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# Bibliometric analysis of academic papers citing Dunleavy et al.'s (2006) "New Public Management Is Dead—Long Live Digital-Era Governance": Identifying research clusters and future research agendas

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## Abstract

I trace the bibliometric evolution of "New Public Management Is Dead" by Dunleavy et al. to investigate how the seminal paper influenced the administrative reform debate. They suggested Digital-Era Governance as the main post-NPM idea. My bibliometric analysis discovers public value, administrative reform trajectories, and digital government as influential themes. Unlike Dunleavy et al., the literature found the managerial reform wave is not linear, reform ideas are supplementary, and NPM remains a major toolkit. Future research should focus on reintegration and need-based holism, linking digital government to administrative reform, and the negative impact of digital government on democracy.

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## Introduction

Public administration scholarship has been long interested in what the principles for establishing good governance ought to be. As such, the field of public administration has several seminal papers that capture commonalities in the administrative reform trends and academic discussions of various countries and incorporate these discussions into broader frameworks (e.g., Dunleavy et al., 2006; Hood, 1991; Lynn, 2008; Osborne, 2006). These papers have contributed to the field by providing a conceptual lens to grasp the changing nature of public administration, diagnose current problems in the public administration system, and guide the transformation of government bureaucracy (Goldfinch & Wallis, 2010).

Despite the vast body of research on public sector reform and the widely acknowledged importance of these papers, the question of "how a seminal paper diffuses and influences a field of research using advanced bibliometric analysis" has rarely been answered (Chandra & Walker, 2019, p. 3). The bibliometric method uses a quantitative analysis of bibliographic information to investigate and evaluate previous studies (Chandra & Walker, 2019; Vogel, 2014). Although there has been a recent increase in the number of literature reviews of the public administration field using bibliometric analysis (Chandra & Walker, 2019; Hu et al., 2016; Ni et al., 2017; Vogel, 2014; Vogel & Masal, 2015), such reviews of seminal papers on administrative reforms are scant. To the best of the author's knowledge, Chandra and Walker (2019) seem to be the only case. They make a rare contribution by investigating papers citing Hood's (1991) "A Public Management For All Seasons?" According to their co-citation analysis, Hood (1991) led to the emergence of three groups of research: the implementation of New Public Management (NPM) doctrines, innovation and leadership, and the limits and paradoxes of NPM.

Influential papers capturing the changing nature of public administration have developed new languages and lines of arguments for improving the quality of public institutions and provoked novel controversies in the field. As such, picturing a map of what local research clusters have created in the wake of these articles and how they have reacted to the novel arguments helps us understand intellectual development (Chandra & Walker, 2019). To overcome this limitation, this study focuses on Dunleavy et al.'s (2006) "New Public Management Is Dead—Long Live Digital-Era Governance." This paper makes unique contributions to the study of public administration. By

examining leading countries in NPM reform, Dunleavy et al. (2006) argued that NPM exposed limitations and that enthusiasm toward NPM waned as a result. Moreover, Dunleavy et al. (2006) developed Digital-Era Governance (DEG) as the main idea for explaining the transformation of government bureaucracy in the post-NPM era. Dunleavy et al. (2006) linked the field of digital government with the changing modes of public administration, which had otherwise been treated as disconnected (Esmark, 2017; Gil-Garcia et al., 2018; Hood & Margetts, 2014; Meijer et al., 2018; Pollitt, 2011; Soe & Drechsler, 2018). Thanks to these contributions, Dunleavy et al. (2006) have received a lot of attention from the academic community. Not only is this paper classified as one of the most cited articles published in the *Journal of Public Administration and Theory*, but Google Scholar selected Dunleavy et al. (2006) as the No. 1 classic paper in the field of public policy and administration in 2017[1] based on the number of citations.

To describe the evolution of academic communities after Dunleavy et al. (2006), I employ co-citation and bibliographic coupling analysis—statistical analyses of intertextual relationships between the journal articles based on the referencing behaviors. I combine factor analysis and two-mode network analysis to determine the proximity of the articles and present clear maps of their intellectual structures. These mappings from the co-citation and bibliographic coupling help unearth both the current trends and influential schools of thought and, accordingly, find the gaps that require future research (Jarneving, 2005; McCain, 1990; Vogel, 2012; Vogel & Güttel, 2013; Vogel & Masal, 2015). In particular, I will answer the following questions: (1) what threads of research have emerged from Dunleavy et al. (2006), (2) how these research clusters are related to one another, (3) how the clusters answer or react to the arguments made by Dunleavy et al. (2006), and (4) what research gaps future research needs to investigate.

This paper proceeds as follows. The first two sections introduce Dunleavy et al.'s (2006) arguments and contributions to the academic community. They are followed by a research design section that explains the data collection and analysis process. Detailed explanations of the definitions, benefits, and underlying assumptions of bibliographic and co-citation analysis are presented. After that, this study answers the four major questions articulated above. Finally, it concludes with the overall implications of the findings and their limitations.

## Key Arguments of "New Public Management Is Dead"

Based on a thorough examination of leading NPM countries, Dunleavy et al. (2006) concluded that the intellectual and practical dominance of NPM has

waned. This is because the three macro themes (disaggregation, competition, and incentivization) of NPM failed to improve the problem-solving capacities of public institutions for two main reasons. First, NPM aims to substitute the political controls of public agencies with a business process and a service delivery model based on market mechanisms. To do this, NPM policies split "large public sector hierarchies in the same way that large private corporations earlier moved from U-form to M-form (multiform) structures" and facilitate competition among multiple public service providers (Dunleavy et al., 2006, p. 470). This NPM movement increased the complexity of public institutions by increasing the number of agencies that have different incentivization structures. This hampered the coordination capacity necessary for joint service delivery and policy integration. Second, Dunleavy et al. (2006) argue that NPM reduced the autonomous problem-solving capacities of citizens. NPM's new responsibility mechanisms are at odds with the existing public understanding of how to make the public sector accountable. Furthermore, the complexity of internal administrative arrangements caused by NPM made it difficult for ordinary people to identify the right access points to represent their interests. Dunleavy et al. (2006) argue that this reduced citizen capacity hinders the problem-solving capacity of society.

