

Impact of digitalization on administrative burden: Empirical results of a content analysis

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The increasing use of ICT in public administration and businesses, along with other tools categorized within the concept of e-government, are believed to offer significant opportunities for progress in reducing administrative burdens. But does this really hold true in practice? This article examines the impact of digital transformation on administrative burdens over the period 1980-2024. Using the method of content analysis based on the analysis of 119 reviewed articles from Scopus database, it was found that in most research digitization had a positive impact on reducing administrative burdens although a significant share of articles demonstrates that digitalization actually increased administrative burden in some specific cases. The empirical results also show that the cognitive paradigm approach public governance / public administration and the e-government / ICT approach dominate in the analyzed articles. Qualitative methods mainly dominate in most of the analyzed articles although the share of quantitative methods is significant as well.

Key words: Administrative burden, red tape, compliance costs, ICT, digital transformation, literature review

1. INTRODUCTION

Governments are actively pursuing digital transformation initiatives to modernize public administration and reduce administrative burdens. Martins & Veiga, 2022 argue that innovations in government using ICT is crucial to reduce administrative burden, which can lead to an increase of economic competitiveness. Digital government is transforming the way the public sector works in a way to improve the efficiency and effectiveness of public service delivery, while reducing corruption and the scope of the informal economy (Martins et al, 2021). Furthermore, digital government is essential to transform government processes and services to improve the responsiveness and reliability of the public sector (OECD, 2023). Still, studies on the intersection of administrative burdens and digital government remain scarce (Peeters, 2023) although reduction of administrative burdens has been ranked among the top priorities of governments for some time now (Arendsen et al., 2014; Veiga et al., 2016). Nevertheless, European Commission published a report (2014) a decade ago already focusing on measures to reduce regulatory burdens, primarily leveraging e-government and ICT solutions. The report was followed by the EU eGovernment Action Plan 2016-2020, while the most recent release of Digital decade policy program 2030 of EC emphasize the importance of digital transformation on administrative costs minimization as well.

Vial (2021) defines digital transformation as "a process aimed at enhancing an entity with significant changes in its characteristics resulting from a combination of information, computer, communication, and connectivity technologies." This definition is in alignment with the broader concept of digitalization, which encompasses individual, organizational, and societal contexts. Among the primary ways of implementing digital transformation into various processes is the implementation of electronic government services, or e-government. In a narrower sense, this entails the use of a set of ICT tools that enable businesses and citizens to interact with public administration via electronic devices such as phones, tablets, fax machines, self-service terminals, and email/internet (Almarabeh & AbuAli, 2010; Viana, 2021). In a broader sense, it refers to the way the government organizes its public administration, rules, legislation, and frameworks that ensure the provision of public services and the dissemination of information, as well as coordination, communication, and integration within the functioning of public administration (Almarabeh & AbuAli, 2010; Viana, 2021). The use of e-government is purported to reduce users' time and costs, particularly in terms of faster data retrieval, easier communication, and lower transaction costs, all of which are expected to contribute to lower administrative burdens. Additionally, e-government enables more efficient exchange of information among different government bodies. The implementation of the so-called "once only principle" (Gallo et al., 2014) ensures that citizens and businesses do not need to submit the same data to public authorities multiple times. If permitted and in compliance with data protection rules, public administration offices internally reuse the data, thereby avoiding additional administrative burdens for citizens and businesses. In the Strategy for the Digital Single Market for Europe (European Commission, 2015), an extensive pilot project on cross-border implementation of the "once only principle" in the area of business-government relations commenced in 2016 through collaboration among EU member states. This strategy aims to provide the best possible access to online services for individuals and businesses while concurrently promoting the reduction of administrative barriers. Additionally, in connection with digital transformation and the reduction of administrative barriers, the concept of "digital by default" (Gallo et al., 2014) is often mentioned. This concept is based on the idea that public administration services should be initially digital, only then accessible via other channels, which remain open for those who cannot or do not wish to access digital services.

