# Connections between Governance and Business Process Management – BPM: A systematic mapping of scientific production between 2011 and 2021

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## Abstract

*We researched governance from the perspective of Business Process Management – BPM. From the understanding of process management as a practice that aims to register organizational knowledge, BPM can be seen as a valuable tool for governance. The BPM uses methodologies of analysis and redesign of processes to represent and translate organizational objectives and strategies to add value to clients. This article presents a systematic mapping of scientific papers published between 2011 and 2021 through the data collected in Scopus and Web of Science databases. The co-occurrence of keywords allowed identifying research subareas such as the public sector, technology, and strategic management. The analysis of the evolution of the publications revealed that the theme is still growing; however, we did not find many articles contemplating the connection between the two constructs simultaneously. We concluded that despite the results found, the concepts of both constructs consider common elements as value generation, demonstrating that there is room for new approaches to analyze the evolution of the theme and possibilities of further research.*

## 1. Introduction

In recent decades, the term governance has gained relevance in the agenda of managers and authorities of public and private organizations, especially for its fundamental principles, such as transparency, equity, compliance with laws, accountability, and ethical conduct (OECD, 2011).

According to Chaves (2016), public governance mechanisms are based on the achievement of the excellence of public services provided to society in connection with the process-oriented organizational architecture, which has as a prerequisite the integrated value chain of the State.

Costa, Leal, Nascimento, Mendonça, andl Guerra (2018) state that one of the tools that assist in implementing public management based on public governance principles is process management, which has Business Management Process Notation – BPMN one of the most used approaches. Thus, by identifying, analyzing, monitoring, and controlling organizational processes, this discipline is a technical tool that contributes to results-oriented management and is aligned with the organization's objectives.

Looking at organizational development, the intersection of these concepts is relevant to providing value, quality, and efficiency in public and private organizations. Cartaxo (2016) emphasizes that adopting process management as a practice to record organizational knowledge can be seen as a form of knowledge management. It uses methodologies of analysis and redesign of processes to represent and translate organizational objectives strategies and add value to customers.

In this context, the article's objective is to visualize the concepts of governance and process management in the literature and whether there is any bibliographic connection between these constructs, intending to broaden the understanding of how process management can be an instrument for governance.

The study is based on a mapping of scientific production and is therefore considered bibliographic research. The analysis was based on producing scientific articles from 2011 to 2021 and evaluated the connection between governance and BPM.

According to Kitchenham, Budgen, and Brereton (2010), the mapping of scientific production is a procedure that provides researchers with a panoramic and comprehensive view of the study themes and thus define links and bias that broaden understanding and provide new perspectives of analysis and studies.


## 2. Conceptual aspects of governance and process management

Understanding the concepts of governance and process management helps understand the importance of using BPM as an instrument to leverage governance. The value chain and the process architecture ideas represent an essential step towards implementing a systemic vision guided by the outstanding results and values generated for society.

Thus, for the Organization for Economic Co-operation and Development (2011), governance concerns formal and formal arrangements that determine how public decisions are made and how public actions are implemented to maintain a country's constitutional values in the face of various problems, actors, and environments.

For the Brazilian Union Court of Auditors (TCU, 2014), the basic definition of public governance refers to a set of leadership, strategy, and control mechanisms put in place to evaluate, direct and monitor management, to provide services of interest society.

According to the Association of Bussines Process Management Professionals (ABPMP, 2013), in their publication BPM CBOK, BPM can be defined as a management discipline that brings together strategies, objectives, culture, organizational structures, roles, policies, methods, and technologies to analyze, design, implement, manage performance, transform and establish process governance, structured in a value-added chain.

According to Chaves (2016), the governance system reflects how the various actors organize, interact, and achieve good governance. It thus involves organizational structures, work processes, instruments such as documents and tools, information flows, culture, and behavior of the people involved in the organization's evaluation, direction, and monitoring.

In this context, the Value Chain, a concept formulated by Michael Porter, provides an integrated and systemic view of the organization, assisting the organization in fulfilling its strategic objectives and delivering value to society (ABPMP, 2013).

