

A Bibliometric Analysis of Government Budget Efficiency and Effectiveness: Trends and Future Directions

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ABSTRACT

This study conducts a comprehensive bibliometric analysis of the literature on government budget efficiency and effectiveness, spanning publications from 1956 to 2024. Utilizing data exclusively from Google Scholar and employing VOSviewer for visualization, the analysis identifies key trends, influential themes, and research gaps within the field. The centrality of "effectiveness" in the literature underscores its critical role in public administration and fiscal policy, while emerging topics such as "policy," "cost effectiveness," and "e-government" highlight the growing importance of integrating economic efficiency and digital innovation into government budgeting practices. Persistent challenges, including issues of "transparency" and "corruption," indicate areas that require ongoing attention to enhance the overall effectiveness of government budgetary processes. The study's findings offer valuable insights for policymakers and researchers, suggesting a balanced approach that incorporates strategic policy-making, technological advancements, and robust accountability measures to optimize the use of public resources.

Keywords: *Government Budget Efficiency, Budget Effectiveness, Public Administration, Bibliometric Analysis, VOSviewer*

1. INTRODUCTION

A growing public demand for more accountability and transparency in the distribution and use of public funds has resulted in increased scrutiny of government budgeting procedures in recent years. A country's economic progress and stability depend heavily on the efficient and effective utilization of its budget, which has an impact on everything from social welfare programs to infrastructure projects [1]. It is crucial to optimize budgetary outcomes since governments around the world are facing more and more obstacles, including the need for sustainable development, demographic changes, and economic uncertainties.

The ability of the government to reduce expenses without sacrificing the volume and quality of public services is referred to as budget efficiency. Conversely, effectiveness is determined by how well government expenditure accomplishes its stated objectives and desired results [2]. These two aspects serve as the cornerstones of both strategic planning and fiscal responsibility and are crucial for assessing the effectiveness of government spending. Despite their significance, systemic problems including bureaucracy, corruption, and resource misallocation make it difficult for many governments to achieve high levels of efficiency and effectiveness.

A methodical way to investigate the large amount of literature about the efficacy and efficiency of government budgets is through bibliometric analysis. Finding significant patterns, important themes, and gaps in the body of current research is made easier with the use of this method. Scholars can obtain insights about the field's evolution and the influence of different scholarly contributions by examining publishing patterns, citation networks, and theme concentrations [3]. An analysis of this kind not only makes the academic landscape easier to

understand, but it also helps practitioners and policymakers identify the best techniques and strategies that work and have been documented in the literature.

Advances in data analytics and the accessibility of large academic databases have expanded the potential applications of bibliometric studies, enabling more thorough examinations of several decades' worth of literature [4]. This is especially true for the fields of fiscal policy and public administration, where long-term research helps to provide a more complex knowledge of the effects and results of budgetary decisions. Thus, it is timely to do a bibliometric analysis of government budget efficacy and efficiency, as this can greatly aid in the improvement of fiscal policies and procedures.

Even though budget effectiveness and efficiency are crucial for public administration, there is still a lack of consensus about how these ideas have been studied and evolved in scholarly literature. It is challenging to synthesize thorough findings and pinpoint areas of agreement or disagreement among academics and practitioners due to the dispersed nature of the studies that are currently available across numerous fields and publications. Additionally, it is critical to keep up with and comprehend new developments in budgetary analysis approaches and patterns as fiscal environments change [5]. The disarray and swift evolution of fiscal tactics necessitate a methodical examination that may incorporate discoveries and offer a cohesive synopsis of the current status of the science concerning the efficacy and efficiency of public budgets.

This study's main goal is to perform a bibliometric analysis on the topics of government budget effectiveness and efficiency in order to pinpoint key themes, emerging trends, and potential future directions in the literature. This study will map out the academic environment in a methodical manner, identifying important papers, authors, and journals. It will also explore the significance of patterns found for future academic research and policymakers. By doing this, it hopes to close the knowledge gap across various research projects and promote a more cohesive strategy for comprehending and improving public budgeting procedures. In the end, this will help to assist the creation of stronger frameworks for effectively and efficiently managing public finances in response to the complexity of contemporary governance concerns.

