exclusively focus on official documents and government websites available in the English language.

The textual corpus encompasses a breadth beyond the confines of English-speaking nations, encompassing countries across all continents and developmental stages, covering countries ranked at the top of the United Nations (2018) e-Government Development Index (EGDI), such as Denmark (ranked #1) or Australia (ranked #2), as much as countries at the very bottom of the ranking, such as Sierra Leone (ranked #174). The complete list of DT policies we analyzed for this study is available in Appendix A.

As illustrated in Fig. 1, our text processing procedure started with converting the strategy documents, typically made available as PDF or HTML files, into a machine-readable text format using the free, open-source Python library called *PyPDF2*. We then followed the suggestions of Manning, Raghavan, and Schütze (2008) and removed all special characters as well as filtered out all boilerplate text passages, such as running titles, pagination, references, or appendices, before tokenizing the text (i.e. breaking documents down into sentences and then into term components). For that, we used *spaCy,* an open-source library for advanced Natural Language Processing (NLP), which is applied in many commercial applications because of its speed for parsing extremely large bodies of text (Choi, Tetreault, & Stent, 2015). We then conducted another text cleansing round by eliminating common stop-words (e.g. functional words such as prepositions or articles), removing a list of unwanted terms (e.g. foreign expressions, URL), and by lower casing and stripping the punctuation from tokens. Maier et al. (2018) further propose to reduce words to their canonical form before applying LDA topic modeling. Accordingly, we used the *WordNet* algorithm, available in the natural language toolkit by Bird and Loper (2004), for converting a term into its base form as the produced results simplified the later analysis and interpretation more than using other stemming algorithms.

3.2. Determining the number of narratives

To explore the hidden semantic structures in governmental DT policies, we used the open-source Python library called *Gensim* by Rehurek and Sojka (2010), as it was most performant in analyzing our large body of text. It also offers the possibility to use alternative topic modeling algorithms. In conducting our content analysis with LDA, our first step was to specify the adequate number of topics and ensure robustness of the resulting topic models. The former is identified by calculating *semantic coherence* (Mimno, Wallach, Talley, Leenders, & McCallum, 2011) and *perplexity* (Rosen-Zvi, Griffiths, Steyvers, & Smyth, 2004) of several candidate models; the later by comparing these values for models with varying numbers of topics and *learning decay* (Stevens, Kegelmeyer, Andrzejewski, & Buttler, 2012).

Topic coherence, or semantic coherence, is a human judged quality that depends on the semantics of the words and cannot be measured by statistical inference that treat the words as exchangeable tokens. Nevertheless, different coherence measures, such as the pointwise mutual information-based score (PMI-Score) developed by Newman, Noh, Talley, Karimi, and Baldwin (2010) or the UMass measure by Mimno et al. (2011), have been proposed to help humans distinguishing between topics that are semantically interpretable and those that represent purely artifacts of statistical inference. To calculate the coherence of our LDA topic models, we applied the UMass measure, which is defined as:

$$coherence\ score\left(t; V^{(t)}\right) = \sum_{m=2}^{M}\sum_{l=1}^{m-1} log\frac{D\left(v_m^{(t)}, v_l^{(t)}\right)+1}{D\left(v_l^{(t)}\right)}$$

where $D(v)$ is the number of documents with least one token of type v and $D(v, v')$ the number of documents containing one or more tokens of type v and at least one token of type v', and $V^{(t)} = (v_1^{(t)}, \ldots, v_M^{(t)})$ is a list of the M most probable words in topic t. A higher score indicates a better topic quality (Mimno et al., 2011).

Perplexity is a common measure for estimating the performance of a probabilistic model and is used in LDA studies to train a subset of documents to predict the word choices in the remaining documents (e.g., Han, Lappas, & Sabnis, 2020; Huang, Lehavy, Zang, & Zheng, 2018). It is defined as:

$$perplexity\ score\ (D_{train}) = exp\left\{-\frac{\sum_{d=1}^{M} logp(w_d)}{\sum_{d=1}^{M} N_d}\right\}$$

where N_d is the number of words in document d, w_d is a vector of all the words in document d, and $p(w_d)$ is the probability of observing the word vector w_d in document d given the LDA model estimated from the training data (Rosen-Zvi et al., 2004). Better generalization performance is indicated by a lower perplexity over a held-out document.

We performed a sensitivity analysis with varying learning decay (from 0.5 to 0.9) and different numbers of topics (from 2 to 20) to determine the adequate number of topics for a trained model with lowest perplexity and highest log likelihood. Learning decay indicates which point is optimal considering the learning rate of the topic model.

The optimal parameters for our LDA analysis turned out to be $K = 8$ topics with 0.5 learning decay. As Fig. 2a shows, topic coherence is highest with a learning decay of 0.5 and 8 or as much as 16 topics. Fig. 2b indicates that the perplexity score remains relatively stable with an increasing number of topics, but significantly increases once the number of topics exceeds >8 topics. In Section 4, we therefore present an 8-topic solution (each topic denoting a discrete policy narrative) derived from the identified optimal parameter configuration described above.

3.3. Validating the calculated model

The second step of our analysis consisted in examining the validity of the resulting LDA model. External validity is typically studied by contrasting the calculated model with other alternative topic modeling techniques or human judgment (Newman et al., 2010). Our approach consisted in comparing the LDA model with other algorithms for topic modeling, that is Hierarchical Dirichlet Process (HDP) (Teh, Jordan, Beal, & Blei, 2004), which does not require an a priori definition of the number of K topics for model training, but estimates the appropriate number for K directly from the data instead (Maier et al., 2018), as well as with Latent Semantic Indexing (LSI), another well-known parametric approach for topic modeling (Hofmann, 1999), which similar to LDA

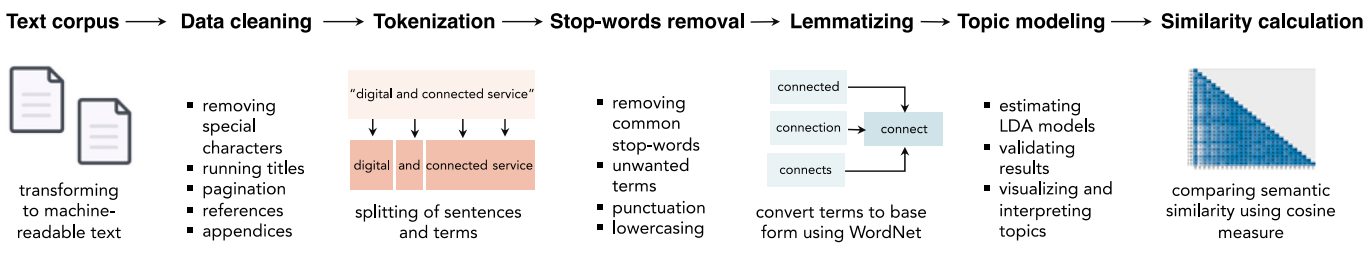


Fig. 1. Text processing procedure.

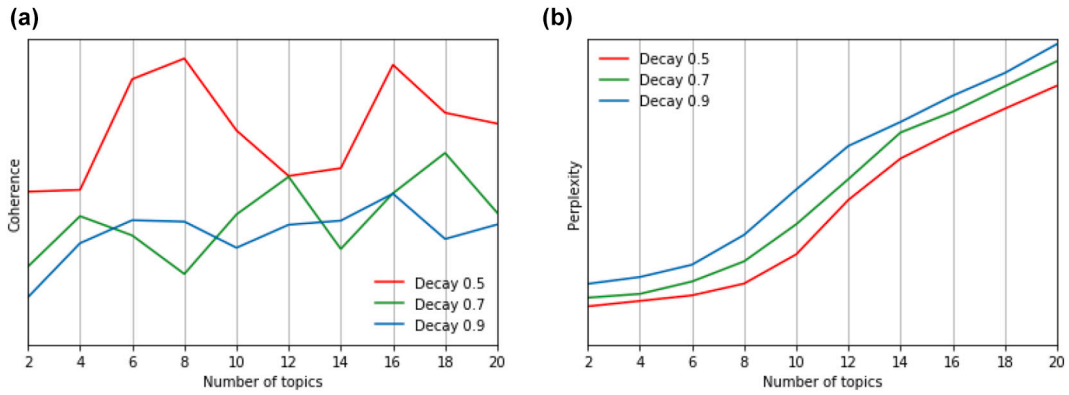


Fig. 2. a. Number of topics in relation to coherence of LDA model. b. Number of topics in relation to perplexity of LDA model.

requires the researcher to predefine the quantity of topics (in our case, we also set K = 8 accordingly). With a coherence score of 0.38, the calculated LDA model performs equally well as LSI (0.38) and better than HDP (0.25).