After pointing out that NPM was becoming less popular, Dunleavy et al. (2006, p. 468) pronounced a death sentence: "We argue here that the torch of leading-edge change has passed from NPM and will not return." They then suggested DEG as the new paradigm for public administration in the post-NPM era. The establishment of DEG as "the broad sweep of [the] current public management regime" is an attempt to both overcome the limitations of NPM and fully adopt the potentials of information and communication technologies (ICTs) in government (Dunleavy et al., 2006, p. 478; Fishenden & Thompson, 2013). In contrast to the existing literature at that point, which mainly focused on the improvement of the internal administrative process through ICTs (Dunleavy et al., 2006), the authors paid attention to citizens' access to and control over public governance: "Our take here highlights the central importance of information technology (IT)-based changes in management systems and in methods of interactive citizens and other service-users in civil society in the underpinning and integrating of current bureaucratic adaptations" (Dunleavy et al., 2006, p. 468).

Dunleavy et al. (2006) developed three main themes to describe how DEG can transform the public sector: reintegration, needs-based holism, and digitalization. The theme of reintegration is antithetical to disaggregation and echoes the joined-up governance movement in the U.K. (Dunleavy et al., 2006; Fishenden & Thompson, 2013). It aims to rebuild government capacity for coordinating fragmented service provision systems under NPM and

provide joined-up public services by reengineering back-office functions (Dunleavy et al., 2006). The second theme, need-based holism, denotes the transformation of public service provision systems in a way that enables citizens to enjoy one-stop and needs-based services by introducing inter-organizational information-seeking systems, data warehousing, and citizen audits and evaluations (Dunleavy et al., 2006). Finally, digitalization refers to a technology-enabled relationship between governments and citizens (Dunleavy et al., 2006). The underpinning idea of this component is the transition from an agency-centric to a citizen-centric system that employs ideas of self-governance, co-production, and open government. That is, the role of government in the digital era is to induce citizen cooperation with, and participation in, administrative systems using open online platforms, to release public information to increase transparency, and facilitate citizens' monitoring of their governments (Dunleavy et al., 2006).

## The Contributions of "New Public Management Is Dead" to Academic Discourses

Dunleavy et al. (2006) sparked the discussion on public management reform and digital government. In terms of the literature on public management reform, Dunleavy et al. (2006) raised the following three controversies. The first is whether NPM is really dead. Following Dunleavy et al. (2006), scholars kicked off the debate on what had replaced NPM and suggested new big ideas in public management, such as the Neo-Weberian state (Lynn, 2008), New Public Governance (Osborne, 2006), and Open Government (Ingrams et al., 2020; Moon, 2020). However, others have argued that it is still too early and dangerous to assert the end of the NPM-era (Christensen, 2012; Hood & Peters, 2004; Pollitt, 2016). In particular, Pollitt (2016) has argued that, though academic enthusiasm for NPM has calmed, it has remained well-entrenched as one of the major toolkits of public managers.

Second, Dunleavy et al. (2006) treated the managerial reform wave as a linear trend. They argued that administrative reform paradigms have shifted from traditional public administration to NPM to post-NPM and saw the one that comes later as having replaced the existing one. This argument led to the question of whether this linear trend could be detected around the world, given that Dunleavy et al. (2006) reached their conclusion based on cases from only a few leading advanced countries (Goldfinch & Yamamoto, 2019; Pollitt, 2016).

The third discussion prompted by Dunleavy et al. (2006) is whether administrative reform initiatives can be supplementary and hybridize one another. In contrast to Dunleavy et al.'s (2006) argument, some suggest that

the existence of a single superior overarching concept is not plausible considering the reality of complex administrative phenomena. Thus, gathering heterogenous ideas for public bureaucracies can be a realistic approach to public management reform (Christensen, 2012; Esmark, 2017; Olsen, 2006).

Dunleavy et al. (2006) also made specific contributions to the digital government literature. Studies on the combination of ICTs and public institutions had heretofore failed to discuss the changing modes of governance and were subsequently detached from the mainstream of public administration studies (Esmark, 2017; Hood & Margetts, 2014). Dunleavy et al. (2006) is one unique exception to this limitation (Esmark, 2017; Hood & Margetts, 2014; Meijer et al., 2018). In particular, Dunleavy et al. (2006) debunked a dominant trend in the digital government literature that took the linkage between NPM and digital government for granted (Cordelia, 2007, p. 265; Soe & Drechsler, 2018).

Previous studies regarded the digitalization of the administrative process as a prominent tool to improve managerial efficiency and deploy market-based mechanisms. That is to say, scholars paid attention to ICTs' potential to lower transaction costs, reduce administrative burdens and red tape, and facilitate customer-oriented public services, etc. (Cordelia, 2007; Fountain & Osorio-Urzua, 2001; Heeks, 1999; Soe & Drechsler, 2018). Dunleavy et al. (2006) questioned the well-entrenched association between NPM and digital government and conceptualized digital government as a remedy for the side-effects of NPM, as mentioned above. Soe and Drechsler (2018) pointed out that since the publication of Dunleavy et al. (2006), the literature on digital government has begun to investigate how ICTs could contribute to public value and democratic governance. Because of their contributions, Meijer et al. (2018) have suggested that Dunleavy et al. (2006) could be positioned with other classic papers that discern major threads of administrative reform, like Hood (1991) and Osborne (2006).