2. LITERATURE REVIEW

2.1 *Overview of Government Budget Efficiency and Effectiveness*

Effectiveness and efficiency of the government budget have been important topics of research in fiscal policy and public administration. Effectiveness in government budgeting analyzes how well expenditure is in line with and accomplishes the planned policy goals, whereas efficiency in budgeting refers to the best use of resources to generate the highest possible output or service quality [6]. These two foundational elements are necessary to guarantee that public money are allocated in a way that optimizes public value and corresponds with the requirements and expectations of the populace.

2.2 *Historical Context and Evolution*

The conversation on public budgeting has changed dramatically over time. Early research placed more of an emphasis on the technical aspects of creating and implementing budgets than on outcome-based metrics [7]. Performance-based budgeting systems, which take into account not just the price of services but also their

impact and efficacy, have gained prominence throughout time [8]. This transition is a reflection of larger trends in public administration, as government operations have shifted from more rigid and bureaucratic models to ones that are more flexible and results-driven.

2.3 Theoretical Frameworks

A number of theoretical frameworks support the effectiveness and efficiency of budgetary research. For example, the principal-agent theory examines the relationships between elected politicians (principals) and bureaucrats (agents) when it comes to budgetary authority, with an emphasis on how to best align the interests of both sides in order to produce effective and efficient results [9]. The Public Choice theory is another pertinent concept that looks at how different stakeholders' interactions and self-interest affect government decisions, such as how much money is allocated to different departments [10]. These theories offer a framework for comprehending the intricacies of government budgeting that go beyond simple financial exchanges.

2.4 Methodological Approaches

A multitude of methodological approaches have been utilized by researchers to investigate the efficacy and efficiency of government budgets. To objectively evaluate performance and pinpoint the factors that influence efficiency, quantitative techniques such as econometric models and efficiency metrics like Data Envelopment Analysis (DEA) are frequently employed [11]. Deeper understanding of the contextual elements influencing budgetary outcomes and the perceived efficacy of public spending is provided by qualitative techniques like case studies and thematic analysis [12]. In order to integrate the benefits of both quantitative and qualitative methodologies and provide a more comprehensive understanding of budgetary practices, mixed-methods research has also grown in favor.

2.5 Empirical Findings

The importance of technological innovation and integration in improving budgetary procedures is frequently highlighted in empirical studies on government budget efficiency. Research has demonstrated that e-governance programs and digital budgeting systems can greatly enhance the effectiveness of budget implementation and monitoring, resulting in financial savings and heightened transparency [13]. Effectiveness-wise, empirical research regularly emphasizes the value of participatory budgeting and stakeholder involvement as instruments for matching budgetary allotments to public needs and boosting the legitimacy and acceptability of budgetary decisions [14].

2.6 Major Contributions and Debates

The literature shows that academics are still debating the best ways to achieve effectiveness and efficiency in a budget. Some argue for more decentralization and autonomy, arguing that local governments are better suited to comprehend and address the unique needs of their communities, while others support tougher regulations and centralized budgeting systems to reduce waste and mismanagement [15]. A recurring topic is also striking a balance between immediate budgetary restrictions and long-term

investment requirements, with varying opinions on how governments should handle these conflicting demands.

3. METHODS

This bibliometric analysis, which focused on material published between 1956 and 2023, was carried out using data that was only obtained from Google Scholar. The search method encompassed terms associated with "effectiveness" and "government budget efficiency" in order to guarantee thorough coverage of pertinent scholarly literature. Peer-reviewed publications, conference papers, and English-language book chapters that explicitly addressed these subjects were chosen for study. A thorough bibliometric analysis, comprising the display of co-occurrence networks, citation patterns, and the identification of significant authors and publications, was carried out using the VOSviewer software. This methodology made it possible to conduct a methodical analysis of the conceptual advancements and research trends in the subject, highlighting significant contributions and pinpointing areas in need of additional study.