To assess intra-topic semantic validity of our LDA model, we made use of *LDAvis* (Sievert & Shirley, 2014), a method for visualizing the distinctiveness and saliency of a set of topic-term distributions estimated in LDA model in relation to the relevance of a term defining a topic. Following Chuang, Manning, and Heer (2012), distinctiveness determines how informative a specific term w is for determining the generating topic, versus a randomly-selected term. It is defined as:

$$distinctiveness(w) = \sum_{T} P(T|w) log \frac{P(T|w)}{P(T)}$$

Saliency refers to the likelihood that an observed word w was generated by latent topic T and can be defined as:

$$saliency(w) = P(w) \times distinctiveness(w)$$

Following Sievert and Shirley (2014), relevance of a term w to a topic k can be defined as:

$$relevance(w, k|\lambda) = \lambda log(\varphi_{kw}) + (1-\lambda) log\left(\frac{\varphi_{kw}}{p_w}\right)$$

where φ is the word-topic distribution matrix and λ determines the weight ($0 \leq \lambda \leq 1$) given to the probability of term w under topic k relative to its lift. $\lambda = 1$ therefore yields a familiar ranking of terms in decreasing order of their topic-specific probability and $\lambda = 0$ yields terms solely by their lift. Multiple experiments have been conducted to define the optimal value of λ, which turns out to be about 0.6, in the definition of relevance to aid topic interpretation. Fig. 3 illustrates two aspects: (a) on the left side, there is a global topic view based on multidimensional scaling, which shows the marginal topic distribution and how close certain topics are from each other, and (b) the bar chart on the right side (not set for a specific topic in the graph) displays the most salient terms based on their estimated frequency within the selected topic in relation to the overall frequency of appearance.

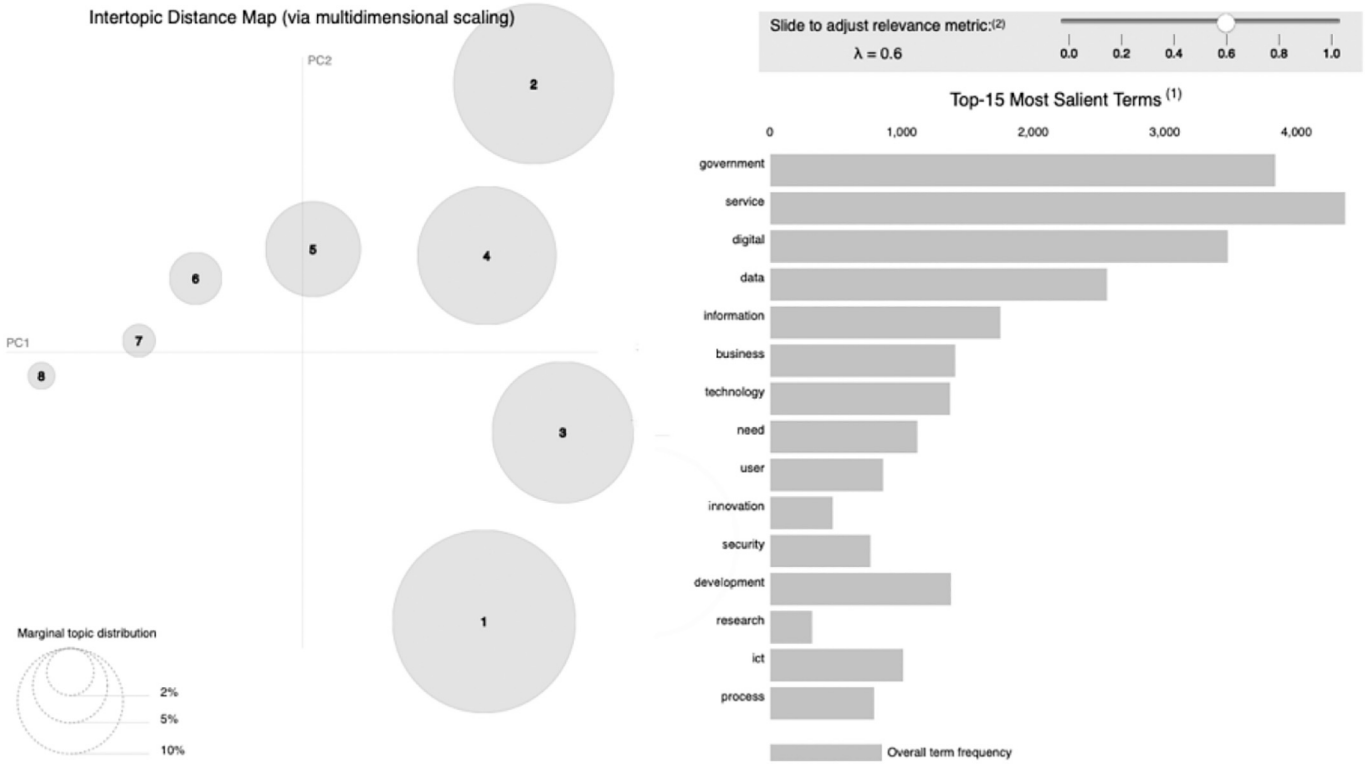


Fig. 3. Relevancy of certain terms per identified topic

Especially the latter, which orders terms by relevance (in our case, set to 0.6), is supposed to ease the interpretation which still is based on human judgment.

3.4. Deriving policy narratives

According to DiMaggio et al. (2013, p. 586), "*Producing an interpretable solution is the beginning, not the end, of an analysis.*" Although an abundance of scholarly articles explains the application of LDA and offer computational methodologies for validating the resultant topics, the discourse within the ML literature remains notably limited in addressing the cognitive interpretation of the outcomes. For this task – to specifically address our first research question – we sought inspiration from Jones, Shanahan, and McBeth (2014) *narrative policy framework* (NPF).

The NPF is a systematic approach to the study of policies and the therein propagated narratives (Jones & McBeth, 2010). According to the NPF, narratives consist of the following four components: (1) The *setting* provides the context in which a story is told. This includes scientific facts as well as norms, rules, and/or assumptions that most relevant actors agree with or that are relevant in a particular policy area; (2) a narrative is about distinct *characters* that are individuals, groups, or whole organizations which may have different interests; (3) the *plot* emerges as a result of the actors acting in their context and usually describes a problem definition; (4) the *moral* of the narrative is a consequence derived from the problem definition and indicates a need for action and offers a possible solution or at least a hint of it. Using an inductive interpretive approach, we contrasted the top words from the LDA analysis with direct quotations from the text corpus, which are provided in Appendix B, to formulate the repertoire of narratives that will be presented in subsequent Section 4.

3.5. Estimating similarity

The final step in our method aims to provide insights into the second research question, focusing on the exploration of whether the documents exhibit tendencies toward isomorphism or differentiation. To compare the divergence (or convergence) of the narratives propagated in the analyzed policies, we calculated similarity scores based on the similarity function available in the *spaCy* library. Similarity is measured based on the assumption that the multidimensional meaning of a word can be represented by a word vector. It then compares the cosine of the angle between word vectors. The cosine similarity is advantageous as it allows the comparison of documents which are different in length. Even in the case two documents are far apart by the Euclidean distance (i.e., dissimilar in length), it is still able to detect semantic similarities by examining the angle of word vectors (i.e., the smaller the angle, the higher the cosine similarity). While a value of 1 means that the semantic content of two documents is essentially the same, 0 indicates that there is no similarity between the two compared documents. To build the word vectors, the sentences in the documents are preprocessed to derive the words and trained with a pretrained *spaCy* vocabulary containing over one-million-word vectors.

4. Results

Let us start by retracing our analytical steps in a reverse sequence, thereby first revealing the findings relevant to the second research question. To this end, the computations quantifying the semantic similarity across diverse documents were visualized by means of a document similarity matrix, as shown in Fig. 4. The graphical representation demonstrates a pronounced convergence among the documents originating from various countries, with a similarity between document as high as 0.995 and as low as 0.892. Consequently, we are inclined to posit that our findings provide support for the isomorphism hypothesis, respectively we show that there exists a diminished emphasis on differentiation and competitive dynamics, with a more pronounced focus on the challenges of digitalization that may possess a global or universal dimension (e.g., the vulnerability of cyber-physical systems, or the need to modernize outmoded government structures). For example, with a similarity of 0.995 the DT policy of Canada exhibits remarkable resemblance to that of the United States, a congruence substantiated by geographical, cultural, and resource-related parallels. Similarly, the DT policy of Sierra Leone, despite confronting vastly distinct contextual circumstances compared to the United States, shows a surprising degree of similarity (0.988), underscoring an inclination toward isomorphism in both orientation and governmental conduct. Because of that, cynics might contend that contextual considerations – despite being emphasized and shown to be vital for the advancement of digital government (e.g., Bertot, Estevez, & Janowski, 2016; Janowski, 2015) – wield negligible influence within the policy arena. At least from this abstract statistical contemplation, a considerable portion of the DT policies appear to display a discernible semblance (or be "same same").

While evident convergence in terms of primary main assumptions, priorities, and promises pertaining to DT are shared, the precise origins of these notions remain elusive; what is ascertainable is their widespread dissemination across global spheres, respectively that the same narratives "*travel around the planet*" (Czarniawska, 2012, p. 27). Historically, factors such as geographical, cultural, or historical proximity (e.g., stemming from shared borders, language, colonialization, etc.) could offer justification for anticipating a heightened convergence between certain countries (Basu, 2016; Ingrams, Manoharan, Schmidthuber, & Holzer, 2020), or a more direct course of the path that the narratives take. However, in light of the pervasive impact of globalization and the omnipresence of the Internet, this assertion may no longer hold true.

Accordingly, we performed a hierarchical cluster analysis to discover the countries exhibiting greater "closeness" and those that – despite sharing the same basic narratives, which we will present next – manifest a somewhat different style in framing their strategic intent. To facilitate a visual interpretation, the findings of this analysis have been plotted by means of a dendrogram, as shown in Fig. 5.

To some extent, the resemblance in discourse patterns can, indeed, be attributed to the geographical proximity of the countries involved. For example, this is the case between Uruguay and Brazil or between Germany and the Netherlands. In contrast, Japan, situated approximately 8600 km away from Denmark, displays a more akin policy discourse compared to Sweden's interaction with its neighboring country Denmark.