## Research Design

### Data

To demonstrate how a seminal paper influences the evolution of the field's intellectual structure, I focused on articles that cited Dunleavy et al. (2006). The data for this analysis comes from Clarivate Analytics' Web of Science (WoS) collection that has been widely and commonly used in previous bibliographic studies (Chandra & Walker, 2019). The database provides a count of how many times articles, books, or literature reviews have been cited over time. It identifies that 574 papers cited Dunleavy et al. (2006) for the period
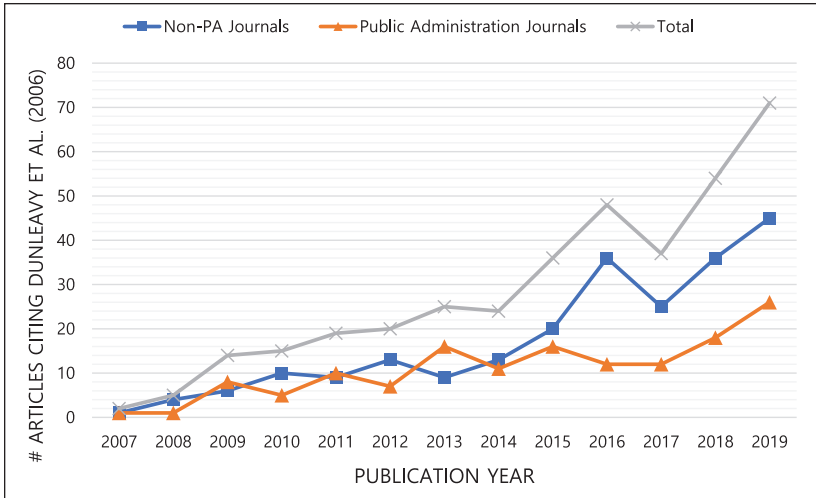
**Figure 1.** The influence of Dunleavy et al. (2006), for 2007 to 2019.

2007 to 2019. However, I only included works published in peer-reviewed academic journals (e.g., articles, reviews, and proceeding papers) in my analysis because peer-reviewed journals contribute to the production and diffusion of certified knowledge through a rigorous review process (Chandra & Walker, 2019; Vogel, 2014). Based on this criterion, I investigated 370 papers.

Figure 1 shows the proliferation of publications citing Dunleavy et al. (2006) over time, revealing that it has been widely cited even in non-PA fields. For the entire observation period, 277 articles have been published in non-PA journals, and the number of such articles increased steadily over time (depicted as a line with a rectangular shape). From 2014 on, the papers published in non-PA journals have outnumbered papers published in PA journals.

## Co-citation and Bibliographic Coupling Analyses

This study uses co-citation and bibliographic coupling analyses to investigate the intellectual evolution of works building on Dunleavy et al. (2006). Both methodologies are rooted in a bibliometric analysis that refers to mathematical technologies created to analyze scholarly communications and identify research clusters through publications (Chandra & Walker, 2019; Vogel & Güttel, 2013; Vogel & Masal, 2015). Bibliometric analyses build upon two major assumptions. First, scholars cite articles to draw on other publications'

findings or arguments that support and justify their own points. Therefore, the number of times publications are cited indicates the extent to which they are acknowledged as influential and classic in their fields. Second, reference activities can identify the intertextuality of papers: the more similar the references of various papers are, the more likely that their contents are similar (Chandra & Walker, 2019; Hu et al., 2016).

A co-citation happens when two documents are cited together by other works in the literature. Two academic papers (*a* and *b*) are co-cited if they appear on the reference list of work *A*. Bibliographic coupling occurs when two works (*A* and *B*) have at least one overlapping and common reference *a* (Vogel & Güttel, 2013; Vogel & Masal, 2015). Although both methods share the common practice of investigating publications, they can produce significantly different results because they focus on different time horizons (Jarneving, 2005; Vogel & Güttel, 2013; Vogel & Masal, 2015): "co-citation analysis is a dynamic approach, while the bibliographic coupling is static" (Vogel & Güttel, 2013, p. 428). Co-citation analysis is sensitive to time because citations accumulate over time. Older publications have more chances to be cited than recent works, regardless of how much potential recent pieces have to be classics. This suggests that co-citation analysis is biased toward the academic past. However, this sensitivity to time trends means that co-citation analysis can discern highly influential themes or works and produce maps on how academic papers are clustered around these important intellectual heritages (Jarneving, 2005; Vogel & Güttel, 2013; Vogel & Masal, 2015).

On the other hand, bibliographic coupling is determined by the number of overlapping references between different articles. Therefore, the results from bibliographic coupling are less likely to be varied with time or influenced by high-impact publications (Vogel & Güttel, 2013; Vogel & Masal, 2015). This characteristic allows for bibliographic coupling to capture current trends of research (Jarneving, 2005; Vogel & Güttel, 2013; Vogel & Masal, 2015). My study applies both analyses to benefit from both perspectives and avoid the biases that occur when only one method is considered.

## Empirical Strategy

I walked through the following three steps to conduct bibliographic analysis. In the first step, I created two network data matrices based on the concepts of co-citation and bibliographic coupling. After inputting all peer-reviewed journal articles citing Dunleavy et al. (2006) into column and row headers, I coded the number of co-citations of every pair of the articles in each cell for the co-citation matrix and I recorded the number of couplings for the coupling matrix. In the second step, factor analyses were conducted to identify

article clusters. Following McCain (1990), I transformed the matrices into correlation matrices with Pearson's coefficient values in each cell. McCain (1990) argued that correlation coefficients allow researchers to focus on the general similarity of article profiles, rather than the absolute number of co-citation and coupling between pairs (Hu et al., 2016; McCain, 1990). Another advantage of correlation matrices is that the correlation coefficient is less affected by outliers (Vogel & Masal, 2015).

When I conducted the factor analyses, I coded the values in the main diagonal of the matrices as missing (McCain, 1990). After the transformation, I proceeded with a factor analysis[2] using varimax rotation and Kaiser normalization to identify research clusters. To consider works that made substantial contributions to factors, papers that had mixed loadings ($<0.4$) are excluded (McCain, 1990, p. 440). After identifying the factors, I reviewed articles belonging to each factor to produce a label that best represents what overall groups the studies stand for, focusing primarily on papers that have a high level of loading values. Table 1 depicts a summary of the factor extraction. For each factor, I suggested three articles with the highest factor loadings.