4. RESULTS AND DISCUSSION

4.1 Research Data Matriks

Table 1. Research Data Metrics

Publication years	: 1956-2024
Citation years	: 68 (1956-2024)
Paper	: 980
Citations	: 666557
Cites/year	: 9802.31
Cites/paper	: 775.07
Cites/author	: 462299.98
Papers/author	: 561.85
Author/paper	: 2.03
h-index	: 475
g-index	: 816
hI,norm	: 350
hI,annual	: 5.15
hA-index	: 92
Papers with ACC	: 1,2,5,10,20:755,732,696,636,527

Source: *Publish or Perish Output*, 2024

A thorough picture of the publishing and citation landscape for works on government budget effectiveness and efficiency from 1956 to 2024 is given by the research data metrics shown in Table 1. A remarkable 666,557 citations were earned by the 980 papers that were published throughout this 68-year span, demonstrating the considerable influence of this corpus of work. There were 775.07 citations per manuscript on average and 9,802.31 citations annually, which shows a high degree of intellectual involvement and relevance. With an average of 561.85 publications per author and an average of 2.03 authors per paper, the figures also demonstrate the authors' productivity and point to a collaborative research environment. The significance and caliber of the research are highlighted by the 475 h-index, which indicates that 475 articles have been cited at least 475 times. The significance of the most cited papers is further highlighted by the g-index of 816, and the authors' normalized citation performance is shown in the hI,norm of 350. Furthermore, a concentration on extremely influential work is suggested by the hA-index of 92 and the hI,annual index of 5.15, which

show a consistent citation influence over time. The top papers have gotten between 527 and 755 citations, according to the papers with the most citations (ACC), indicating their crucial relevance in the area. Together, these indicators demonstrate the breadth, significance, and collaborative character of this field's study.