As digital transformation becomes more widespread among businesses and public administrations, many scholars assert that it enables the reduction of administrative burdens (Arendsen et al., 2014; Troshani et al., 2018; Veiga et al., 2016). Proactive digital public services can play an important role in reducing clients' administrative burden by decreasing compliance costs by prefilling forms, thus reducing the amount of information clients must provide, informing clients about services for which they are eligible, thereby reducing clients' learning costs, and decreasing stress (psychological costs) during the delivery process (Scholta & Lindgren, 2023). However, despite predominantly supportive

research findings regarding this relationship, some studies have also noted a degree of caution. Arendsen et al. (2014) suggest that the primary beneficiaries of digital transformation are public administration organizations, rather than businesses experiencing reduced administrative burdens. Supporting this caution, Raus et al. (2010) argue that there is insufficient evidence to conclusively demonstrate that increased utilization of ICT services alongside e-government initiatives effectively reduces administrative burdens and improves services for businesses. Similarly, Reissig et al. (2022) found that the efficiency of e-government services in Switzerland's farming sector is contingent on various farm-specific factors, with no overall time savings or efficiency gains observed. Furthermore, Vasilenko & Zotov (2020) for example demonstrate that the positive impact of digital transformation on reducing administrative burdens is not guaranteed, particularly when inefficiencies arise in managing electronic documents, such as issues with incomplete interactive report submission forms or frequent changes to required indicators. The results of a study by Schou & Pors (2019) on the implementation of the "digital by default" concept in Danish municipal social institutions since 2014 have shown that the introduction of legal communication via digital channels may lead to additional social stratification as a result of the "digital exclusion" of certain marginalized groups. Therefore, when examining digital transformation, it is necessary to pay attention to potential negative consequences. Although these research mainly deal with marginal cases, probably the most exposed counterpart to the widely accepted fact that digital transformation reduces administrative burdens by streamlining access to digital services, is that it may reproduce administrative burdens for digitally disadvantaged users (Alshallaqi & Al-Mamary, 2024; Larsson, 2021; Peeters, 2023), thus making marginal groups even more marginal. Peeters (2023) even describes this phenomenon as digital administrative burden.

The article focuses on administrative burdens and the related concept of bureaucratization, which significantly influences various levels of public administration and other fields (Linos & Riesch, 2019). Researchers inconsistently use bureaucratization and related concepts (Madsen et al., 2022; Moynihan et al., 2015), with studies often overestimating conceptual differences due to various definitions and research methods. Nonetheless, the results of a detailed literature review in (Madsen et al., 2022) suggest that the differences between these concepts may be small. In this article, administrative burden represents a portion of the administrative costs incurred due to regulatory requirements. It is important to differentiate administrative burden from administrative barrier which is also often subject of research (e.g. Kalaš & Bačlija, 2015; Kovač, 2010; Milavec & Klun, 2011). Administrative barrier is a narrower concept than administrative burden, referring only to the burden that is not necessarily essential for achieving the public interest. Still, the distinction between these two concepts is often blurred, as it is challenging to determine when regulation imposes a certain (unnecessary) burden on users and when the removal of regulation could cause harm to the public interest (Kalaš & Bačlija, 2015). According to definition of (Burden et al., 2012) administrative burden is defined as "an individual's experience of a policy implementation as onerous".

In accordance with the methodology of the Standard Cost Model (SCM Network, 2006), which represents a widely accepted framework for measuring different types of regulation costs (Veiga et al., 2016), each regulation spurs three types of costs, namely financial costs, substantive compliance costs, and information compliance costs. The latter are often referred to as administrative burden, expression that carries a negative connotation in scientific research, while additionally research on the latter is often linked to the negative impact it has on efficiency (Feeney, 2012; Madsen et al., 2022). These can further be divided into actual administrative costs, which companies would incur even if regulations were removed (OECD, 2001; SCM Network, 2006), and administrative burdens, involving unnecessary administration that could be reduced if legislation and its enforcement were of higher quality (Kotnik & Klun, 2019). From the perspective of citizens' interaction with public administration, Moynihan et al. (2015) examined administrative burdens and defined them as a combination of learning costs, psychological costs, and administrative costs. Learning costs refer to acquiring information about public services, psychological costs relate to the stigma resulting from individuals' participation in a particular program or the stress arising from fulfilling administrative procedures, while administrative costs stem from completing applications and forms and providing necessary documentation (Moynihan et al., 2015).