According to the OECD (2014), in this sense, public value refers to various benefits offered to society depending on social circumstances. Thus, the OECD (2014) describes these benefits as (1) goods or services that satisfy citizens' needs; (2) the deliverables that meet the expectations of justice, fairness, efficiency, and effectiveness in providing services to citizens; (3) adequately ordered public institutions that meet citizens' aspirations and preferences; (4) equity and efficiency in the provision of public services; (5) the legitimate use of resources for public purposes; and (6) the innovation and resilience of public administration in the face of changes in social interests promoted by society.

In the relationship between governance and process management, clarity is needed in the terminology of process management. When relating the constructs of governance and process management, it is essential to be clear the concepts and nomenclature of the terms discipline of process management in the light of the governance mechanisms.

In this sense, Ensslin, Ensslin, Dutra, Nunes, and Reis (2017) approach process management as an instrument that impacts the validation of the strategy and the creation of value for the organization regarding aspects of organizational governance.

## 2.1 The bibliographic connections between governance and BPM

Observing the bibliographic connections between governance and process management verified that process governance is a new discipline that combines governance and BPM concepts.

Andrade (2017) explains that BPM has been a management technology that provides performance improvement and results in private organizations with fewer obstacles to solve despite being subject to internal bureaucracies. J. G. Silva (2014) points given that administrative and bureaucratic processes are commonplace in public agencies, BPM results tend to be more significant.

The implementation of process management promotes an impact on the efficiency of services and the use of resources; thus, the organization fits the principle of efficiency, which is one of the criteria of good governance. Garcia (2015) pointed out the importance of integrating the strategies and objectives of the organization into the processes, and this integration should be the first phase of BPM.

Among others, Garcia (2015) highlighted some advantages in adopting process management: positive change in corporate culture, increased quality, and improved critical competencies. Still, the author cites:

creating high-performance processes, reducing costs, increasing the speed and accuracy of processes, optimizing asset usage, and having greater flexibility.

In addition to showing how governance processes are appropriating the concepts related to BPM, this article pointed out how these constructs are being treated and how they can contribute to the maturity of organizations, whether public or private.


# 3. Methodological procedures

The methodology allows to support academic writing and support this study's objectives. Bibliographic research was carried out – based on previously published – and descriptive articles – considering that it seeks to describe the characteristics of the set of recent articles in the area of BPM and governance (Gil, 2017; Köche, 2011). The approach in data processing is quality-quantitative (Severino, 2017).

To verify the connection between governance and BPM, the research technique used consisted of a systematic mapping that is a secondary study that aims to identify the reflections of a given area in order to determine the contributions and gaps of the theme and increase the understanding of the production of knowledge in a specific (Moro dos Santos & Alves, 2020).

According to Kitchenham et al. (2010), systematic mapping has the following characteristics: (i) a generalist research issue that seeks research trends, researchers, how much activity, and types of studies; (ii) search process by area; and (iii) results in the present a set of articles from the area in several categories; among others.

The stages of the research were planning, execution, and analysis of the results (Dias, Rosa, Comiotto, & Gasparini, 2020; Klock, 2018). The planning was based on the following criteria: (i) search string: "business process management" AND "governance"; (ii) type of document: peer-reviewed article (Kitchenham et al., 2010); year of publication: last ten years – from 2011 to 2021 (Menezes & Caregnato, 2018); and the databases to be used: Scopus and Web of Science (Carvalho, Lopes, Freire, & Pedron, 2019; De Abreu, Turini, & Santos, 2021; Lopes & Farias, 2020; Quevedo-Silva, Almeida Santos, Brandão, & Vils, 2016; M. R. da Silva, 2021b, 2021a; Sousa & Fontenele, 2019).