4.2 Network Visualization

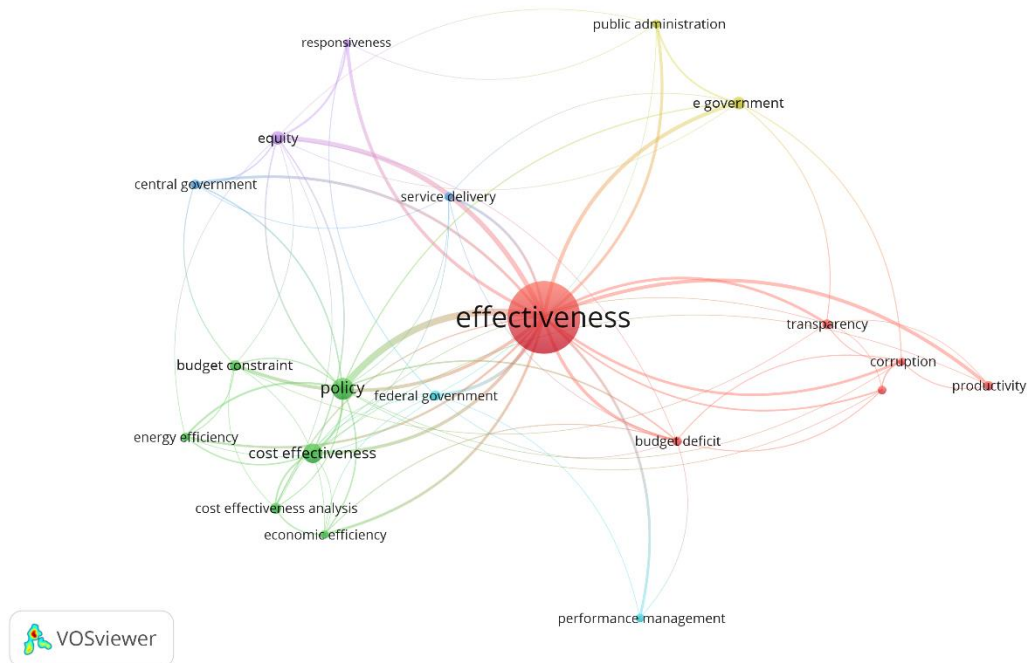


Figure 1. Network Visualization

Source: Data Analysis Result, 2024

The figure generated by VOSviewer represents a keyword co-occurrence network focused on the concept of "effectiveness" within the context of government budget efficiency and effectiveness. The central position of "effectiveness" in the network highlights its significance as a core theme in the literature. The large size of the node and its connections to various other nodes indicate that effectiveness is a widely discussed topic that intersects with multiple dimensions of public administration, policy, and financial management. This suggests that scholars and practitioners alike consider effectiveness a crucial outcome measure for assessing the success of government budgetary practices.

Several other significant nodes connected to "effectiveness" include "public administration," "e-government," and "service delivery." The presence of these terms highlights the intersection of effectiveness with broader governance and administrative processes. The link to "e-government," in particular, underscores the growing importance of digital tools and platforms in enhancing the effectiveness of government operations. These connections suggest that effectiveness in government budgeting is not just about financial metrics but also about improving service delivery and administrative efficiency, particularly through the adoption of technology.

The network also includes nodes such as "transparency," "corruption," and "productivity," which are closely associated with "effectiveness." These terms point to the challenges and barriers that can undermine the effectiveness of government budgets. The presence of "corruption" and "transparency" highlights ongoing concerns about accountability and the ethical use of public funds, suggesting that efforts to improve effectiveness must also address these governance issues. Meanwhile, the link to "productivity" reflects the importance of ensuring that budget allocations lead

to tangible improvements in government performance, thereby reinforcing the overall impact of public spending.