In the final step, I created two-mode network data that positions the clusters extracted from the factor analyses as one set of nodes and the journal articles as the second set of nodes. Applying two-mode network analysis provides two major advantages. First, it has a visual advantage. Assigning each of the articles to the one or two factors to which they make the most contribution reduces the density of the networks, which subsequently improves the clarity of mapping (Vogel, 2014). Second, two-mode network analysis displays the extent to which research groups are receptive to one another because the journal articles that have ties to different research groups serve as boundary spanning links (Vogel, 2014). Considering that the varimax rotation method identifies factors that do not correlate to one another, these articles substantially contribute to more than one factor by both drawing on and contributing to different threads of research (McCain, 1990; Vogel, 2014). Therefore, the larger number of connections there are between research clusters, the more open research groups are to works beyond their field's boundaries (Vogel, 2014). Close relationships between research groups indicate that scholars perceive the relevance between topics and ideas from different threads of research and explore synergies of research through an active cross-boundary exchange of knowledge (Vogel, 2014).

## Findings

In this section, I first introduce what each cluster stands for. The following subsection reviews the relationships between clusters. After that, I demonstrate

**Table 1.** Factor Extraction.

| Factor label | Number of documents | Eigen-value | Variance explained % | Cum, % | Most characteristic references (in brackets: factor loadings) |
|---|---|---|---|---|---|
| *Bibliographic coupling* | | | | | |
| 1.1 Influence of NPM on policy and public administration systems | 90 | 67.85 | 29 | 29 | 1. Jenkins (2014) (0.937), 2. Heminway (2013) (0.935) 3. Mann (2017) (0.895) |
| 1.2 Digital government | 59 | 30.25 | 20 | 49 | 1. Norris and Reddick (2013) (0.869) 2. Meijer and Bekkers (2015) (0.863) 3. Meneklis and Douligeris (2010) (0.859) |
| 1.3 Trajectories of administrative reform | 40 | 12.49 | 13 | 62 | 1. Khalid and Sarker (2019) (0.789) 2. Guga (2018) (0.748) 3. Ma (2016) (0.745) |
| 1.4 Accounting and performance management | 33 | 10.16 | 12 | 75 | 1. Jacobs (2016) (0.792) 2. Carlson et al. (2010) (0.761) 3. Shin and Jung (2014) (0.751) |
| 1.5 Public value | 30 | 8.07 | 10 | 85 | 1. X. Wu and He (2009) (0.805) 2. Broucker et al. (2018) (0.772) 3. Davis and West (2009) (0.735) |
| *Co-citation* | | | | | |
| 2.1 Government-citizen interactions via ICT | 34 | 20.49 | 22 | 22 | 1. Abdelsalam et al. (2013) (0.94) 2. Deverell et al. (2015) (0.937) 3. Andersen et al. (2012) (0.918) |
| 2.2 Public value (DEG) | 20 | 8.7 | 14 | 35 | 1. Pang et al. (2014) (0.859) 2. Navarra and Cornford (2012) (0.828) 3. Cordella and Paletti (2018) (0.824) |
| 2.3 Trajectories of administrative reform | 15 | 7.35 | 12 | 47 | 1. Hong (2013) (0.874) 2. Goldfinch and Wallis (2010) (0.785) 3. Kirkpatrick et al. (2011) (0.776) |
| 2.4 Skepticism about digital government | 19 | 6.57 | 11 | 59 | 1. Clarke et al. (2017) (0.916) 2. M. M. Brown (2015) (0.778) 3. Morgeson and Mithas (2009) (0.734) |
| 2.5 Decision-making in the digital governance era | 11 | 5.55 | 9 | 68 | 1. Estermann (2018) (0.967) 2. Marando and Craft (2017) (0.967) 3. Fishenden and Thompson (2013) (0.730) |
| 2.6 Co-production | 12 | 4.15 | 9 | 77 | 1. Voorberg et al. (2015) (0.811) 2. Ashworth et al. (2013) (0.793) 3. L. Brown and Osborne (2013) (0.747) |
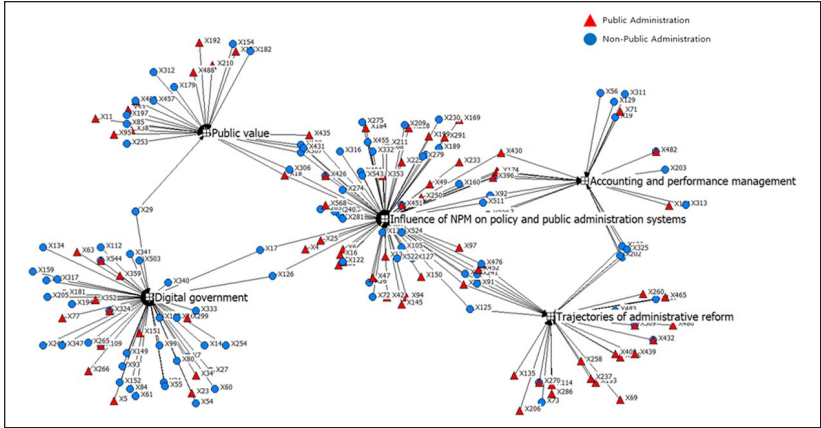
**Figure 2.** Bibliographic two-mode networks of publications that cited Dunleavy et al. (2006).
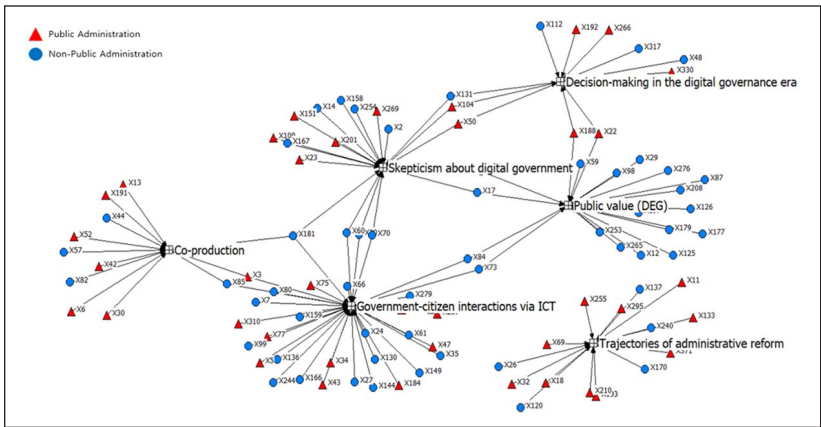


**Figure 3.** Co-citation two-mode networks of publications that cited Dunleavy et al. (2006).

how the schools of thought identified by co-citation and bibliographic coupling analyses respond to the arguments of Dunleavy et al. (2006). Based on these findings, I will identify the remaining gaps in the literature. Figures 2 and 3 show the bibliographic and co-citation two-mode networks, respectively. Box-shaped nodes represent individual clusters. Triangle shapes identify the papers

published in journals classified as public administration. Papers published elsewhere are indicated with a circle shape.