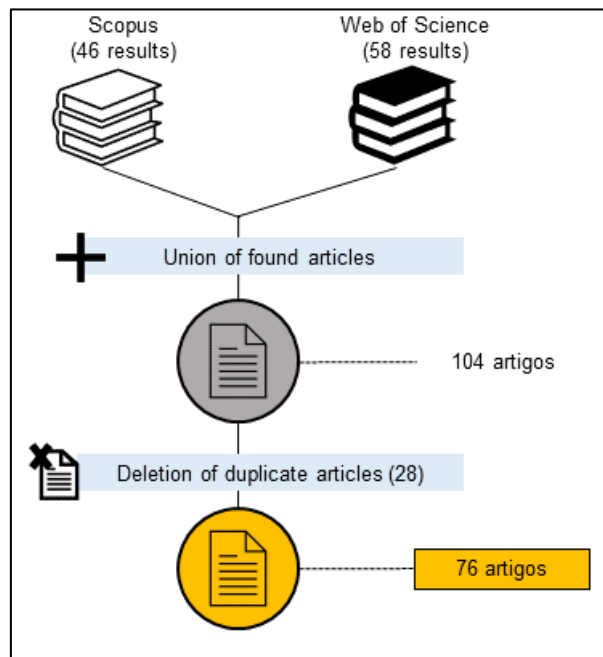The execution of the research occurred in November 2021 and took place according to Figure 1.

Figure 1. Systematic mapping execution.

After eliminating duplicate articles, we found a total of 76 articles, as shown in Figure 1. These articles made up the sample, and then we analyzed the results.

We used the protocol proposed by Baldam (2021) for the analysis. R Studio support software was also used for loading Bibliometrix packages and accessing the Biblioshiny interface (Aria & Cuccurullo, 2017). The following variables were analyzed: year of publication of the article; the number of articles and citations by country; the existence of collaborations between authors from different countries; the number of papers per author and per journal; author's impact index; the content of the ten most cited articles; and co-occurrence of keywords.

## 4. Presentation and analysis of results

This section presents the results of the annual production of articles, the mapping by country, by authors and journals, and the analysis of the most cited papers, evidencing the relationship between governance and BPM and the mapping of the co-occurrence of keywords.

### *4.1 Annual production*

Initially, we presented the result referring to the annual production of articles. The data indicated that the number of articles published annually contemplating BPM and governance from 2011 to 2021 is relatively low, as shown in Figure 2.
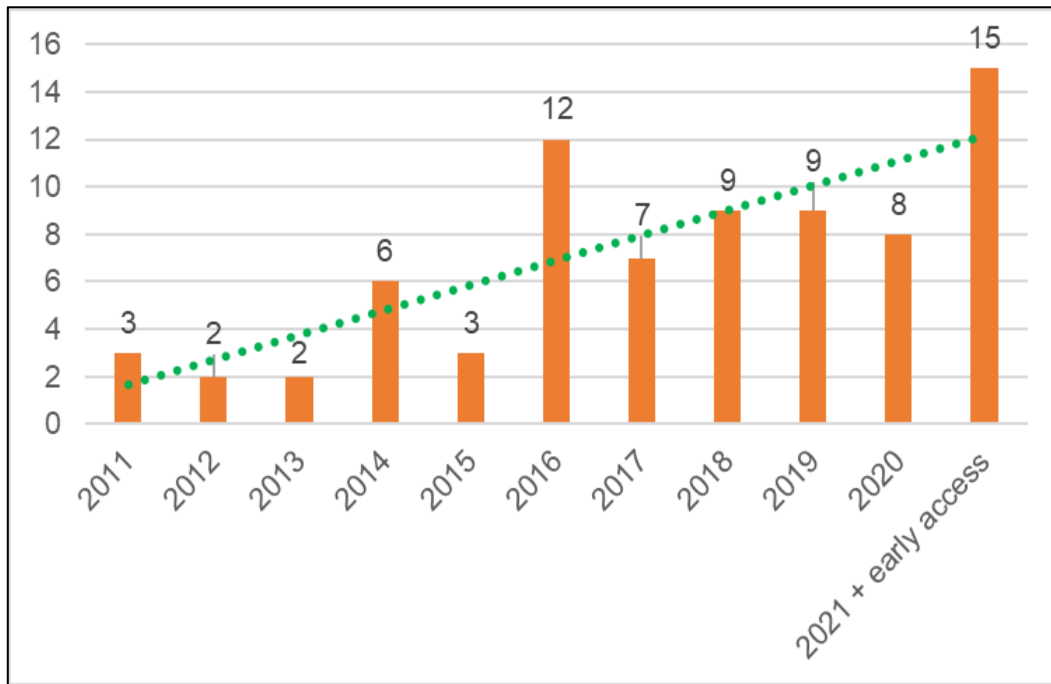
Figure 2. Annual production of articles

In Figure 2, the trend line analysis suggests growth of research on the subject, demonstrating that there is room for new approaches and evolution of the theme and possibilities for further investigation.