4.3 Overlay Visualization

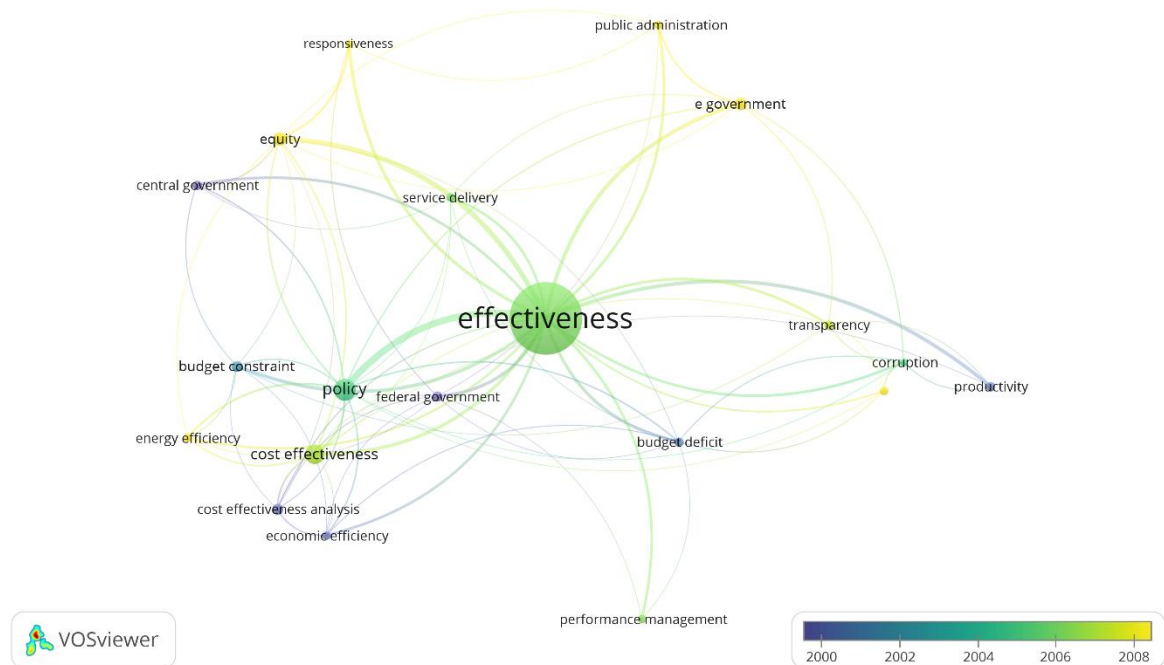


Figure 2. Overlay Visualization

Source: Data Analysis Result, 2024

The figure presents a VOSviewer keyword co-occurrence network focused on "effectiveness," with a time overlay that illustrates the evolution of research topics related to government budget efficiency and effectiveness from 2000 to 2023. The color gradient, ranging from blue (representing earlier years) to yellow (representing more recent years), indicates the temporal development of these themes. "Effectiveness" remains the central node, signifying its continued importance as a core concept in the literature over time. The persistent centrality of "effectiveness" suggests that this theme has been consistently relevant across different periods, reflecting ongoing scholarly and practical interest in improving government budget outcomes.

The connections between "effectiveness" and terms like "policy" and "cost effectiveness" are predominantly green and yellow, indicating that these themes have gained prominence in more recent years. This trend reflects a growing focus on how policies can be designed and implemented to enhance the cost-effectiveness of government spending. The shift towards these topics suggests an increasing concern with not just achieving effectiveness but doing so in a financially responsible manner. This also implies that recent research is increasingly considering the economic implications of policy decisions, emphasizing the importance of aligning budgetary practices with broader economic efficiency.

The nodes for "e-government" and "public administration" are connected to "effectiveness" through yellow and green lines, indicating their emergence as significant topics in the past decade. This suggests that the integration of digital technologies (e-government) and the modernization of public administration practices are viewed as critical to enhancing government effectiveness. The focus on e-government, in particular, highlights the role of digital transformation in streamlining processes, improving service delivery, and increasing transparency. These connections underline the

evolving nature of government operations and the increasing reliance on technology to achieve better budgetary outcomes.

The nodes for "transparency," "corruption," and "productivity" are connected to "effectiveness" with lines that vary in color, reflecting a mixture of both older and more recent research interest. The ongoing presence of these terms suggests that issues such as corruption and transparency have been longstanding challenges that continue to affect government effectiveness. The continued focus on productivity also highlights the importance of ensuring that government resources are used efficiently to generate desired outcomes. These connections emphasize that while new trends like e-government have emerged, traditional challenges related to governance and accountability remain critical to the discourse on effectiveness.

The nodes for "equity," "service delivery," and "budget constraint" are also connected to "effectiveness," with a noticeable green and yellow hue, indicating their increased relevance in recent years. This evolution suggests a growing recognition of the importance of equitable service delivery and the constraints imposed by limited budgets. The emphasis on equity reflects a broader societal focus on ensuring that government services are accessible and fair to all citizens. At the same time, the focus on budget constraints highlights the challenges governments face in balancing fiscal responsibility with the need to maintain and improve service delivery. These trends suggest that recent research is increasingly concerned with how to achieve effectiveness in the context of limited resources and the need for social equity.