We acknowledge that, relying solely on a document-based analysis, our capacity to provide definitive explanations remains constrained to speculation. However, it appears that Japan, holding the 10th position in the EGDI ranking, appears to emulate the content and manner of communication of Denmark, which holds the top rank in the EGDI. This imitation seems to stem from the belief that Denmark's modus operandi is "beneficial" or "correct" as compared to the approach taken by other countries. This pattern, in conventional parlance referred to as "follow the leader" behavior, is known in the scientific literature as *mimetic isomorphism* (DiMaggio & Powell, 1983; Haveman, 1993).

In specific instances, a shared historical background emerges as a plausible rationale for the resembling policies of geographically distant nations. This is evident, for instance, in the case of the United Kingdom and Singapore, both of which occupy comparable ranks in the EGDI (4th place the former and 7th place the latter). Despite significant size differences, these countries share the commonality of being island nations with substantial global economic influence. More important, however, is the fact that both countries share a colonial history that has led to Singapore "inherit" a British administrative model (Haque, 2004).

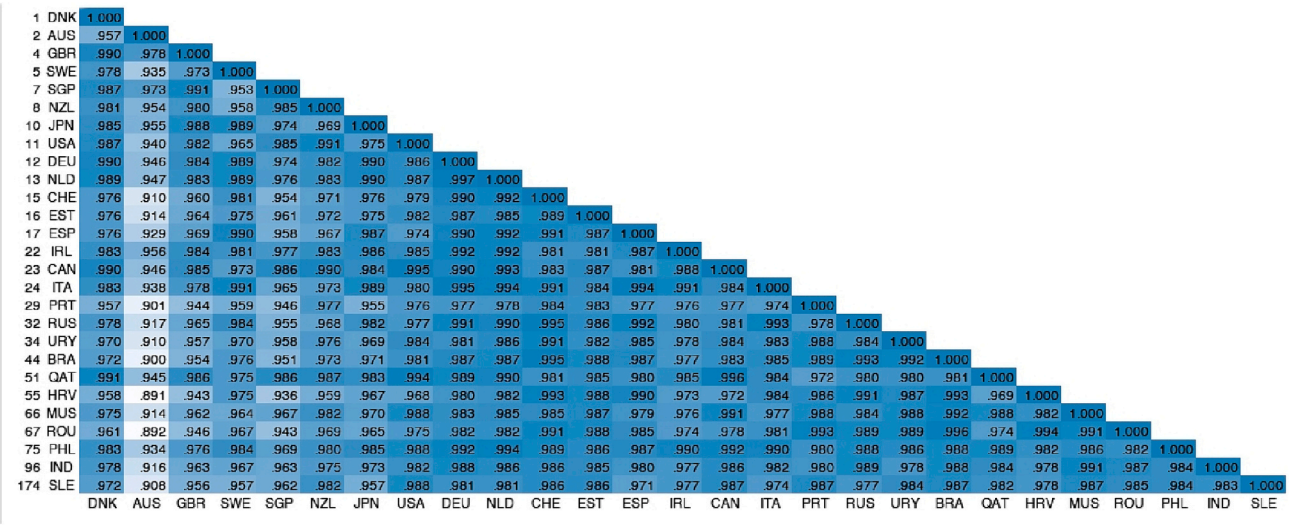


Fig. 4. Results of document similarity estimation.

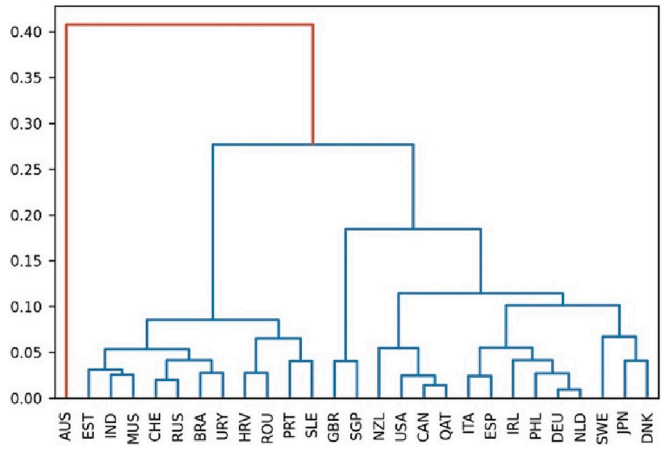


Fig. 5. Results of cluster analysis visualized by means of a dendrogram.

Consequently, both nations possess analogous public sector traditions, with their norms and values reflected in the way how public servants approach problems, what they consider important, and how they communicate their work (Weerakkody, Omar, El-Haddadeh, & Al-Busaidy, 2016). This type of akin behavior, stemming from a shared socialization and interactional histories, is termed *normative isomorphism* in the literature (DiMaggio & Powell, 1983).

In general, precisely ascertaining the focal point of communication and the intended beneficiaries of the DT policies – whether they encompass citizens, corporate entities, investors, foreign states, or international bodies – proves to be a complex challenge. An intriguing exception emerges in the case of Australia. Scrutinizing the Australian DT policy document reveals a disposition for a more direct engagement with its population. This inclination is discernible through a reduced reliance on general or passive terms when conveying the government's plan for DT (it speaks directly to citizens). However also here, our inferences remain within the realm of speculation concerning the potential underlying motives for this decision. These could potentially be linked to a prevalent light-hearted and depoliticized approach to discussing societal issues, often referred to as the "Aussie way of life" (Terrill, 2000), or a persistent inclination to diverge from its British colonial legacy which monarchy tradition takes a different approach in its engagements with its citizenry.

Despite the previously delineated differences, it is imperative to underscore that the discourse pertaining to DT, including the Australian case, maintains a considerable degree of consistency. The repertoire of narratives that serves as the foundational basis for this discourse, and at the same time represents the answer to our first research question, is summarized in Table 1 and discussed in more detail next.

4.1. The outmoded government narrative

A repeating story that is featured in the examined policies is the one of a government that is unable or stymied to embrace the digital transformation and use it to bring added value due to outdated and isolated structures and a bureaucratic culture based on silo thinking, in the public administration. As opposed to fostering newly propagated IT trends and fashions, such as more agile, flexible, and collaborative ways of designing and delivering digital services, the current structures and culture of public administrations are not well adapted to new technologies, though there is an increasing awareness for a need to change among state actors, as is for example expressed in the United Kingdom's strategy: *"Many departments have started to transform how they deliver services … but in many cases it has not changed the way government organisations operate to deliver them"* (GBR, 2016, p.5).[1] As a way out of this lethargy, many of the analyzed DT policies, hence, propagate drastic government reforms or a restructuring of the public administration and its organizational culture in order to transform the rigid structures into a more digitally oriented mindset focused on continuous learning and improvement. Good examples for this are the strategies of Spain and Singapore: *"The Administration should be in the vanguard of the use of new technologies, (…) To accomplish this, a comprehensive transformation is needed towards Digital Government"* (ESP, 2015, p.17). *"We want to encourage a 'dare to try' mindset, where officers will be empowered to try out new ideas and new ways of working, which will be critical to support the realisation of new opportunities"* (SGP, 2018, p.25).

4.2. The opaque government narrative

The second narrative which is portrayed in DT policies is about a lack of transparency of government actions resulting in low efficiency and accountability and thus leading to low levels of citizen trust and usage of public services. From this follows the premise that progressive digitalization of services helps to increase governmental transparency and citizen participation in public affairs, ultimately leading to good

[1] See Appendix A for country codes.

Table 1
Identified narratives in digital transformation strategies backed by top-10 highest-probability words.

	Settings	Characters	Plot	Moral	Top-10 words defining the narrative
1	Outmoded government structures	State actors acting in current structures bringing little added value. They are aware of a need for change.	Current structures of public administrations are not well adapted to new technologies	Current structures and culture in government need to be reformed and obstacles removed to facilitate digital transformation	0.040*committee +0.007*government +0.007*change +0.005*transformation +0.005*administration +0.003*strategy +0.003*information +0.002*ministry +0.002*state +0.002*action
2	Opaque government behavior	Citizens demanding government transparency	Due to a lack of transparency, citizens do not trust the state and hardly use its services.	Promoting openness as core value of digital government; increasing accessibility to information and citizen participation in government processes	0.023*value +0.019*data +0.005*public +0.005*sharing +0.005*technology+0.005*user +0.005*policy +0.004*open +0.004*citizen +0.004*access
3	Public sector lagging behind private sector digitalization efforts	State actors lacking digital skills and capacity	Administrative inertia and resistance culture is crippling digital innovation	Educating and hiring new generations of public administrators; establishing a post-bureaucratic workplace culture which instigates creativity and innovation	0.018*innovation +0.017*public +0.015*capacity +0.014*ict + 0.013*skill +0.011*service +0.011*education +0.011*work +0.010*administration +0.009*private
4	Global competition in the digital economy	State actors wanting to promote digital competitiveness of their country	National economic development cannot grow without a proper environment	Spending public money for the digital transformation also benefits economy and enhances the country's international competitiveness	0.031*business +0.020*sector +0.016*national +0.012*investment +0.011*development +0.010*payment +0.009*business +0.008*data +0.008*startups +0.007*policy
5	Value capture, delivery, and sharing through digital platforms	State actors recognizing potential of digital platforms	Digital government services do not unfold full potential	Increase adoption of platform-based solutions in government to create public value	0.036*platform +0.029*cloud +0.019*shared +0.018*government +0.015*web +0.014*service +0.014*library +0.011*digital +0.010*mobile +0.010*internet
6	Poor usability of digital government services	Citizens expecting user-friendly digital government services	Good usability of digital government services is hindered by organizational silos and lacking skills	Defining design principles for digital government services; establishing user-centric services across different agencies and departments	0.042*government +0.039*service +0.030*digital +0.015*public +0.014*citizen +0.011*technology +0.011*service +0.007*people +0.007*user +0.006*society
7	Vulnerability of critical cyber-physical public and private infrastructures	State actors taking active role in cyber security	Digital government services are under constant threat and attack	Increasing security and control of critical cyber-physical (public and private) infrastructures to strengthen citizens' trust in digitalization	0.043*data +0.016*public +0.014*threat +0.014*cyber +0.012*service +0.011*infrastructure +0.008*government +0.007*system +0.007*information +0.007*device
8	Inequality in digital transformation	State actors considerate of different groups in society	Risk of leaving a proportion of the population behind due to progressive digitalization of government services	Planning some transitory measures for increasing security and minimizing the risk of exclusion of certain population groups	0.011*privacy +0.011*information +0.007*accessibility +0.007*negative +0.007*digital +0.006*security +0.006*government +0.005*divide +0.005*citizen +0.004*network