### 4.2 Mapping by country

The second group of results presents the scientific production by country demonstrated in the map in Figure 3.
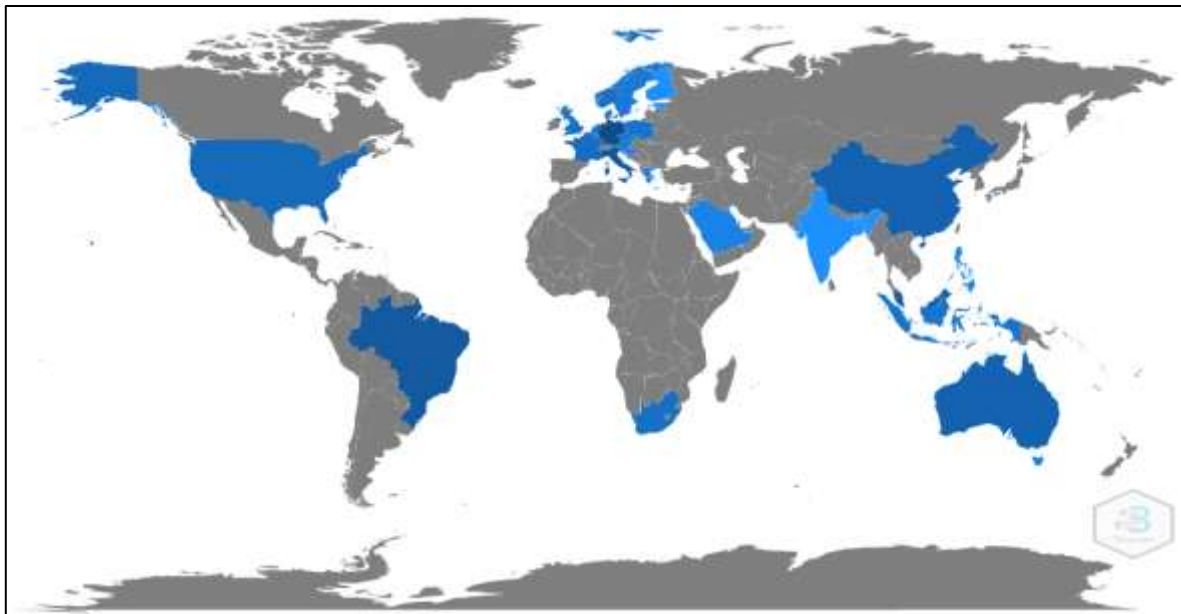


Figure 3. Production of articles by country

The production of articles by country is illustrated on the map by the map's colors; the darker the blue, the higher the country's output. Thus, Figure 3 allows us to identify that the theme is researched in all continents,

but in a relatively low number of countries - only 30 countries.

In South America, only Brazil produces articles about the area; in North America, only the United States; and Africa, only South Africa. Europe, Asia, and Oceania have more interest in governance and BPM. According to Sousa and Fontenele (2019), the impact is relevant in bibliometry and relates the number of citations with published papers. Table 1 lists the ten countries with the most significant impact concerning research in the area.