## Identifying Clusters

*Bibliographic Networks.* The largest cluster is *Influence of NPM on policy and public administration systems*. Papers assigned to this cluster investigate how NPM transformed administrative and policy systems. As shown in Figure 2, papers published in both public administration and non-PA fields contribute to this largest cluster. The impact of NPM is investigated in various policy areas, such as education (e.g., Jenkins, 2014), public health (e.g., Green et al., 2009), criminology (e.g., Mann, 2017), libraries (e.g., Düren et al., 2017), and child protection (e.g., Gibson & O'Donovan, 2014). This shows that Dunleavy et al. (2006) has influenced different academic fields by informing its readers of the changing nature of public institutions and its repercussions.

The *Digital government* cluster is the second largest cluster. The papers belonging to this thread of research cover a variety of digital government issues, including the government adoption of ICTs, impact of technologies on public bureaucracy, and stage models of digital government (e.g., Budding et al., 2018; Norris & Reddick, 2013; Reddick et al., 2011; Rooks et al., 2017). There are also studies that focus on theoretical and conceptual contributions to E-government. They provide overarching frameworks to understand perspectives from various disciplines and link theories to practices in E-government (e.g., Meijer & Bekkers, 2015; Meneklis & Douligeris, 2010).

Papers connected to the *Trajectories of administrative reform* cluster investigate evolving waves of public administrative reform by taking comparative or historical approaches (e.g., Cavalcante, 2019; Goldfinch & Yamamoto, 2019; Guga, 2018; Khalid & Sarker, 2019; Randma-Liiv & Drechsler, 2017). They examine what government reform paths countries with common cultural backgrounds have walked. For instance, they investigate whether those countries differ in the stringencies or types of administrative reforms they have put in place.

The *Accounting and performance management* cluster is in line with the first cluster, given that the works in this cluster investigate the results of NPM reform. However, this array of research focuses on the influence of one specific NPM tool: performance auditing. These studies have found that NPM changed the grounding norms of accounting from financial control and compliance to outcome-focused effectiveness analyses. They investigate how the changing nature of auditing affects accounting systems and, subsequently, their organizations (e.g., Carlson et al., 2010; Jacobs, 2016; Lee, 2012; Parker et al., 2019; Shin & Jung, 2014).

Finally, the *Public value* cluster debunks the NPM assumption that economic objectives and performance are the goals of public organizations. Furthermore, papers in this cluster criticize NPM's assumption that citizens are passive customers (e.g., Broucker et al., 2018; Pang et al., 2016; Soe & Drechsler, 2018). The public value literature argues that public value derives from a deliberative decision-making process and stresses the role of public managers in this process (Broucker et al., 2018; Davis & West, 2009; Shaw, 2013).

*Co-citation Network.* The *Government-citizen interactions via ICT* cluster explains the largest variance in the co-citation two-mode network. This research cluster is interested in whether the adoption of two-way communication tools, like social media and Web 2.0, improves the efficiency, effectiveness, and responsiveness of public institutions (e.g., Abdelsalam et al., 2013; Andersen et al., 2012; Deverell et al., 2015; Reddick et al., 2017).

The *Public value (DEG)* cluster deals with papers that address how digital government can produce public value and what the underlying approach to building up the government IT system should be (e.g., Cordella & Paletti, 2018; Mergel, 2016; Navarra & Cornford, 2012; Pang et al., 2014; Wang et al., 2018). These studies criticize the fact that the literature on digital government only focuses on the creation of managerial toolkits through the combination of ICTs and government. They argue that the ultimate object of digital government is to establish an open and democratic governance where the people are empowered as citizens, rather than as customers (Cordella & Paletti, 2018; Navarra & Cornford, 2012).

The *Decision-making in the digital governance era* cluster investigates how digital government can transform decision-making. Scholars sharing this research agenda argue that the existing literature on digital government has confined its attention to changes in public service delivery and neglected decision-making. They examine how new trends in information systems, including the soaring amount of information, machine learning technology, and big data, can impact individual decision-makers or the overall cycles of decision-making (e.g., Andrews, 2019; Fishenden & Thompson, 2013; Höchtl et al., 2016; Marando & Craft, 2017).

The idea presented in Dunleavy et al. (2006) that uses ICT as a tool to promote the involvement of citizens in the administrative process led to the *Co-production* cluster. However, studies in this cluster do not confine their subjects to co-production activities mediated by technologies. Instead, they are interested in the potential benefits and challenges of realizing such ideas in various policy areas, like social welfare and risk governance (e.g., Baines et al., 2010; L. Brown & Osborne, 2013; P. R. Brown & Head, 2019).

Another group of papers questions the effects of digital government. I named this the *Skepticism about digital government* cluster. The underlying expectation of studies on digital government is that the proper combination of ICTs and public administration creates open, transparent, efficient, and democratic administration. However, rigorous analyzes to investigate digital government's true impact remain scant. This line of research attempts to fill this gap by exploring instances when digital government failed to achieve objectives such as curbing bureaucratic discretion, improving efficiency, and bolstering trust in government. Papers in this cluster conclude that if we expect more than just symbolic effects from digital government, then keeping pace with changing environments, political leadership, and managerial perspectives should come together (e.g., Bannister & Connolly, 2011; M. M. Brown, 2015; Morgeson & Mithas, 2009; Reddick et al., 2011).