Following the introductory framework encompassing two distinct scholarly domains, namely, digitalization and administrative burdens, along with their intersection, four research questions were formulated:

RQ 1: *Does digital transformation reduce administrative barriers?*

RQ 2: *Which cognitive paradigmatic approaches prevail in the selected literature?*

RQ 3: *Which thematic areas are most represented in the selected literature?*

RQ 4: *Which methodological approaches are most used?*

The remainder of the paper is structured as follows; in Section 2 methodological framework is presented, Section 3 contains the empirical analysis of the results from selected contributions, while Section 4 and Section 5 include responses to the research questions as well as discussion summarizing the key findings and presenting possibilities for further research in the field.

2. METHODOLOGY

To find out answers to research questions, an inductive approach to reviewing literature on digital transformation and administrative burdens was chosen. The methodology is based on guidelines (Wolfswinkel et al., 2013) and their application of techniques rooted in the "grounded theory," which precisely defines the process of thorough literature review. The purpose of employing the grounded theory approach in literature review is to ensure a comprehensive and theoretically relevant analysis of the subject matter (Glaser & Strauss, 2017). Systematizing the entire literature review ensures optimal and credible analysis results, further contributing to the formation of the theoretical process (Wolfswinkel et al., 2013). The guidelines of the grounded theory encompass five steps, namely: (1) defining the scope of the review – "define", (2) searching for relevant literature – "search", (3) selecting literature for analysis – "select", (4) analyzing – "analyze", and (5) presenting findings – "present". Each step of the grounded theory or grounded analysis is further elaborated below.

The first step (Wolfswinkel et al., 2013) involves establishing criteria for including or excluding literature in the review. It also necessitates defining any temporal restrictions, subject areas, and types of literature. For this analysis, contributions did not have any time limitation of being published, while it was limited to articles document type only as well as English language. No additional constraints were imposed on the subject areas or types of literature, as one of the objectives was to explore the topic's relevance across various domains. The systematic literature review was done on data from the Elsevier Scopus abstracts and citations database. To ensure the inclusion of all relevant contributions and mitigate the risk of overlooking key works, multiple search queries were conducted, ultimately leading to the selection of an appropriate search query (Wolfswinkel et al., 2013).

The search terms for the field of reducing administrative burdens were based on the study by Kovač & Jukić (2017) who utilized the following keywords (keyword phrases): "red tape," "administrative burden," "bureaucratization," "reduction of administrative burden," and "removal of administrative barriers." Similar analyses was performed by Blom et al. (2021) who identified a total of 8,886 studies on the concept of administrative burden using the keywords "red tape," "compliance burden," "administrative burden," "unnecessary rules," and "ineffective rules."

The search terms for literature on digital transformation proved to be more challenging, as the initially selected terms ("digital transformation" or "digitalization") did not capture certain relevant contributions found in other databases. Adjusting the search terms to include contributions whose titles, abstracts, or keywords contain the root word "digital" proved to be a more suitable search criterion. The search results revealed 6,383 contributions in the field of reducing administrative burdens, while the search terms for digital (or including the root word "digital") yielded a total of 1,713,986 documents. The intersection of

these two sets, representing the subject of our study, initially amounted to 247 documents, while the number decreased to 127 when limited to articles in English only.

Selected contributions that met conditions outlined above (Wolfswinkel et al., 2013) were further analyzed by both authors of the article regarding the relevance of the topic to the research subject. Both researchers separately reviewed the content of selected articles, and at the same time, added definitions whether it was a "completely irrelevant," "less relevant," "relevant," or "highly relevant" contribution. Subsequently, the researchers discussed the various labels of the works, reaching a unanimous agreement on the inclusion of each piece in the further analysis. Out of 127 contributions, 8 were further excluded due to irrelevance. The final number of included articles in the analysis thus amounted to 119.