governance and greater accountability of the state: "*Deepening the digital transformation of the public administrations, making the digital channel the preferred choice of citizens and businesses to interact with the Administration, (…) enhancing the transparency of internal functioning*" (ESP, 2015, p.12). Central characters in this narrative are the citizens, increasingly demanding more open and transparent digital services that enable them to be informed and to participate in the public debate: *"Citizens are increasingly demanding for greater openness in government. They want to participate more in public affairs and seek a way to make their governments more transparent, sensitive, responsible and effective"* (URY, 2016, p.4). Establishing a culture of openness and trust as well as increasing accessibility to information and establishing new ways of citizen participation is the moral of this story: *"Greater transparency fosters trust and makes it easier for different parties to interact. In particular, e-Government supports more transparent government performance by being able to track the speed and quality of execution. … Electronic channels allow for constituents to have a much more open and transparent participation in policy creation."* (QTA, 2014, p.3).

4.3. The public versus private sector narrative

DT does not happen in a vacuum. Citizens and businesses alike constantly compare (or do not differentiate between) the quality, cost, ease-of-use, and overall usability of public services and the ones they consume from private service providers. What becomes apparent from this comparison is that the private sector is generally more advanced in the adoption of digital technologies and the public sector is antiquated: *"Many sectors have been disrupted by new companies making the best use of digital technology, but it is not a given that similar benefits will be realised by government automatically."* (GBR, 2016, p.16). Nevertheless, a non-neglectable share of governmental agencies has been reluctant to accept this fact and developed a particularly strong resistance to adapt the design and delivery of digital services according to the standards laid down by other sectors of the economy which are leading in the DT. Accordingly, a common narrative that is found in the analyzed policies is that of governments lagging behind or being unable to match private-sector digitalization efforts because of the incapacity of thinking and acting creatively due to a deeply rooted culture of resistance and organizational inertia. The root of this lies in a lack of adequate digital skills among public servants that would enable them to become drivers of digital change and perform on a level playing field with the private sector: *"… a lack of technological skills within the public administration, with the consequence that it is often the supplier that suggests to the PA what it must buy"* (ITA, 2018, p.48). The moral that commonly is put forth to address this issue is to train existing public servants and to recruit and educate a new generation of public servants who have the necessary skills and mindset. In this sense, while the two previous narratives implicitly pointed to some sort of subliminal cultural change, this third

one demands it more explicitly to remain interesting as an employer for young IT professionals and to bring digital government services to a similar level of sophistication as private sector services. *"We must have the right capabilities to support our level of ambition and ensure that the Government is able to 'think big, start small and act fast' to seize new opportunities"* (SGP, 2018, p. 24).

4.4. The digital competition narrative

Another narrative that is transported in DT policies is not only that of blurring boundaries between the private and public sector but also that of accelerating global competition in the digital economy in which the state must take part to remain relevant and attractive. Consequently, governments are acting as investors and promoters of the domestic tech industry and startups to foster economic development, enhance the competitiveness of their states and ensure leading positions in the global digital competition: *"In order to remain competitive, the Dutch business community must lead the way in digitalisation. The government is therefore providing a boost by means of specific action programmes for SMEs and the industry"* (NLD, 2018, p.16). However, the further development of national economic growth is only possible if the proper environmental conditions for business, investments, and innovation are created by governments. The moral that is presented is that spending public money for the digital transformation is not only beneficial for the state, but also for economic growth and the country's international digital competitiveness: *"Serving businesses faster and providing them with valuable open datasets will enhance national economic development. Successful e-Government will also raise the international profile and standing of Qatar"* (QTA, 3).

4.5. The digital platform narrative

For digitalization to generate value it is not enough to develop, deploy, and maintain technological artifacts, but also to be able to orchestrate and serve numerous, antagonistic stakeholders with diverse needs and objectives. Consequently, the potential of digital platforms for value capturing, delivery, and sharing of information in both the private and public sector is mentioned often in DT policies and the need to implement platform-based solutions increasingly recognized by state actors, as becomes clear in the case of Singapore: *"Our systems have to be interoperable and easy to maintain over time. In order to do this, we will leverage common platforms where we can, (…) This requires the Government to significantly re-engineer ourselves."* (SGP, 2018, p.18). Without the implementation of digital public platforms, governmental services cannot unfold their full potential. A moral that is propagated in the analyzed DT policies is that digital platform solutions need to be increasingly adopted by governments to create public value and reap benefits for citizens, businesses, and the administrations themselves: *(…) a shared platform approach to developing and delivering digital services and managing data not only helps accelerate the adoption of new technologies, but also lowers costs and reduces duplication"* (USA Stevens et al., 2012, p.5). Presenting data platforms as single truth, a overlooked aspect within this discourse is, however, the portrayal of alternative paradigms for data sharing and governance (Micheli, Ponti, Craglia, & Berti Suman, 2020).

4.6. The usability deficiency narrative

Fitting with the private versus public and the digital platform narrative, another recurring message in DT policies is that the adoption and use of digital services are primarily slowed down because of the quality and usability issues of deployed services. Currently, existing digital public services are portrayed as being complicated and overly bureaucratic, thus lacking the necessary efficiency and incentives to be adopted by users. Improvements in the design and usability of these services are expected and requested by citizens, as is shown in the case of Canada: *"Citizens typically want more digital government services but are discouraged by difficulties in accessing digital information or service channels"* (CAN, 2017, p.8). However, developments aimed at improving the usability of public services are again hindered by organizational silos and a lack of digital skills in governments. Without the necessary competencies and openness toward new digital technologies, the provision of services cannot be improved to match users' needs. A solution which is presented in the analyzed documents is that government start pondering about service design principles and re-define services from a user-centric perspective across different agencies or departments: *"Periodically defining standards and quality levels … that the PA must comply with when reorganizing and updating the services provided, based on a prior analysis of the actual needs of users, and making these available online"* (ITA, 2018, p.53), *"Services need to be redefined from a user-oriented perspective, taking into account both citizens' and public servants' needs to make them more accessible, usable, simple and secure"* (ESP, 2015, p.21).

4.7. The cyber threat narrative

Digital public services have not been exempted from security breaches and other forms of cyber-attacks. When it comes to citizens' data and privacy rights, critical cyber-physical infrastructures have proven to be especially vulnerable. Digital services are under constant threat and attack by cybercriminals or foreign state hackers whose goal is to dismantle the state and economy for their own gain. Aware of these threats, governments are taking an increasingly active role in the establishment of cyber security practices, defining them as a clear public responsibility: *"We need to continually safeguard both Government and citizens' data, and ensure that critical public services remain unaffected"* (SGP, 2018, p.22). A solution that is put forth is intensifying public investments in the security and resilience of critical cyber-physical infrastructures to strengthen citizens' trust in digitalization: *"It is not only the protection of critical infrastructures which is a central element of digitalisation to ensure their longevity. Rather, this extends to other areas of public life, to ensure the population's confidence in the efficiency of the state"* (CHE, 2018, p.7).

4.8. The digital divide narrative

Ingrained in the concept of DT is a socio-technical change or transition from an analog (or low digital) present to a "digital-by-default" and "once only" future. While for some these are positive prospects, for others the progressive digitalization of public services (without analog options) presents a massive challenge, as most societies are facing a digital divide that results in inequality of DT. Consequently, for certain vulnerable groups in society who are lacking digital skills, there is a risk for exclusion from society through the progressive digitalization of public services. This demonstrates the dark side effects of the DT and a growing social, cultural, and political divide – fueled and intensified by digital technology – between the young and the old, the tech-savvy and tech-illiterate, or the rich and the poor: *"'Digitization for All' … embodies the realization that technology and scientific advances will fail to deliver national development and good governance for every citizen if digitization is not inclusive and available for all: the literate and illiterate, urban and rural dwellers, young and old, men and women, companies and individuals, public and private sector"* (SLE, 2019, p.6). However, the DT policies portray an overall awareness of these issues and consideration for vulnerable

groups among state actors. To reduce the risk of leaving behind large proportions of the population an increased sensitization toward the needs of marginal groups and transitory planning of supportive measures and improvement of digital literacy (e.g. free Internet access, computer training courses) are presented as solutions out of this dilemma, for example in the Digital Strategy of the Netherlands: *"This is to avoid a division in society between those who can take advantage of opportunities and those who cannot"* and *"The government supports various initiatives and encourages both employers and social parties to give people with limited digital skills the opportunity to acquire these skills"* (NLD, 2018, pp.12, 30). A similar notion is also expressed in Singapore's strategy: *"We believe that as we push ahead, no one should be left behind, … Services should be user-friendly, accessible and beneficial to different population segments."* (SGP, 2018, p.27).