Finally, the *Trajectories of administrative reform* cluster, a research theme within the bibliographic coupling network, can also be found in the co-citation network analysis. As with the bibliographic coupling cluster, this one examines the waves of administrative paradigms that countries have gone through. The cluster concludes that NPM does not seem to go away and that the argument that administrative reform trajectories ultimately converge is overstated (e.g., Goldfinch & Wallis, 2010; Hong, 2013; Kirkpatrick et al., 2011; Pollitt, 2013; Simonet, 2015).

*Overall Findings.* The results from the co-citation and the bibliographic coupling analyses emphasize different lines of administrative reform ideas. In the co-citation analysis, the lines of research, except for one cluster, are related to digital government topics. Since co-citation analysis weighs older publications and unearths influential schools of thought, we can conclude that the academic community influenced by Dunleavy et al. (2006) developed important threads of research in the digital government field. On the other hand, the bibliographic coupling analysis reveals the current trends of research and two NPM-related research clusters. This shows that Dunleavy et al.'s (2006) definition of NPM and analysis on its limitations have provided useful guidance for recent studies on the topic.

However, two common clusters are identified. The first one is the *Public value* cluster. Although the one found in the co-citation network mainly focuses on the relationship between digital government and public value, together they suggest that the academic community has been interested in how government bureaucracy contributes to public value. The other cluster is the *Trajectories of administrative reform* cluster. This reveals that Dunleavy et al.'s (2006) belief in the death of NPM and the linear model of administrative transformation added one major and persisting debate to the field.

## Relationships Between the Clusters

Looking into the relationships between the various research clusters reaffirms the influence of Dunleavy et al. (2006) on administrative reform and digital government literature. In terms of the bibliographic network (Figure 2), the cluster located at the central position within the network is the *Influence of NPM on policy and public administration systems*. In addition, this cluster shares several papers with other clusters, such as *Public value, Accounting and performance management*, and *Trajectories of administrative reform*. The co-citation network also shows that digital government-related clusters such as the *Government-citizen interactions via ICT, Public value (DEG), Skepticism about digital government*, and *Decision-making in the digital governance* are interconnected (Figure 3). These connections between research groups that are mediated by publications imply that scholars have perceived and expanded the intersections of scholarly subfields.

Both networks show that digital government topics are isolated from the *Trajectories of administrative reform* cluster. The *Digital government* cluster in the bibliographic network has only three articles connecting the schools of thought on public value and the overall influences of NPM. It shows no connections at all with the other two clusters. A similar pattern comes out of the co-citation network, given that the digital government-related clusters have no ties with *Trajectories of administrative reform*. This shows that information technologies in the public sector have not been spotlighted in the history of administrative reform despite the effort by Dunleavy et al. (2006) to set up ICTs in government as a distinct line of thought for the transformation of bureaucracy.[3]

The isolation of E-government topics from administrative reform clusters resonates with Goldfinch and Yamamoto's (2019) and Pollitt and Bouckaert's (2014) criticisms of Digital-Era Governance. They have argued that it might be difficult for digital government to become a distinct idea in bureaucratic transformation because "e-government is a nebulous term with a variety of meanings and uses, with an appeal to a variety of audiences" (Goldfinch & Wallis, 2010, p. 1190) and digital government is not a distinct paradigm of governing models (Pollitt & Bouckaert, 2014, p. 7). That is to say, scholars have paid attention to ICTs in government not only to facilitate NPM (downsizing governments) and Post-NPM (joining-up government, network, and participation) but also re-bureaucratization (standardization and centralization) (Goldfinch & Wallis, 2010).

## How Do the Clusters React to Dunleavy's Arguments?

*NPM Reform and Waves of Administrative Paradigms.* The findings of papers assigned to the *Influence of NPM on policy and public administration* cluster

correspond with the major criticisms of NPM by Dunleavy et al. (2006). NPM prevents systemic and joint-up approaches in policy problems by increasing the number of service providers (Green et al., 2009; Jenkins, 2014), narrowing public managers' focus to performance measures rather than overall goals (Gibson & O'Donovan, 2014; Mann, 2017), and worsening organizational turf wars (Mann, 2017). Also, an increasing number of service providers having heterogeneous statuses (public, semi-private, and private) reduces citizens' capacity to understand the administrative system and set up the right targets to raise their voices (Jenkins, 2014).

The papers assigned to the *Trajectories of administrative reform* clusters in the bibliographic coupling and co-citation networks raise arguments that contrast with Dunleavy et al. (2006). First, these papers argue that countries do not follow the same linear model from traditional public administration to post-NPM reform (Goldfinch & Wallis, 2010; Hong, 2013; Khalid & Sarker, 2019; Pollitt, 2013; Randma-Liiv & Drechsler, 2017). According to Goldfinch and Wallis (2010), the argument that novel and dominant ideas come after older orthodox administrative reforms is a myth because a variety of administrative designs exist across developed countries. Randma-Liiv and Drechsler (2017) and Guga (2018), who investigated the trajectory of administrative reform in Eastern European countries, argued that in contrast to Western developed countries, these countries implemented NPM reform without having a traditional Weberian bureaucracy. Instead, they kicked off Weberian bureaucratic reform after side-effects, such as corruption originating from the absence of a well-established bureaucracy, were pervasive during the post-communist transition period.

Second, the papers in these clusters debunk Dunleavy et al.'s (2006) postulation of the conflicting relationships between NPM and Post-NPM. Pollitt (2013) investigated how narratives of administrative reform in the UK have changed over four decades by reviewing five key governmental papers. He found that Open Public Service, a government paper published in 2011, contains both NPM and post-NPM reform ideas. Randma-Liiv and Drechsler (2017) note that even when the digital government agenda became the main current stream of an administrative reform agenda in Eastern European countries, NPM was not removed from decision-making toolkits. Rather, NPM can resurface in times of economic crisis. Furthermore, Goldfinch and Yamamoto (2019) and Hong (2013) found that NPM toolkits are too firmly established within existing institutions to ever be removed. In particular, Goldfinch and Yamamoto (2019) set out to investigate whether Australian and Japanese citizens perceive a series of administrative reform paradigms as totally separated. Based on the finding that people perceive different streams of ideas as intertwined rather than separated, they concluded that the reform

paradigms could coexist without trading off and may even have supplementary relationships.