Table 1. Number of articles by country and total citations

| n. | Country | Total citations | Total articles | Citations per article |
|----|---------|-----------------|----------------|-----------------------|
| 1 | Germany | 138 | 31 | 4,45 |
| 2 | Italy | 80 | 19 | 4,21 |
| 3 | Denmark | 55 | 5 | 11 |
| 4 | Malaysia | 36 | 12 | 3 |
| 5 | Brazil | 35 | 16 | 2,19 |
| 6 | Holland | 31 | 12 | 2,58 |
| 7 | Croatia | 29 | 3 | 9,67 |
| 8 | United States | 17 | 7 | 2,43 |
| 9 | Austria | 14 | 3 | 4,67 |
| 10 | Poland | 11 | 4 | 2,75 |

From Table 1, we identified Germany and Italy as the leading countries that deal with the theme related to governance and BPM, both in terms of citation and production of articles. Although not so numerous in production compared to other countries, Denmark has the highest citation ratio per article, indicating that its production has a high scientific impact.

Brazil is among the five countries with the highest number of citations. We argue this result can be because the publication is in international journals and English idiom. However, due to the high number of articles, Brazil has the lowest citation-per-article ratio, indicating that production is not yet of high scientific impact. Concerning the collaboration between authors from different countries, which can bring to the research perspectives on other realities, Figure 4 shows the collaboration map. The pink line in the map indicates research among authors from the countries noted, and the thicker the line, the greater the number of articles produced in collaboration between the countries.
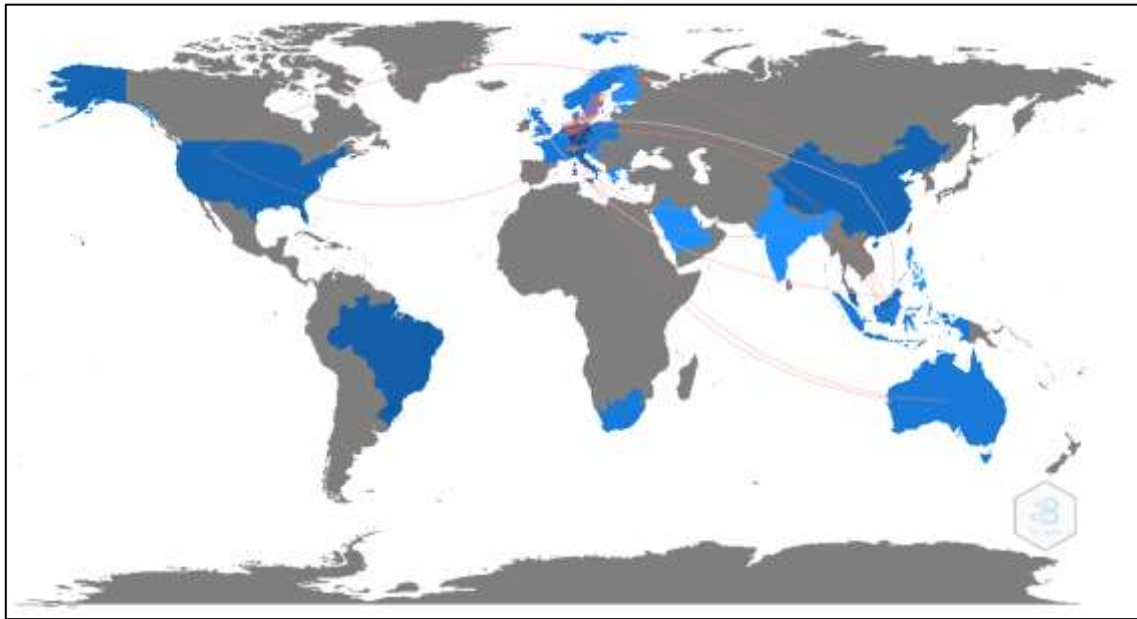
Figure 4. Collaboration of authors by country

As shown in Figure 4, the collaboration between countries occurs in isolation; only one article is produced in cooperation between two countries, and only 20 countries appear in this item. The only exception occurs between Holland and Sweden, which has two papers produced in collaboration between its researchers. According to Hilário, Grácio, and Guimarães (2018), the collaboration between authors provides the possibility of research with different approaches, higher density, and rigidity.

### 4.3 Mapping of authors and journals

The third group of results includes the analysis of the principal authors and journals in BPM and governance. A total of 220 different authors wrote the 76 articles analyzed. Of these, ten articles are single-authored, and 210 have multiple authorship.