5. Discussion

Our study centered on how governments, as strategic actors, frame societal-level DT policies. Employing ML to analyze a text corpus consisting of approximately 350,000 words, we identified a repertoire of eight prevalent narratives through which governments shape their strategic agendas pertaining to DT. While assessing the degree of semantic similarity among these documents, we find a strong convergence of the discourse presented, which leads us to confirm the isomorphism hypothesis, respectively dismiss the idea that DT policies primarily revolve around the pursuit of establishing a competitive advantage over other governments.

5.1. Practical implications

Overall, our study unveils a number of findings that are of practical relevance. Firstly, and consistent with the perspective of strategy-as-practice (Hughes & McDonagh, 2021; Vaara & Whittington, 2012), the narratives highlight the dual role of states as both active agents – engaging in roles such as regulators, enablers, users, or investors of digital technology (Guenduez & Mettler, 2023) – and the context in which DT operates within the state and public sector. Secondly, the narratives predominantly adopt a defensive and problem-centric orientation, portraying DT as a response to well-recognized challenges prevalent across the globe, which might explain why these narratives are largely shared among governments. In essence, the governments crafting these policies appear to introspectively assess the current state of affairs, utilizing these policy documents to provide a realistic diagnosis that, in turn, outlines and advocates for an improved future. It is not surprising that this shared conception of the future exhibits substantial similarity, particularly given that the aspiration for a well-functioning state equipped with a secure and user-friendly IT infrastructure, that is beneficial for both its citizens and economy, aligns with the interests inherent to all societies. The displayed good intention and commonsensicality make them difficult to disagree with (Pollitt & Hupe, 2011).

In a context where every government presents equivalent pledges, it is legitimate to ask what intrinsic worth these policies hold. Viewed from a positive lens, these documents demonstrate a government's comprehension of the complexities entailed by DT and project a compelling sense of governmental commitment toward safeguarding the prospective interests of and creating public value for both business and society (Sandoval-Almazán et al., 2017). They signal that policymakers possess an awareness of prevailing and forthcoming challenges, are actively engaged in seeking remedial courses of action and, in doing so, are cognizant of approaches and solutions adopted by others (i.e., avoiding redundant efforts and errors made by others).

Adopting a less positive standpoint, one could contend that the pronounced resemblance in narrative repertoires and their rhetorical deployment within policies implies a potential shortcoming in governments' endeavor for optimal distinctiveness (Zhao, Fisher, Lounsbury, & Miller, 2017). It appears, instead, that governments operate within what strategic scholars identify as strategic or cognitive groups (Reger & Huff, 1993) – an environment of competition interpreted in a manner that reinforces self-similarity, ultimately engendering convergent thinking and thereby precluding substantial differentiation. Moreover, an argument could be posited that imitating the narratives of others constitutes a legitimate political strategy for evading accountability and blame (Weaver, 1986). Pursuing an alternative, markedly dissimilar discourse from the norm exposes vulnerabilities to criticism, particularly when the actual outcomes deviate from the originally professed promises (Hinterleitner, 2020). As previously mentioned, considering the substantial failure rate of 70% among such projects (Bucy et al., 2016), the significant prospect of potentially losing political capital due to an unsuccessful DT endeavor is considerable.

An additional question arises concerning the precise intended audience for these documents, respectively the entities to which accountability is ascribed. The documents – unintendingly or not – lack clarity in specifying the target audience, except for Australia, which has deliberately adopted a more citizen-centric communication style. From our perspective, it is evident that separate approaches are needed when aiming to initiate a dialogue with the domestic population compared to the endeavor of attracting global talent and capital. Given the pronounced uniformity and similarity exhibited across these documents, it prompts doubts into whether these policies can indeed effectively convey positive signals to the free capital market and other financial institutions (e.g., the International Monetary Fund, World Bank). As mentioned before, it remains uncertain if this was the intended objective of policymakers, given that the exact motivations behind the publication of such policies remain elusive.

5.2. Theoretical implications

From a theoretical standpoint, our study also offers some food for thought. Despite the resounding calls for policy-driven contextualization of IT (Janowski, 2015), our analysis unveils an inclination to overlook the undeniable diversities inherent in the societal contexts that the implementation of DT must contend with. Instead, a propensity toward isomorphism is apparent. In delving into the underlying reasons that contribute to isomorphic behavior, a conclusive explanation cannot be provided regarding whether socialization (normative isomorphism), or the aspiration to emulate best practices (mimic isomorphism), or even other motivations serves as the impetus behind the neglect of engaging more with a country's idiosyncrasy.

Contrary to studies that commonly make use of institutional theory – a frequent theoretical angle used in the digital government literature to examine the processes through which schemes, regulations, norms, and routines become authoritative for governmental IT (e.g., Hong, Kim, & Kwon, 2022; Luna-Reyes & Gil-Garcia, 2011; Manda, 2022) – our work places more emphasis on the role of discursive practices, particularly narratives, in shaping the trajectory of DT. The identified narratives play a pivotal role in potentially explaining path-dependency, wherein countries often refrain from deviating from the established discourse propagated by early adopters and their legitimizing narratives (DiMaggio & Powell, 1983). This dynamic unveils a complex interplay that is not necessarily overtly instrumental. Instead, governments fostering a thriving IT environment are implicitly regarded as credible in their capacity to initiate comprehensive societal modernization.

We find it important to mention that, even though our results demonstrate a low regard for contextual issues, we strongly believe that situating DT within the appropriate geographical, cultural, and temporal contexts remains a significant consideration warranting rigorous

scholarly exploration. For example, intricacies such as pronounced political instability (Myovella, Karacuka, & Haucap, 2021), weak adherence to the rule of law (Khan & Roy, 2019), economic and financial volatility exacerbated by concentrated wealth dynamics (Goh & Arenas, 2020), the influence of social movements and religious organizations (Ortiz et al., 2019), social unrest (Bergquist, Ljungberg, Remneland, & Rolandsson, 2017), and the uneven distribution of digital infrastructures across demographics and regions (Kvasny & Keil, 2006; Reggi & Gil-Garcia, 2021) all demand due consideration when devising DT policies. The present absence of such factors within today's policy documents does not diminish their significance. For us, it seems plausible that a policymaking approach encompassing a wider spectrum of contextual issues and local conditions could be a potential answer for reducing the high failure rate that is often observed in governmental DT programs. However, it remains difficult to definitively determine the specific impact of such documents on the practical implementation of DT. This is a limitation of our work, but also an interesting starting point for future research, to which we will now turn.

5.3. Limitations and future work

We acknowledge that this study has limitations. To begin with, it is imperative to recognize that the policy documents may not invariably encapsulate the actual occurrences within reality. As mentioned earlier, policy documents serve as artifacts of strategic intent; discerning the precise magnitude of impact instigated solely by these documents presents a challenge. It is plausible that the deciding factors rather lie in the intricacies of how these documents came about. This encompasses differences in the composition of contributors (ranging from a single department or government tier, to a more collaborative endeavor spanning multiple departments of all tiers of government), the extent of consultation (ranging from closed-group deliberations within government to the integration of public consultations), or the manner of how these documents are placed into the wider policy landscape (ranging from a self-contained document to a key puzzle piece within a broader legislative agenda). All these factors have the potential to exert an influence on the manner in which these documents are being perceived and used for subsequent DT implementation. Therefore, to amplify the depth of our findings, a plausible avenue for future research lies in the pursuit of supplementary in-depth inquiries with the authors of these policies. These inquiries would serve the purpose of gaining a more profound comprehension of the creation process (the "how") and the driving forces behind isomorphic behavior (the "why"). This would in turn yield an enhanced understanding of the foundational tenets, thereby facilitating the determination of the veracity of assertions encapsulated within these documents, distinguishing between factual claims (i.e., taking the narratives at face value) and conjectural postulates (i.e., seeing narratives as part of political rhetoric).

Another limitation is our sample, which only covered 27 governmental policies, or roughly 14% of the total population of 193 countries. On the one hand, we cannot say with certainty to what extent such policies exist in all countries (i.e., the actual total population). It could be that our sample is representative for countries that entertain such policies. On the other hand, the limitation to DT policies only published in English language, since manual preprocessing and cleaning of the texts required a comprehensive understanding of the document content, could have introduced bias into the narratives – yet our sample is by no means restricted to countries where English is the native language. The potential of using automated text translation, while initially compelling, was not a viable alternative due to the inherent limitations wherein automated translation often engenders semantic distortions which could have biased the subsequent analyses even more. Should the comparability of NLP libraries across various languages approach parity in forthcoming advancements, the prospect of an extended sample investigation becomes a plausible avenue for future research.

Some limitations also arise from the use of LDA. While it facilitates the examination of large text corpora, it is not entirely an automated procedure devoid of human influence. Attaining outcomes that retain human interpretability mandates the manual configuration of optimal parameter settings. Although there are metrics for validating computational results, they are not universally established, and there is no consensus on how to justify the selection and parameterization of algorithms (DiMaggio, 2015). Hence, using LDA not only entails rigorous validation procedures and sensitivity examinations, but foremost, some human judgment. Due to the inherent nature of LDA, which does not take into account word order, contextual details pertaining to semantic interrelationships among words might be lost (despite potential compensation through our qualitative analysis). Fortunately, there are new, visual approaches that simplify the interpretation of large text corpora composed of hundreds of documents, respectively the resulting dozens (or hundreds) of topics, which themselves are modeled as distributions over thousands of terms (Sievert & Shirley, 2014). Interpreting and comprehending the computed and visualized outcomes of LDA still remains a human endeavor, a process susceptible to the common biases akin to those encountered in qualitative data analysis, which may be also the case in our study.