The analysis involved determining the variables under study that allowed for answering the research questions. It was a systematic process of coding, through which each scientific article was identified based on the following categories, namely: (i) the impact of digitalization, (ii) the cognitive paradigmatic approach used, (iii) the thematic area covered, and (iv) the methodological approach used in the research. Coding of the contributions formed the basis for empirical analysis, upon which the results were presented, and the acquired findings structured.

3. RESULTS

RQ 1: Does digital transformation reduce administrative barriers?

Table 1 presents the results of the analysis of scientific articles in the field of digitization and administrative burdens. Empirical findings indicate that among the 119 scientific contributions included in this analysis, which were published between 1980 and 2024, 82 articles or 68.9 % of all contributions, suggest that digitization contributes to the reduction of administrative burdens. In 18 of analyzed scientific articles (15.1% of articles), it is evident that digitization leads to an increase in administrative burdens, while 7 articles (5.8%) argue that digitization could have positive and negative effect on digital burden, or the impact of digitalization has not been significant. 12 articles focus on topics where the impact of digitization on administrative burdens is not the central subject of research. Based on the empirical results of content analysis, we can thus answer the first research question affirmatively, stating that research is mainly supportive regarding the digitization influencing the reduction of administrative burdens. Still, the percentage of articles that finds digitalization actually increasing administrative burden in general or in some specific cases is not insignificant.

Table 1: The impact of digitization on administrative burdens

The impact of digitization on administrative burdens	Number of articles	Share (in %)
Decreases	82	68.9%
Increases	18	15.1%
No impact (mixed impact)	7	5.8%
Not subject to analysis	12	10.1%
Total	119	100%

Source: own research.

RQ 2: Which cognitive paradigmatic approaches prevail in the selected literature?

Overall, the Table 2 provides insight into the distribution of cognitive paradigmatic approaches within the analyzed articles, illustrating the diverse theoretical perspectives employed by scholars in studying digitalization and administrative burdens.

The most prevalent cognitive paradigmatic approach observed is "Public Administration / Public Governance," with a frequency of 37 instances, constituting approximately 31.1% of the total. This approach encompasses studies that focus on the organizational and managerial aspects of public administration and governance systems. Following closely by "E-Government / ICT," accounting for 35 articles, or 29.4% of the total. This category pertains to research centered on the utilization of information and communication technologies (ICT) in the context of government services and digital governance initiatives. The "Economic" approach is represented by 17 articles, comprising about 14.3% of the total. This category encompasses studies that examine the economic implications and consequences of various phenomena related to digitalization and administrative burdens. Other approaches (e.g., Political, Institutional, or Public Policies; Managerial approach; Legislative approach) are significantly less represented in the analyzed articles. This can be attributed to the specific nature of the analyzed field (digitalization and administrative burdens), the rigidity of legal institutions when it comes to the legal approach, or the fact that the public governance paradigm has reached a very high proportion.

The high prevalence of good public governance indicates a strong interest among states or communities of states, including the EU, to establish a modern digital environment at all levels of their institutions (supranational, national, regional, or local) that meets the needs of citizens and the economy of today. The high representation of the Public Administration / Public Governance approach also indicates the multidisciplinary nature of the analyzed articles, suggesting that addressing the demanding and complex challenges of the 21st century can only be achieved through appropriate complex approaches such as public governance. Moreover, recent trends suggest that complex cross-cutting issues are difficult to analyze solely by focusing on one discipline, such as law or economics. The results of the analysis are thus consistent with assumptions in the literature (Hofmann, 2008; Trondal & Peters, 2013) which state that such a multidisciplinary approach is necessary to address the current challenges of public administration. Therefore, the answer to the second research question "Which cognitive paradigmatic approaches prevail in the selected literature?" is that the main cognitive paradigmatic approaches used are: (i) Public Administration / Public Governance; (ii) E-Government / ICT; and (iii) Economic Approaches.