4.4 Citation Analysis

Table 2. The Most Impactful Literatures

Citations	Authors and year	Title	Findings
27237	[16]	Street-level bureaucracy: Dilemmas of the individual in public service	This work explores the challenges faced by public service workers who interact directly with citizens, highlighting the complexities and discretion involved in policy implementation.
22843	[17]	Reinventing government	The book advocates for transforming government through principles such as entrepreneurial governance, focusing on efficiency, responsiveness, and results-oriented management.
14729	[18]	Public management reform: A comparative analysis-into the age of austerity	This comparative analysis examines the evolution of public management reforms, particularly in the context of austerity, and their impact on government efficiency and effectiveness.
10559	[19]	Cost-effectiveness in health and medicine	This foundational text introduces methodologies for evaluating the cost-effectiveness of health interventions, influencing policy decisions in healthcare resource allocation.
9234	[20]	Strategic planning for public and nonprofit organizations: A guide to strengthening and sustaining organizational achievement	The book provides a comprehensive guide to strategic planning, emphasizing its importance for achieving long-term organizational goals in both public and nonprofit sectors.
8334	[21]	Big data: The next frontier for innovation, competition, and productivity	This report highlights the transformative potential of big data in driving innovation, enhancing competition, and improving

Citations	Authors and year	Title	Findings
			productivity across various sectors, including government.
8325	[22]	Creating public value: Strategic management in government	The book introduces the concept of public value and provides a framework for strategic management in government to create value for citizens, shifting the focus from traditional public administration.
6042	[23]	Geographical information systems	This work discusses the development and application of geographical information systems (GIS), emphasizing their role in improving spatial analysis and decision-making in public administration.
5913	[24]	Management control systems design within its organizational context: findings from contingency-based research and directions for the future	This study explores the design of management control systems within organizations, offering insights into how context-specific factors influence their effectiveness.
5732	[25]	Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature	This meta-analysis examines the relationship between transformational and transactional leadership styles and their effectiveness, providing a critical evaluation of the Multifactor Leadership Questionnaire (MLQ).