Nevertheless, we would like to end this paper by encouraging researchers to experiment with new ML-based approaches to scrutinize large bodies of text – consisting of scholarly publications, government reports, or websites – for studying new phenomena, such as DT. In the past, much has been limited by human capacity and resources for processing such information. Although it may not substantially diminish subjectivity, it possesses the potential to broaden the analytical perspective, thereby fostering the possibility of acquiring novel, distinctive insights or corroborate intuitive perceptions that could not otherwise have been substantiated.

CRediT authorship contribution statement

Tobias Mettler: Conceptualization, Supervision, Methodology, Data curation, Formal analysis, Resources, Writing – original draft, Writing – review & editing, Visualization. **Gianluca Miscione:** Conceptualization, Writing – original draft, Writing – review & editing. **Claus D. Jacobs:** Conceptualization, Writing – original draft, Writing – review & editing. **Ali A. Guenduez:** Conceptualization, Writing – original draft, Writing – review & editing.

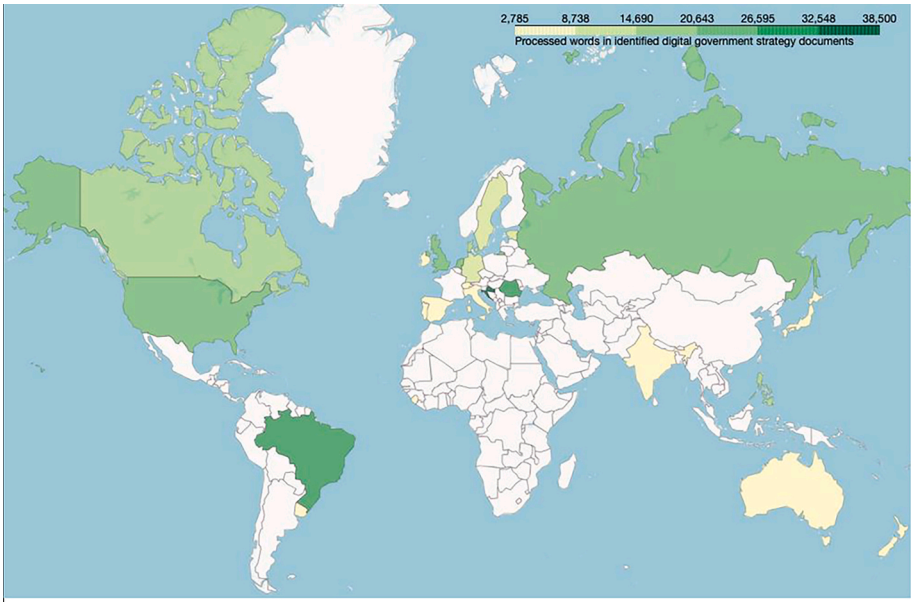
Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgment

This research has been supported by the Swiss National Science Foundation (grant no. 212637; grant holder is Tobias Mettler).

Appendix A. Digital government transformation strategies included in our text corpus



EGDI* Rank	Country (ISO-Code)	Publication year of document	Words in cleaned document
2	Australia (AUS)	2018	7761
44	Brazil (BRA)	2018	31,193
23	Canada (CAN)	2017	19,601
55	Croatia (HRV)	2017	38,505
1	Denmark (DNK)	2016	15,368
16	Estonia (EST)	2018	9110
12	Germany (DEU)	2016	12,790
96	India (IND)	2015	5065
22	Ireland (IRL)	2017	3614
24	Italy (ITA)	2018	2913
10	Japan (JPN)	2017	6316
66	Mauritius (MUS)	2018	17,216
13	New Zealand (NZL)	2019	6489
75	Philippines (PHL)	2019	16,080
29	Portugal (PRT)	2018	2787
51	Qatar (QAT)	2014	6564
67	Romania (ROU)	2014	30,029
32	Russia (RUS)	2016	23,912
174	Sierra Leone (SLE)	2019	5361
7	Singapore (SGP)	2018	3710
17	Spain (ESP)	2015	8240
5	Sweden (SWE)	2016	12,007
15	Switzerland (CHE)	2018	7880
13	The Netherlands (NLD)	2018	21,262
4	United Kingdom (GBR)	2016	24,570
11	United States (USA)	2012	7986
34	Uruguay (URY)	2016	3003

Note: Ranking is based on the 2018 survey of the United Nations *E*-Government Development Index (EGDI).

Appendix B. Direct quotations from DT policies

NPF component	*Description*	*Example*
The outmoded government narrative		
Setting	Outmoded government structures	• *"Absent coordination, however, the work is being done in isolated, programmatic silos within agencies."* (USA Stevens et al., 2012, p.2) • *"… a multitude of rapid technological developments also requires a concentrated and well-considered effort on the part of the government, in terms of both opportunities and challenges."* (NLD, 2018, p. 25) • *"… we want to demonstrate that the era of isolated solutions must come to an end."* (DEU, 2016, p.7)
Characters	State actors acting in current structures bringing little added value. They are aware of a need for change.	• *"It has meant that organisations without public-facing services have not benefitted from the same degree of focus on digital transformation."* (GBR, 2016, p.5)

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NPF component	*Description*	*Example*
		• *"… expose our technology officers to the Government's business needs so they can design effective solutions."* (SGP, 2018, p.16) • *"The government cannot properly serve Canadians if its public service has outdated tools."*(CAN, 2017, p.10) • *"Going forward, … it will be necessary to undertake initiatives that focus on increasing the value of the services themselves (the numerator) that are provided to the public and business operators"* (JPN, 2017, p.4)
Plot	Current structures of public administrations are not well adapted to new technologies	• *"…the barriers between administrative bodies impede total optimization and rethinking administrative services in a way that transcends the boundaries between national and local government, and between the public and private sectors…."* (JPN, 2017, p. 2) • *"… we need a shift in our public service culture to better support transformation and innovation."* (SGP, 2018, p.25) • *"The biggest challenge, however, is the establishment of an appropriate institutional structure."* (BRA, 2018, p.44) • *"In future years, it will also be necessary for a number of authorities to modernise or replace some of their IT systems, either because they are outdated or because they are no longer working according to their intended purpose."* (DNK, 2016, p.10) • *"These approaches are already valued and practised by parts of the public service, but not consistently and they are difficult to do in our current system."* (NZL, 2019, p.10)
Moral	Current structures and culture in government need to be reformed and obstacles removed to facilitate digital transformation	• *"The culture of continuous improvement in public services should be promoted at all times. This means redesigning procedures and services for digital transformation, so that the tasks performed by public servants lead to focus on results in their units, in compliance with the relevant procedural regulations."* (ESP, 2015, p.21) • *"… the government will also need to broadly embrace a 'learning organization' approach of continuous development if it is to ready itself for digital government"* (CAN, 2017, p.13) • *"… changing our culture, structure and processes so that we become more agile, flexible and responsive"* (IRL, 2017, p.4) • *"… government agencies will cultivate a culture of continuous learning and continual improvement driven … by a genuine desire to continually improve how they (the agency or agencies) deliver their products and services to its citizens"* (PHL, 2019, p.32)
The opaque government narrative		
Setting	Untransparent government behavior	• *"Digitization is also essential for supporting and expanding a core function of government: public financial management, and in the process also reducing corruption and increasing transparency and accountability."* (SLE, 2019, p.7) • *"Increasing the efficiency and transparency of the public administration … represents short term strategic priorities aimed at contributing to the effective approach of the major obstacles regarding the economic growth and employment"* (ROU, 2014, p.35). • *"… ICTs have ample scope to raise efficiency, transparency and accuracy of decision making within the government."* (BGD, 2011, p.45) • *"Insufficient efficiency, effectiveness, transparency and responsibility of central government … in public policy implementation and public services provision"* (HRV, 2017, p.43). • *"… agencies still fail to view their service levels from the perspective of the customer. It is one-sided and with no transparent channel for customers to provide real-time feedback."*(PHL, 2019, p.21)
Characters	Citizens demanding government transparency	• *"Canadians want to know what their government is working on and be assured that government is acting responsibly and ethically on their behalf."* (CAN, 2017, p.24) • *"Citizens and businesses expect greater transparency and it is the Government's intention to ensure the trust of its people … and ensuring more accountability."* (IRL, 2017, p.6) • *"Australians want to know how we use their data. They want transparency and accountability in how we make decisions."* (AUS, 2018, p.32)
Plot	Due to a lack of transparency, citizens do not trust the state and hardly use its services.	• *"The lack of trust has to do with the perception (often on no grounds) that digital information is more fragile, privacy in digital environments is more vulnerable and the technology used is less transparent."* (ESP, 2015, p.30) • *"A lack of unique common business processes of the state on horizontal and vertical level makes operation difficult and prevents transparency, which makes it difficult and/or impossible for the users of state administration services to exercise the rights guaranteed to them."* (HRV, 2017, p.39)
Moral	Promoting openness as core value of digital government; increasing accessibility to information and citizen participation in government processes	• *"Citizens and businesses expect greater transparency and it is the Government's intention to ensure the trust of its people by opening up to and engaging with stakeholders in decision-making, and ensuring more accountability."* (IRL, 2017, p. 6) • *"The overall objective is to increase transparency so that all citizens would know at all times who, when, why was their personal data accessed."* (SLE, 2019, p.18) • *"Open Government aims to promote the pillars of transparency, accountability, citizen participation and innovation."* (URY, 2016, p.5) • *"The strategy has three main objectives … the third is to develop a more open government with enhanced participation of citizens and residents in their government and to offer greater access to data that will help spur innovation and help diversify our economy."* (QTA, 2014, p.1) • *"Digital technology must be used to i) increase transparency and social accountability, ii) enlarge social participation in policy making, and iii) provide more and better digital public services."* (BRA, 2018, p.100)