Only 12 authors produced two articles: Bandara, W.; Becker, J.; H. Bouwman; L. Coast; Eshuis R.; Hartani N.; Mathiesen P.; J. Mendling, B. Niehaves; Plattfaut R., Said J.; and Seymour L. The other authors are only included in one article.

Of the authors who produced two articles, only three obtained an h-index of 2: Bouwman H.; Eshuis R. and Mendling J. The h-index index indicates the number of published papers about citations received. H-index equal to 1 means that the author has one published work with at least one citation, h-index equal to 2 standards that the author has two papers published with at least two citations and then successively. Thus, we identified no concentration of authors on BPM and governance, either by the number or impact of the articles.

Concerning the leading journals in the area, the Business Process Management Journal stands out, concentrating 29 of the 77 articles found - 37.7% of the published articles. This Journal is from the United Kingdom, posted by Emerald Group, and has Brazilian Qualis A1 in Public and Business Administration, Accounting, and Tourism Sciences and is in quadrant Q1 in Scimago JR in the same area.

### *4.4 Content of Articles*

The last group of results of this research concerns the content of the articles with the connection of governance and BPM concepts. For such, we read the abstract, introduction, and conclusion of each of the ten most cited articles among the articles found. Table 2 presents these articles briefly explaining the connection between governance and BPM in each paper.

Table 2. Analysis of the governance and BPM connection in the ten most cited articles

| Authors/Title/Journal | Year | Quotes | Connection analysis |
|---|---|---|---|
| Rahimi, F., Møller, C., & Hvam, L. **Business process management and IT management: The missing integration.** International Journal of Information Management. | 2016 | 47 | Highlights the need for horizontal integration between process management and IT management to enable strategic and operational alignment. It highlights the importance of process management (BPM) and IT management as support for governance mechanisms. |
| Trequattrini, R., Shams, R., Lardo, A., & Lombardi, R. **Risk of an epidemic impact when adopting the Internet of Things.** Business Process Management Journal. | 2016 | 38 | It demonstrates how the Internet of Things (IoT) has been crucial in promoting growth and sustainability. It identifies the main obstacles and highlights governance as a legal form of resistance to the introduction of radio frequency identification (RFID) technology. It highlights the need for discussion and discussions to promote stakeholder cooperation by defining the principles of IoT governance. |
| Wong, W. P., Tseng, M.-L., & Tan, K. H. **A business process management capabilities perspective on organisation performance.** Total Quality Management & Business Excellence. | 2014 | 36 | Addresses the organization's capabilities to improve performance using process management (BPM). It points out that bpm management capabilities based on managers' commitment and employee involvement positively impact BPM capabilities because it drives the improvement of the organization's performance. Management and technical capabilities shape BPM governance. |
| Doebeli, G., Fisher, R., Gapp, R., & Sanzogni, L. **Using BPM governance to align systems and practice.** Business Process Management Journal. | 2011 | 33 | The authors propose a BPM governance model based on the understanding that governance is one of the critical factors for BPM governance to take effect. Governance refers to organizational processes that need to be conducted by senior management with authority, responsibility, and risk management. They highlight that BPM relates to processes that encompass functions and add value. They emphasize that the integration of BPM functions and duties with |