Table 2: Cognitive Paradigmatic Approach

Cognitive Paradigmatic Approach	Number of articles	Share (in %)
Public Administration / Public Governance	37	31.1%
E-Government / ICT	35	29.4%
Economic	17	14.3%
Political, Institutional, or Public Policies	10	8.4%
Other (Ethics, History, Culture, Integrated Approach)	7	5.9%
Managerial	7	5.9%
Legislative	5	4.2%
Epistemology	1	0.8%
Total	119	100%

Source: own research.

RQ 3: Which thematic areas are most represented in the selected literature?

Table 3 presents the distribution of articles across different areas of study within the analyzed literature. The majority of articles focus on Public Governance & Public Administration, constituting 44.5% of the total. Following this, Healthcare, Taxation and Finance, and ICT & AI are also prominent areas of study, each comprising approximately 15.1% of the total articles. Education represents 9.2% of the articles, while Agriculture, Energy, Insurance, and Employment are comparatively less represented, each

constituting less than 3% of the total articles. This distribution highlights the diverse range of topics covered within the literature on digitalization and administrative burdens, reflecting the interdisciplinary nature of the field.

The results unequivocally point to the complexity and challenges of the field, as the thematic area of Public Governance & Public Administration is the most prevalent. It indicates that addressing the current challenges of the intersecting domain of digitalization and administrative barriers, primarily involving public administration, requires a complex multidisciplinary approach. These findings are consistent with those of other studies (Aguilera & Cuervo-Cazurra, 2009; Bingham & Bowen, 1994; Kotnik & Kovač, 2018; Kovač & Jukić, 2016), which highlight how the concept of good public governance represents a key aspect of governance in the modern world. An interdisciplinary approach in modern public administration on a global scale is thus necessary to address such complex challenges of public governance (Raadschelders, 2011). In response to the third research question "Which thematic areas are most represented in the selected literature," it can be concluded that the predominant thematic area is Public Governance & Public Administration.

Table 3: Area of Study

Area of Study	Number of articles	Share (in %)
Public Governance & Public Administration	53	44.5%
Healthcare	18	15.1%
Taxation and Finance	18	15.1%
ICT & AI	12	10.1%
Education	11	9.2%
Agriculture	3	2.5%
Energy	2	1.7%
Insurance	1	0.8%
Employment	1	0.8%
Total	119	100%

Source: own research.

RQ 4: Which *methodological approaches* are most used?

Table 4 presents a summary of the employed methodological approaches. The results of the empirical analysis indicate that the majority of published scientific articles (54.6%) utilize a qualitative methodological approach, while the share of articles using a quantitative approach (37.8%) is also significant. 7.6% of analyzed articles adopt a mixed methodological approach. These results are not surprising given that the most prevalent cognitive paradigmatic approach in the analyzed scientific articles is Public Governance & Public Administration, within which predominantly qualitative methodological approaches are utilized. However, the proportion of qualitative research approach usage (54.6%) is lower compared to similar studies, where the qualitative approach accounts for 81.0% in the analysis of contributions in the NISPAcee Journal (Kotnik & Kovač, 2018), 78.0% in the analysis of coproduction and co-creation contributions (Jukić et al., 2019), 75% in the analysis of contributions in the International Public Management Journal (currently CEPAR), and 65% in the analysis of articles in the Croatian and Comparative Public Administration Journal (Kovač & Jukić, 2017). The lower proportion of qualitative approach is expected, as the second-ranked cognitive paradigmatic approach, E-Government / ICT (27.1%), and especially the third-ranked economic approach (17.1%), predominantly employ quantitative methodological approaches. Based on the data, the answer to the fourth research question is that the qualitative approach is the most commonly used methodological approach in the analyzed field.