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NPF component	*Description*	*Example*
The public versus private sector narrative		
Setting	Public sector lagging behind private sector digitalization efforts	• *"Many sectors have been disrupted by new companies making the best use of digital technology, but it is not a given that similar benefits will be realised by government automatically."* (GBR, 2016, p.16) • *"Data science, and in particular AI, has transformed decision making in the private sector in the last ten years. However, its applications in national governance are still rare."* (SLE, 2019, p.9) • *"SMEs and start-ups play an important role in this context, because they are often drivers of innovation"* (CHE, 2018, p.11) • *"Assessment of ICT in Ministries and Departments reveals that digitisation is evolving at a pace that does not match the aspirations of "a high income, sustainable, innovative and inclusive economy"* (MUS, 2018, p.24) • *"Successful digital firms make information easy to find and services easy to use with a relentless focus on user-based research and design, and governments need to learn from this approach."* (CAN, 2017, p.9)
Characters	State actors lacking digital skills	• *"An initial estimate calls for 510 experts in technology, change management and operational processes … This type of qualification is rarely found among PA employees."* (ITA, 2018, p.46) • *"Civil Service suffers from scarcity of ICT human resources, and discrepancy between availability of funds and priority of ICT initiatives."* (MUS, 2018, p.24) • *"Qatar currently has a shortage of ICT skills and qualified people often choose to build their career in the private sector rather than the public sector."* (QTA, 2014, p.19) • *"We understand there are gaps in talent and the skills needed for a modern, agile and adaptive public service."* (NZL, 2019, p.14)
Plot	Administrative inertia and resistance culture is crippling digital innovation	• *"Although most of the external interface of public services has already been digitised, internal procedures to the Administration have not evolved at the same rate. … This would not be possible without a larger, more general, cultural change."* (ESP, 2015, p.18) • *"When the government first embarked on this journey … most of the technologies that were to be adopted were at the leading edge of ICT and were consistent with the models employed by the private sector … due to the prevailing mindset and behavioral constraints existing within the bureaucracy … by the time these programs were ready for use, most of these technologies that were implemented had already undergone numerous version releases."*(PHL, 2019, p. 12–13) • *"Early mobile adopters in government—like the early web adopters—are beginning to experiment in pursuit of innovation. … Absent coordination, however, the work is being done in isolated, programmatic silos within agencies."* (USA Stevens et al., 2012, p.2) • *"… a number of legislative and cultural barriers prevent the full potential of the government's data from being unlocked."* (AUS, 2018, p.31)
Moral	Educating and hiring new generations of public administrators; establishing a post-bureaucratic workplace culture which instigates creativity and innovation	• *"…create programs to attract talented young graduates with modern technological skills to the PA, … working closely with high-level administration and public agency executives on digital transformation projects."* (ITA, 2018, p.47) • *"In order to maintain Switzerland's leading position as a location for innovation and research, competencies relating to digital technologies in their entire breadth must be strengthened and the transfer of knowledge into the economy must be accelerated."* (CHE, 2018, p. 5) • *"Provide training, education and guidance for existing public service leaders and workers to ensure they have the digital and data literacy skills and capabilities required to enable new ways of working."* (NZL, 2019, p.15) • *"We will identify and describe the digital skills we need so that training, recruitment and career development is easier for the Australian Public Service."* (AUS, 2018, p.37)
The digital competition narrative		
Setting	Global competition in the digital economy	• *"…for Sierra Leone to compete globally, it must innovate. The local creative and entrepreneurial economy must be bootstrapped through digitization."* (SLE, 2019, p.4) • *"The environment surrounding public administration is changing rapidly, with global competition accelerating."* (JPN, 2017, p. 1) • *"Information and communication technology (ICT) has become one of the main tools for raising the competitiveness of every economic sector and walk of life."* (EST, 2018, p.1)
Characters	State actors wanting to promote digital competitiveness of their country	• *"We aim to become Europe's digital leader. We want the Netherlands to be a pioneer and testing ground in the field of digital innovation, a place where companies from all over the world can responsibly develop and test new applications."* (NLD, 2018, p.12) • *"Our recommendations are intended not only to enable the German economy to respond to new challenges but also to ensure its leading position both in quality and technology"* (DEU, 2016, p.7) • *"The business and growth policy of the Government is to … contribute to growth in Denmark through the promotion of digital solutions in Danish businesses"* (DNK, 2016, p.8–9) • *"… the ASEAN collective currently views ICT as integral to the improvement of its competitive posture"* (PHL, 2019, p.6) • *"Australia's ongoing success depends on our ability to harness these technological advances to drive economic growth and raise productivity and living standards for all Australians."* (AUS, 2018, p.5)
Plot	National economic development cannot grow without a proper environment	• *"This policy proposes strategic actions focused on the role of the government as an enabler of the digital transformation in the economy's productive sectors, as an important*

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NPF component	*Description*	*Example*
		contributor for capacity-building in this new era, as well as a service provider and guarantor of rights."(BRA, 2018, p. 4) • *"Qatar's Strategy for economic diversification relies on creating the right environment for investment and businesses, and removing any barriers to doing business, so that the economy can continue to grow and develop."* (QTA, 2014, p.2) • *"Above all, digitisation is a business project. Accordingly, we must provide room for the development of enterprising investments, product innovation and new data-based services."*(DEU, 2016, p.23)
Moral	Spending public money for the digital transformation also benefits economy and enhances the country's international competitiveness	• *"Efforts by the public sector must promote digitisation in the private sector. With more digitisation, businesses will become better at exploiting business potentials in a digital world; they will become more competitive and they will improve their productivity."* (DNK, 2016, p. 9) • *"Switzerland will develop its strengths as an innovative and cosmopolitan national economy and create the basic conditions for innovations and digital business models in such a way that value creation, economic growth and prosperity can be achieved in the best possible way."* (CHE, 2018, p.4) • *"In order for new businesses and new jobs to be created, Sweden needs to create a world class competence and infrastructure."* (SWE, 2016, p.3) • *"A society that makes it as easy as possible for businesses to operate at a global level is required for economic growth. To this end, public administration must function not as a bottleneck hindering businesses, but as a platform that expedites economic activity."* (JPN, 2017, p.5)
The digital platform narrative		
Setting	Value capture, delivery, and sharing through digital platforms	• *"Internet platforms, such as Google, Bol.com, Booking.com and Marktplaats, offer major advantages, for example better access to knowledge, easier and faster communication and new opportunities for businesses and consumers to offer products and services in the Netherlands and abroad.* (NLD, 2018, p.11) • *"Leading governments are now thinking in terms of how providing application programming interfaces (APIs) to trusted intermediaries can open opportunities for new private sector services and entrepreneurs (…) This approach has been termed "Government as a Platform"*(RUS, 2016, p.13) • *"The main issues followed in the public sector are the reduction of costs and the increase of the quality of services supplied by Cloud platforms."* (ROU, 2014, p.52) • *"With the advent of many market opportunities (…), digital platforms became a drive for economic growth, innovation, efficiency and competitiveness, bolstering investment in digital technology, e-commerce and online services."* (BRA, 2018, p.81)
Characters	State actors recognizing potential of digital platforms	• *"ICTs allow integration of information platforms across the government … This can reduce duplication of efforts, wastage of precious scarce national resources, and tighten collaboration and integration among different organs of the government"* (BGD, 2011, p.185) • *"…the delivery of context-driven technology platform serves as the intersection point where value co-creation is realized."* (PHL, 2019, p.35)
Plot	Digital government services do not unfold full potential	• *"While there is recognition that Ireland has done well in the delivery of digital government services to date, we recognise that the key to an even better customer experience is to provide access to all services* via *a gateway or portal."* (IRL, 2017, p. 6) • *"To make the most use of our resources and 'innovate with less', we need to share more effectively, both within the government and with the public."* (USA Stevens et al., 2012, p.5) • *"…penalise and/or reduce funding for administrations that do not implement the digital transformation, in particular the use of enabling platforms."* (ITA, 2018, p.48)
Moral	Increase adoption of platform-based solutions in government to create public value	• *"We will use technology-enabled platforms to simplify our engagement and enable you to focus on delivering the results you are passionate about."* (AUS, 2018, p. 13) • *"…delivering integrated services and information that citizens need, when they need it, all through a single platform."* (SGP, 2018, p.13) • *"…possibilities of development of platform services* – i.e., *jointly usable applications and components will be analysed constantly, and the common analysis and development of (software) solutions will be advanced;"* (EST. 2018, p.9) • *"Mass use the interoperability platform (iAP) for administrative simplification and modernization initiatives."* (PRT, 2018, p.15)
The usability deficiency narrative		
Setting	Poor usability of digital government services	• *"…the inadequacy of the digital marketplace …, which is still too complicated to use and lacks basic features such as a search engine that produces relevant results, easy registration for companies and detailed descriptions of the services and products;"* (ITA, 48–49) • *"A failure to achieve sufficient shift of citizens and businesses to digital channels, because e-government systems do not offer sufficient incentives for users to make the transition."* (RUS, 2016, p.8) • *"…service supply must be expanded, with greater efficacy and efficiency, so more citizens may request and follow up to public services"* (BRA, 2018, p.102) • *"If digital services are not user-friendly, users will waste time searching for the right websites or information and may eventually abandon the service."* (MUS, 2018, p.33) • *"In order to be successful in the long run and to establish their presence in the international market, start-ups must be relieved of unnecessary bureaucracy."* (DEU, 2016, p.17)