Source: Publish or Perish Output, 2024

4.5 Density Visualization

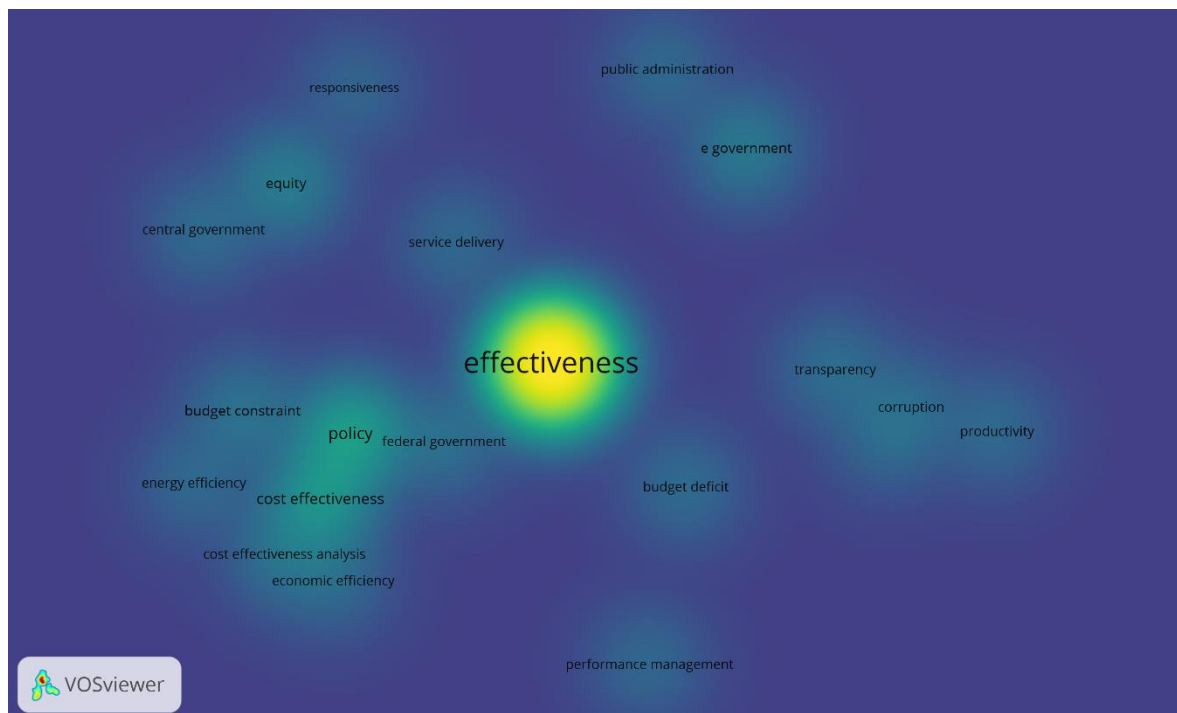


Figure 4. Density Visualization

Source: Data Analysis Result, 2024

The figure displays a density visualization created using VOSviewer, highlighting the keyword "effectiveness" as the central theme in research related to government budget efficiency and effectiveness. The bright yellow area surrounding "effectiveness" indicates a high concentration of research activity and a dense cluster of related studies, reflecting its critical importance in the literature. The surrounding terms such as "policy," "cost effectiveness," "service delivery," and "public administration" also show areas of notable research focus, albeit with slightly lower density, as indicated by the transition from yellow to green.

The more diffuse, darker areas represent terms like "corruption," "transparency," and "productivity," which, while still relevant, have less concentrated research attention compared to "effectiveness." This suggests that while these themes are significant, they are explored in a more fragmented or specific context within the broader literature. Overall, the figure underscores that "effectiveness" serves as a central hub, connecting various aspects of government budgeting and public administration, with research activity spreading out into related but less densely studied areas.

4.6 Practical Implications

The centrality of "effectiveness" in the keyword co-occurrence network, as observed across various visualizations, underscores its pivotal role in shaping government budgetary practices. For policymakers, this highlights the importance of designing and implementing budgetary strategies that prioritize effectiveness as a key outcome. By focusing on effectiveness, governments can ensure that public funds are used in a manner that maximizes value and meets the needs of citizens. This focus should drive the development of performance-based budgeting frameworks that align resources with clear, measurable objectives, thereby improving overall governance.

The emergence of "policy" and "cost effectiveness" as significant themes in recent years suggests that governments must increasingly integrate economic considerations into their policy-making processes. This means that decision-makers should adopt tools and methodologies that assess the cost-effectiveness of different policy options before implementation. By doing so, they can avoid unnecessary expenditures and direct limited resources to initiatives that offer the greatest return on investment. This approach not only enhances fiscal responsibility but also promotes public trust in the government's ability to manage finances effectively.

The rising importance of "e-government" and "public administration" in the literature points to the need for continued investment in digital transformation within the public sector. Governments should prioritize the adoption of e-government solutions to improve service delivery, transparency, and accountability. The implementation of digital tools can streamline processes, reduce bureaucracy, and make government services more accessible to the public. Moreover, these technologies can facilitate better data collection and analysis, enabling more informed decision-making and enhancing the effectiveness of budgetary allocations.

Finally, the persistent challenges of "transparency" and "corruption," as highlighted in the analysis, indicate that governments must continue to address these issues to improve overall effectiveness. Implementing robust anti-corruption measures and promoting transparency in budgetary processes are essential steps in building public confidence and ensuring that resources are used for their intended purposes. Governments should also focus on strengthening institutional frameworks that support transparency and accountability, such as independent audit bodies and public reporting mechanisms. By addressing these challenges, governments can create a more conducive environment for effective budgeting and governance.

CONCLUSION

The analyses of the VOSviewer visualizations reveal that "effectiveness" remains a central and enduring theme in the literature on government budget efficiency, indicating its critical importance in both scholarly discourse and practical governance. The growing emphasis on related

concepts such as "policy," "cost effectiveness," and "e-government" underscores the need for governments to integrate economic efficiency and digital innovation into their budgeting practices to enhance overall effectiveness. However, persistent challenges related to "transparency" and "corruption" highlight ongoing governance issues that must be addressed to achieve these goals. Ultimately, these findings suggest that a balanced approach that combines strategic policy-making, technological advancements, and robust accountability measures is essential for improving the effectiveness of government budgeting and ensuring the optimal use of public resources.

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