*Digital Government.* The *Digital government* clusters are heavily influenced by digitalization, one of the three main themes of DEG, which refers to the establishment of civic-centric systems mediated by ICTs. Papers in the *Public value (DEG)* cluster argue that the ultimate value of digital government is not managerial efficiency but enhancing democratic governance. Digital government accomplishes its goals by increasing public access to information and establishing networked collaborative governance through co-production (Cordella & Paletti, 2018; Navarra & Cornford, 2012). These practices of openness should also be applied to the establishment of government IT systems (Fishenden & Thompson, 2013; Mergel, 2016; Wang et al., 2018). The digital government literature argues that governments can establish adaptable government IT systems when they replace performance-based contracts with open-source programming, which can facilitate co-production and collaboration (Fishenden & Thompson, 2013; Mergel, 2016; Wang et al., 2018). Additionally, the *Government-citizen interactions via ICT* cluster addresses whether the accessibility of public information and two-way communication channels between citizens and governments can improve the quality of public services (Abdelsalam et al., 2013; Andersen et al., 2012; Deverell et al., 2015).

The studies influenced by Dunleavy et al. (2006), however, are not blinded by utopian technological determinism. As noted above, the *Skepticism about digital government* cluster reveals that the adoption of technology alone cannot accomplish the objectives of digital government. Papers from the *Government–citizen interactions via ICT* cluster, especially studies conducted in developing countries (Abdelsalam et al., 2013; Reddick et al., 2017), found that flows of information from citizens to their governments have not significantly increased. In fact, the introduction of social media and new communication technologies often adds additional unilateral communication channels from governments to their citizens (Abdelsalam et al., 2013; Reddick et al., 2017). The *Decision-making in the digital governance era* cluster also shows both optimism and skepticism. On the one hand, the proper usage of ICTs allows for the emergence of a small but intelligent bureaucracy capable of policy design and strategic decision-making (Fishenden & Thompson, 2013; Höchtl et al., 2016; Marando & Craft, 2017). On the other hand, technology rather stifles creative decision-making because of the strict application of data and standards. Furthermore, it can cause serious ethical problems in that decision-making based on algorithms can exaggerate human bias and prejudices existing within the data (Andrews, 2019; Marando & Craft, 2017).

## Gaps in the Literature

The first gap found in the literature is that efforts to understand the combination of ICTs and administration in relation to the changing nature of the public sector remain scant. The digital government clusters have no connections with the *Trajectories of administrative reform* cluster. Studies assigned to the *Trajectories of administrative reform* cluster barely address digital government as a part of the transformation of public bureaucracy. This result is in line with PA scholars' critiques that Dunleavy et al. (2006) has remained the rare exception and that digital government studies are yet to be discussed in the mainstream public administration scholarship (Esmark, 2017; Meijer et al., 2018; Pollitt, 2011). As mentioned above, the instrumentality of digital government for other reform ideas could make it difficult to make E-government a model for administrative reform in itself (Goldfinch & Yamamoto, 2019; Pollitt & Bouckaert, 2014). However, digital government is not a static concept but an evolving question about the impact of ICTs on government bureaucracy and the relationship between citizens and governments that is mediated by information technology (Choi & Chandler, 2020; Dawes, 2008). Therefore, it would be difficult to fully accommodate the potential of new technology for the public sector without examining the underlying logic of how the public sector should be constructed.

The second gap is that the other two themes of digital government and reintegration and needs-based holism, respectively, have not received substantial attention. Most of the digital government-related clusters, including the *Government–citizen interactions via ICT, Co-production, Skepticism about digital government*, and *Public value* clusters, are focused on how the combination of ICTs and administration have transformed the relationship between governments and citizens. However, earlier studies provide limited insight into whether ICTs improve inter-organizational coordination or whether enhanced coordination capacity leads to public service integration. Given that one-stop services from well-integrated public institutions can increase citizens' overall satisfaction, and collaborative approaches have become essential because of complex policy problems that cannot be solved by a single administrative agency (Chen & Lee, 2018; Dawes et al., 2009; Gil-Garcia, 2012), this is a serious gap in the literature. Moreover, these two core elements of digital government were created as a remedy for the fragmentation and disintegration of public organizations and services (Dunleavy et al., 2006). Thus, future research on reintegration and need-based holism could elucidate the relationship between NPM and digital government.

The third gap relates to the deep-seated belief of digital government studies that the combination of ICTs and administration paves the way to open and democratic administration. However, digital government is a double-edged

sword. The combination of ICTs and administrative strategies can hamper individual rights. The more the digital footprints are perceived as a tool to improve the quality of administrative and policy systems, the more concerns arise about privacy, social controls, and social sorting (Mergel et al., 2016; Webster, 2012). In addition, some scholars challenge the assumption that digital government is a good fit with democracy. Data-driven decision making using big data rarely leaves room for citizen participation (Ingrams, 2019). Autocracies utilize E-government as a tool to increase their governmental capacity to take control of online communications through the partial liberalization of the Internet (Cho & Rethemeyer, 2022; Schlaufer, 2021; Stier, 2015). Despite these possible negative effects, only a few studies have investigated what legal or administrative measures are needed to prevent the negative impact of digital government on the democratic polity. This finding resonates with how Gil-Garcia and Luna-Reyes (2006) and Moon et al. (2014) reviewed the literature of digital government studies. They used a three-fold approach (managerial, political, or legal), suggested by Rosenbloom (1983) and found that the legal approach, which stresses the values of equity, due process, and individual rights, has received the least attention among the three approaches.

## Conclusion

This paper set out to trace the evolution of the literature influenced by Dunleavy et al. (2006). The contributions of Dunleavy et al. (2006) to the literature of public sector reform and digital government warrant tracking its influence on the literature. This paper utilized bibliometric analysis: co-citation and bibliographic coupling analyses. These methods, combined with factor analysis and two-mode network analysis, portray clear maps of the research clusters. In particular, I tried to answer four questions: (1) what groups of research have emerged, (2) how these different schools of thought are related to one another, (3) how the papers react to the arguments of Dunleavy et al. (2006), and (4) what research gaps exist for future studies to investigate.