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NPF component	*Description*	*Example*
Characters	Citizens expecting user-friendly digital government services	• *"When people access our services, they expect seamless services that are centred around the events in their lives. They don't want to have to navigate multiple agencies or tell their story over and over again to deal with one life event, like having a baby or becoming a senior."*(NZL, 2019, p. 6) • *"Citizens expect to be able to rely on intuitive and standardised platforms that are adaptable to their preferences."* (URY, 2016, p.4) • *"As e-Government efforts expand, the demand for more user-friendly, 'anytime, anywhere' access to government and its services will continue to increase."* (QTA, 2014, p.1) • *"Citizens typically want more digital government services but are discouraged by difficulties in accessing digital information or service channels."* (CAN, 2017, p.8)
Plot	Good usability of digital government services is hindered by organizational silos and lacking skills	• *"The digital medium … enables policies, services and infrastructure to be better designed through the use of data and evidence-based policymaking, rather than by agencies' functional boundaries or our manpower limitations."* (SGP, 2018, p.7). • *"The Administration needs to know how to use the new technologies (*e.g. *social media) to continuously improve the provision of services"*. (ESP, 2015, p.36) • *"Change-resistant cultures and bureaucratic management have convinced long-serving decision-makers that they know what is best for customers."* (MUS, 2018, p.40) • *"…the IT solutions and processes of a number of authorities are today designed to match the internal needs and organisation of the authority rather than the needs of citizens and businesses"* (DNK, 2016, p.10) • *"The need of improving the quality of public services and promoting PA higher efficiency implies a better use of skills and resources."* (PRT, 2018, p.17)
Moral	Defining design principles for digital government services; establishing user-centric services across different agencies or departments	• *"The government will incorporate service design thinking into approaches to promoting reforms, … This approach involves designing the whole service with the goal of (…) making the entire user experience (UX) — including the user's state of mind and behavior — the best that it can possibly be"* (JPN, 2017, p. 8) • *"… introducing user research laboratories, metrics and KPIs to measure the efficiency and effectiveness of digital public services, including indicators such as the frequency and ease of use"* (ITA, 2018, p.45) • *"If done right, the information-centric approach will add reach and value to government services by helping to surface the best information and making it widely available through a variety of useful formats."* (USA Stevens et al., 2012, p.5). • *"To govern ICT with a common strategy, coordinate sectorial initiatives, … therefore preventing unnecessary replications, are firstly measures that intend to ensure that digital services are simpler, more accessible and inclusive, in order to promote their use by all citizens."* (PRT, 2018, p.7) • *"User experience design guidelines will support entities to create a standard user interface."*(QTA, 2014, p. 8)
The cyber threat narrative		
Setting	Vulnerability of critical cyber-physical public and private infrastructures	• *"Protection and security aspects are therefore components of the general configuration of digitalisation."* (CHE, 2018, p.7) • *"Cyber security of the Digital Government is exceptionally important – not just because of the rising threat from state-sponsored and other actors but also because the digital government system, and the data that it holds, will be increasingly essential to the proper functioning of government institutions in Russia"* (RUS, 2016, p.31). • *"… issues around privacy, security, digital rights and ethics stemming from the adoption of emerging technologies has meant that there is now an increasing need to consider wider digital risks when making investment decisions."* (NZL, 2019, p.19)
Characters	State actors taking active role in cyber security	• *"The Uruguayan government has worked on the creation of infrastructures and the enabling frameworks with the aim of articulating, managing and promoting security and confidence in the use by citizens of digital technologies (*e.g. *CERTuy)."* (URY, 2016, p.9) • *The government wants to make citizens and businesses resilient and protect their digital security and personal data.* (NLD, 2018, p.7) • *Data protection and privacy are* two *critical responsibilities of any government to its citizens.*(SLE, 2019, p.16)
Plot	Digital government services are under constant threat and attack	• *"As the National Cyber Security Strategy notes, cyber attacks are growing more frequent, sophisticated and damaging when they succeed."* (GBR, 2016, p.5) • *"Cyber crimes have been added to list of crimes and are getting a threat for safe access to Internet based services and exchange of information and data"* (BGD, 2011, p.96) • *"… cyber security is becoming an extremely important prerequisite for efficient, continuous and sustainable provision of e-services in the Republic of Croatia."* (HRV, 2017, p.3) • *"Today's cyber security and privacy protection challenges require a more holistic solution because digital initiatives are happening everywhere"* (MUS, 2018, p.51)
Moral	Increasing security and control of critical cyber-physical (public and private) infrastructures to strengthen citizens' trust in digitalization	• *"The primary task is to ensure the resilience of vital functions (strategic infrastructure and services) to cyber threats."* (EST, 2018, p. 16) • *"A platform of 'Security and Privacy' – Ensures this innovation happens in a way that ensures the safe and secure delivery and use of digital services to protect information and privacy."* (USA Stevens et al., 2012, p. 5) • *"Security is crucial to overcome mistrust in the use of new technologies. Issues to be addressed include the prevention of cyber-attacks and the reduction of cyber-risks."* (ESP, 2015, p.30) • *The Government of the Russian Federation should ensure that cyber-security and the protection of personal data is built into the architecture of digital government from the start*

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NPF component	*Description*	*Example*
		and that new investments, such as a Government Cloud and a Government Network, are used to further strengthen the security and resilience of the state. (RUS, 2016, p.31)
The digital divide narrative		
Setting	Inequality in digital transformation	• *"An omni-channel experience means not only citizens can access services using the Internet, but also that citizens can choose the channel they prefer (*e.g. *face-to-face, telephone, email, web, mobile,* etc.*) and obtaining exactly the same result."* (URY, 2016, p.4) • *"A Digital Government will still be one that 'Serves with Heart'. It does not mean that we will digitalise at the risk of losing our human touch and stop engaging with our citizens face-to-face."* (SGP, 2018, p.5)
Characters	State actors considerate of different groups in society	• *"The government wants everyone to be able to participate and benefit."* (NLD, 2018, p.12) • *"We also recognise some people can't or don't want to engage online or use digital services. Digital transformation is about how we meet everyone's needs through better design and collaboration, whether online, face-to-face, through others or by phone."* (NZL, 2019, p. 6)
Plot	Risk of leaving a proportion of the population behind due to progressive digitalization of government services	• *"Services must work for the whole of society - not just the 77% of people who have basic digital skills, but for the 12.6 million adults who don't. This is particularly important as financial exclusion and digital exclusion often go hand in hand."* (GBR, 2016, p.16) • *"Insufficient attention paid to the specificities of access to electronic information for disabled persons and vulnerable groups …"* (HRV, 2017, p. 47)
Moral	Planning some transitory measures for increasing security and minimizing the risk of exclusion of certain population groups	• *"But in order for everyone to be able to benefit from the social services in an egalitarian way, … everyone needs to have high-capacity internet access."* (SWE, 2016, p.3) • *"… in order to achieve the goal of equal opportunities and the participation of all inhabitants in the opportunities of digitalisation, it is important to promote basic skills in the use of the new technologies."* (CHE, 2018, p.4) • *"The aim is to consistently develop digital literacy to keep a (digital) gap from arising or deepening in society – so that through ICT, all people in Estonia would have enough awareness and skills to ensure their quality of life and well-being, use public services* etc.*"*(EST, 2018, p.13) • "*It must ensure that no citizen is left behind, therefore contributing for the digital inclusion of about 30% of Portuguese people who are still not directly benefiting from the ICT and/or ensuring assisted digital services.*" (PRT, 2018, p.3) • *"… we will design digital public services that are inclusive by default for the widest possible audience (universal design) and cater for a broad range of needs and abilities, including older people and people with disabilities."* (IRL, 2017, p.7)

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Tobias Mettler is Full Professor of Information Management at the Swiss Graduate Institute of Public Administration (IDHEAP) of the University of Lausanne, Switzerland. His research interests are in the area of digital transformation of governments and society. His research revolves around societal issues of data governance, digital health, demographic change, and wellbeing of citizens.

Gianluca Miscione is a tenured academic in Management Information Systems at University College Dublin Smurfit Business School (Ireland) and researcher at the School of Management and Law of the Zürcher Hochschule für Angewandte Wissenschaften (Switzerland). He conducted and contributed to research in Europe, Latin America, India, East Africa, and on the Internet. His focus is on the interplay between technologies and organizing processes with a specific interest on innovation, development, organizational change, social networks, and trust.

Claus D. Jacobs is Professor of Public Management and Organization at the University of Berne (Switzerland). He specializes in theory and practice of strategy work in pluralistic settings.

Ali A. Guenduez is Assistant Professor of Digital Government and Head of the Smart Government Lab at the University of St.Gallen (Switzerland). His research interests include technology adoption, digital transformation, public sector innovation and smart government.