Table 4: Methodological Approach

Methodological Approach	Number of articles	Share (in %)
Qualitative	65	54.6%
Quantitative	45	37.8%
Mixed	9	7.6%
Total	119	100%

Source: own research.

4. DISCUSSION WITH CONSLUSION

The findings of the content analysis also revealed a favorable trajectory in scholarly publications within the intersecting domain of digital transformation and administrative burdens. Prior to 2020, the annual publication count did not surpass 10 articles, yet it escalated to 16 in 2021, 24 in 2022, and 25 in 2023. Notably, in the first five months of 2024, 23 articles meeting our analysis criteria had already been published, further substantiating the pertinence of the study. On the contrary, scarce number of publications until 2020 reveal the under-researched nature of the field in the past, despite reports and initiatives published earlier focusing on potential of digitalization on reduction of administrative burden, e.g. Study on eGovernment and the Reduction of Administrative Burden (Gallo et al., 2014) published by Commission and the EU eGovernment Action Plan 2016-2020.

Furthermore, the results indicate the predominant cognitive paradigmatic approach in the examined scientific articles is public administration/governance, while the examined area of public administration/public governance is also a central thematic domain in the selected analyzed articles. Among the more prevalent topics, one can also observe the areas of taxation and finance, as well as healthcare. The results also demonstrate that the qualitative approach is the prevailing methodological approach, while the share of articles using quantitative methodological approach is also relatively high, especially having in mind that the prevalent cognitive paradigmatic approach is Public Governance & Public Administration in which similar studies found the predominance of qualitative research designs.

E-government, digital administration, digital governance are just a few related concepts that reflect the gradual transformation of public administration as a result of the digital revolution. The first e-services are said to have emerged in the 1980s, the beginnings of ICT usage in the 1990s, while the development of e-government can be seen concurrently with the proliferation of e-business in the early 21st century (Viana, 2021). The origins of studying administrative burdens date back much further in history and have always been one of the key challenges of public administration. Therefore, it is not surprising that the EU, in its e-Government Action Plan 2011-2015, amidst the digital revolution, identified reducing administrative burdens as a key priority to achieve the goal of efficient and effective governance (Gallo et al., 2014). The results of the literature review conducted are thus expected in terms of the impact of digital transformation on reducing administrative burdens, although the proportion of articles indicating that digitalization may indeed exacerbate administrative burdens in some cases is noteworthy.

To conclude, while the increasing use of ICT and e-government tools holds promise for reducing administrative burdens, the actual impact of digital transformation remains nuanced. Our analysis of 119 articles from the Scopus database spanning from 1980 to 2024 reveals a mixed picture: while most studies suggest a positive effect of digitization on reducing administrative burdens, a significant portion highlight cases where digitalization has led to increased burdens. The dominance of the cognitive paradigm approach to public governance/public administration and the e-government/ICT approach in the analyzed articles underscores the importance of these frameworks in understanding the impact of digital transformation. Further research in this area is needed, as rapid advances in artificial intelligence show promising chances for future exploration. As artificial intelligence continues to shape the

landscape of digital transformation in public administration, it is likely, with increased performance of artificial intelligence that soon new opportunities to reduce administrative burden will arise.

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Appendix:

Coding Scheme for Content Analysis

1. Author(s) of the article
2. Organization(s) of the author(s)
3. Article title
4. Year of publication
 - 1980 – 2024
5. Cognitive Paradigmatic Approach
 - Legal approach
 - Managerial approach
 - Economic approach
 - Political, institutional, or public policy
 - E-Government / ICT
 - Public management / public administration
 - Other (ethics, historical, cultural, integrated approach)
6. Thematic Areas
 - Healthcare
 - Education
 - Public management / public administration
 - ICT / artificial intelligence
 - Energy
 - Taxes and finance
 - Agriculture
 - Insurance
 - Employment
7. The impact of digitization on administrative burdens
 - Decreases
 - Increases
 - No impact (mixed impact)
 - Not subject to analysis
8. Methodological Approaches
 - Qualitative
 - Quantitative
 - Mixed