First, my bibliographic coupling analysis shows that the recent studies that cite Dunleavy et al. (2006) investigate NPM-related topics. The co-citation network identifies that the papers citing Dunleavy et al. (2006) converge around several important digital government themes. However, there is consistent interest in the historical trajectories of administrative reform, public value, and digital government. Second, I found that in both networks the digital government clusters are isolated from other areas of research. This is related to the point that digital government seems to be marginalized in the discipline of public administration (Esmark, 2017; Hood & Margetts, 2014; Meijer et al., 2018). Third, in terms of reactions to arguments by Dunleavy et al. (2006), the studies agree about the negative impacts of NPM on policy and administrative systems. However, the

suppositions of a linear trend in administrative reforms and of conflicting relationships between administrative paradigms have been criticized. Digital government clusters have focused primarily on digitalization out of the three main pillars of digital government. Fourth, based on the foregoing discussions, I articulated three main areas for future research: (1) relating digital government to the changing nature of public administration, (2) focusing on the other two major pillars of digital government (reintegration and need-based holism), and (3) investigating how to prevent the negative impacts of digital government on democracy by applying the legal approach to public administration.

There are some limitations to this study. First, since my study focuses only on papers citing Dunleavy et al. (2006), the results could fail to capture the evolution of the overall literature. Additionally, the fact that I only paid attention to articles published in peer-reviewed journals could introduce biases in the findings, given that the information science and computer science fields tend to regard conference papers as a rigorous tool to share ideas in the academic community.[4] Second, this study only focused on academic papers written in English. Thus, some papers describing administrative reforms in non-native English-speaking countries in languages other than English are not included.
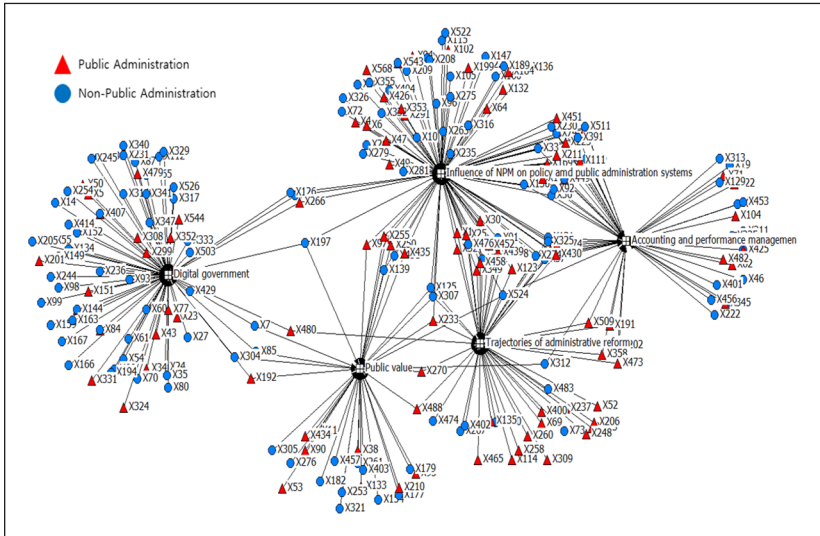
## Appendix A



**Figure A1.** Bibliographic two-mode networks of publications (a loading value <0.3).
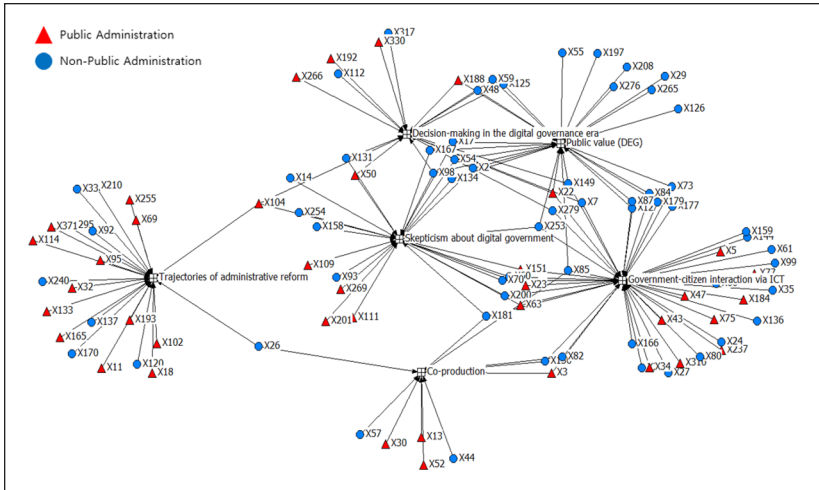
**Figure A2.** Co-citation two-mode networks of publications (a loading value <0.3).

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## Notes

1. Classic Papers: Articles That Have Stood the Test of Time (2017, June 14). Retrieved January 5, 2022, from https://scholar.googleblog.com/2017/06/clas-sic-papers-articles-that-have-stood.html
2. Before conducting these factor analyses, I checked whether bibliographic coupling and co-citation matrices were suitable for factor analysis using the

Kaiser–Meyer–Olkin (KMO) and Bartlett' tests. KMO values for bibliographic coupling and co-citation matrices are 0.962 and 0.739, which are higher than the rule-of-thumb threshold (0.5) for suitability (Shrestha, 2021). Bartlett's test of sphericity also shows that both matrices have the significant value ($p < .01$), indicating that they are suitable for structure detection (Shrestha, 2021).

3. Some might argue that the two-mode network analysis reported a separation between the digital government-related clusters and *trajectories of administrative reform* cluster because the high cut-off point (the loading value <0.4) excludes articles that could otherwise serve as boundary spanning links. To address this point, as shown in Appendix A, I also visualized the bibliographic coupling and co-citation networks using the loading value 0.3. In doing so, I found that the loading value does not affect the relationship between the two research clusters in a significant manner. The bibliographic coupling network shows that only one article is tied to both research groups. The co-citation network reports that there are no connections between the two research clusters.

4. The initial data set had 574 documents, and there are 53 conference papers. Almost half of them (24 papers) were presented at computer science related conferences.

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