| Authors/Title/Journal | Year | Quotes | Connection analysis |
|---|---|---|---|
| | | | the governance system ensures the sustainability of the practice and the improvement of organizational performance. |
| Hernaus, T., Vuksic, V. B., & Štemberger, M. I. **How to go from strategy to results? Institutionalising BPM governance within organisations.** Business Process Management Journal. | 2016 | 29 | Demonstrates through field research the strategic interest in BPM and how structural decisions can promote organizational success. The authors conclude that the concept of BPM applies to the public sector. However, resources are developed to a low level in local government and present that bpm maturity models show deficiencies. |
| Niehaves, B., Plattfaut, R., & Becker, J. **Business process management capabilities in local governments: A multi-method study.** Government Information Quarterly. | 2013 | 26 | It deals with the relevance of BPM to government innovation, highlighting that it is an approach to improve organizational processes. The authors point to governance as an area of BPM capacity related to accountability and decision-making. |
| Hosseini, S., Kees, A., Manderscheid, J., Röglinger, M., & Rosemann, M. **What does it take to implement open innovation? Towards an integrated capability framework.** Business Process Management Journal. | 2017 | 25 | It highlights the open innovation (OI) processes considering the constant changes and reduced product cycles in corporate environments. It points to the importance of mobilizing capabilities to develop and implement the IO and an integrated capacity structure using BPM capabilities. It points out that OI relies on interactions and innovation partners from outside the organization, so organizations should address governance-related issues. |
| Gorbacheva, E., Stein, A., Schmiedel, T., & Müller, O. **The Role of Gender in Business Process Management Competence Supply.** Business & Information Systems Engineering. | 2016 | 17 | It deals with the role of genders in providing competencies offered to work with BPM and investigates the existence of gender biases among BPM professionals. |
| Ensslin, L., Ensslin, S. R., Dutra, A., Nunes, N. A., & Reis, C. **BPM governance: a literature analysis of performance evaluation.** Business Process Management Journal. | 2017 | 17 | It highlights the challenges of BPM with the alignment between organizational strategy and the processes executed and the aspects of governance. It points out that BPM impacts the validation of organizational strategy and value creation. |

| Authors/Title/Journal | Year | Quotes | Connection analysis |
|---|---|---|---|
| De Filippi, F., Coscia, C., Boella, G., Antonini, A., Calafiore, A., Cantini, A., … Schifanella, C. **MiraMap: A We-Government Tool for Smart Peripheries in Smart Cities.** IEEE Access. | 2016 | 17 | It presents technological solutions to strengthen the link between citizens and public administration. The MiraMap solution aims to facilitate communication and management between citizens and administration in communicating social issues and submitting proposals. BMP was used to build an environment for the first life social network management process. |

We emphasized that of the most cited articles, most of the findings deal with BPM, the most comprehensive theme researched. In this sense, Rahimi et al. (2016) and De Filippi et al. (2016) investigated the relationship between process management and IT as essential aspects for governance. Other authors who addressed both themes, including Trequattrini et al. (2016) and Doebeli et al. (2011), addressed organizational governance and process governance as essential for better organizational performance.

To identify how the connection between BPM and governance occurs through the keywords of the articles, we constructed the co-occurrence network, according to Figure 5. The network demonstrates when two keywords appear in the same document. Thus, a network of relationships is built to present the interactions and links between these keywords. Sousa and Fontenele (2019) explain that it is possible to identify the structure of ideas, interactions, conceptual networks, and research trends through co-occurrence.
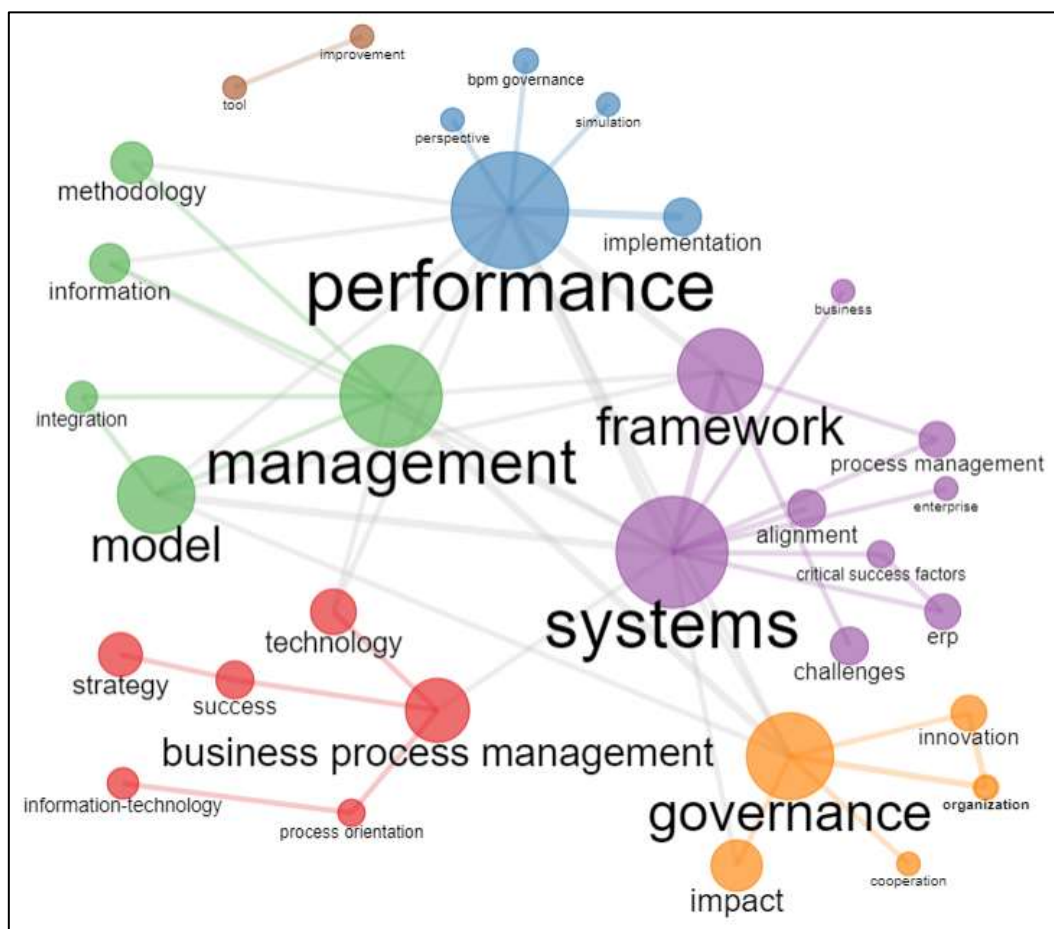


Figure 5. Keyword co-occurrence

Figure 5 allows identifying 6 clusters that are identified by colors. Of these, five relate to each other and have a keyword that constitutes their core. The cluster with its core *business process management* is composed of the keywords: *technology*, *strategy*, *success*, *information technology*, and *process orientation*. The cluster with its core *governance* is composed of the keywords: *innovation*, *organization*, *cooperation*, and *impact*.

We could not directly relate the two concepts investigated in this study through the keywords. The keyword *governance* relates to keyword *BPM* through another cluster with the keyword *systems* as its core. Nevertheless, the keyword *BPM governance* belongs to the cluster cored to the keyword *performance*.

Based on the analysis of these relational links, it can be understood that the connection between the two concepts - BPM and governance - is not yet dealt with directly by the literature, the concepts are related through other constructs, and no association invokes or signals the relationship between governance and BPM.

## 5. Conclusion

This article analyzed governance from the perspective of Business Process Management to understand the connection between both constructs. From the understanding of process management as a practice that aims to register organizational knowledge, BPM can be seen as a valuable tool for governance. The BPM uses methodologies of analysis and redesign of processes to represent and translate organizational objectives and strategies to add value to clients.

A relevant aspect of this search lies in creating value, a concept familiar to both constructs. This research aimed to present a systematic mapping of scientific articles published in the last ten years - 2011-2021, based on Scopus and Web of Science databases.

The co-occurrence of keywords allowed identifying research subareas such as the public sector, technology, information, innovation, and strategic management. The analysis of the evolution of the publications revealed that the theme is still growing; however, many articles were not found contemplating the connection between the two constructs simultaneously.

Despite the inherent limitations of this exploratory study, the work developed proves to be of great use to design and conduct a literature review on a sub-theme that one wants to study. The mapping obtained herein is essential because it presents research paths in a new and exciting field, such as research in governance.

Finally, this work contributes by seeking to approximate the two concepts that do not yet have direct connections in the analyzed articles. We concluded that, despite the results found, the concepts of both constructs contemplate common elements such as value generation, demonstrating that there is room for new approaches. Thus, that may present exciting debates in the association of BPM principles for robust governance in public and private organizations.

Thus, future research may overcome this limitation to give visibility to this production, its authors, institutions, and countries that disseminate BPM as a governance instrument to analyze the theme's evolution and possibilities for further research.

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